

REIMAGINE CHALLENGE

Anthology of 2020
Winning Proposals



IT'S TIME TO **REIMAGINE** OUR WORLD
FROM THE GROUND UP

Foreword by Eric Schmidt

The COVID-19 pandemic has transformed our world, revealing vulnerabilities and magnifying challenges in nearly every community across the globe. But it also presents us with an opportunity to reimagine our future.

In the summer of 2020, Schmidt Futures announced the Reimagine Challenge, inviting the world's college and university students to put forward their most innovative proposals to build back better and more resilient than before. I'm inspired by the bold ideas we received and the rising generation of leaders who developed them.

From combating misinformation online to tackling food insecurity with sustainable farming to improving access to remote mental and physical health care, the issues students addressed revealed the myriad challenges faced by communities around the world. Their projects showcase not only critical thinking and ingenuity, but also empathy.

Although the long-term impact of this pandemic is daunting, we cannot forget we live in the most educated, interconnected, empowered period in human history. If we come together with all of our tools, knowledge, and talents—as these students have done—I'm confident we can build a world that's fairer, safer, and more prosperous for everyone.

—Eric Schmidt, Co-Founder of Schmidt Futures



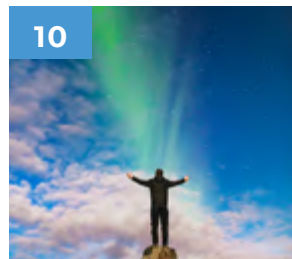
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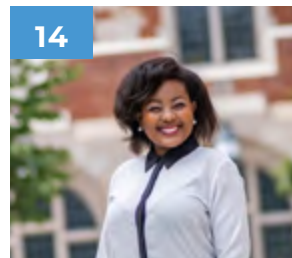
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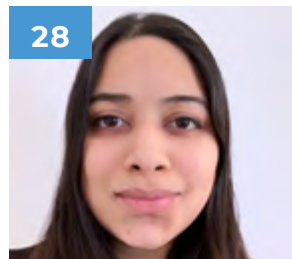
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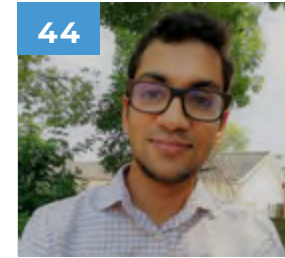
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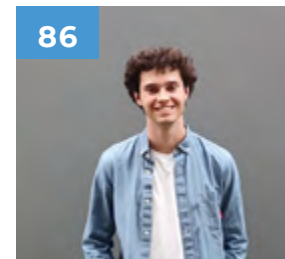
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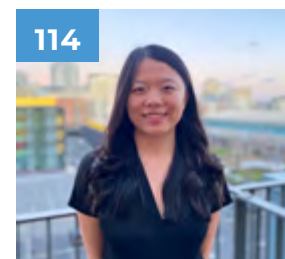
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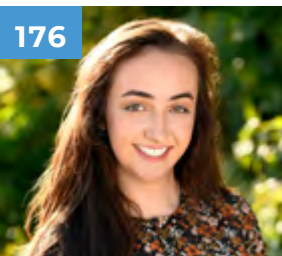
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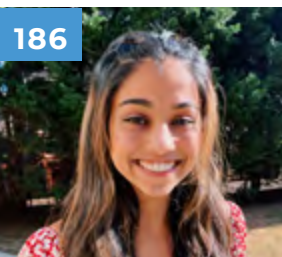
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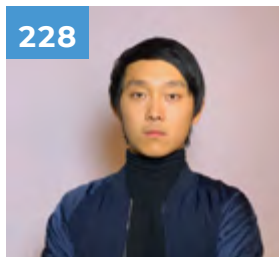
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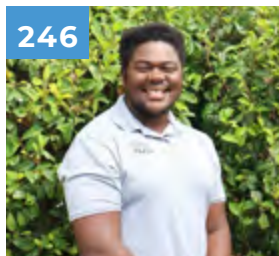
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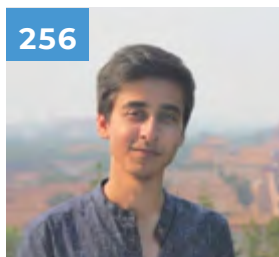
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About

The **Reimagine Challenge 2020** invited college and university students from around the world to submit project proposals to address one of two topics: Sparking a Global Movement and Community Impact from COVID-19.

Of the 838 submissions, 20 winners were selected and provided access to a total of \$1 million in scholarships and prizes. Each of the 20 winners became eligible to receive up to \$25,000 in tuition scholarships, and the institution where each winner was currently enrolled became eligible to receive up to \$25,000 in additional prizes per winning entry from their school.

Schmidt Futures worked with the 20 winners to refine their proposals and publish them in this online anthology. The anthology serves as a capstone of the months-long competition, amplifying voices of students around the world and their solutions to build a better future. The proposals exhibit a wide variety of ideas from a diverse group of students, representing 13 universities and nine nationalities. Some winners have outlined their ideas in concept, while others have begun developing prototypes. All winners have presented promising ways to reimagine a post-pandemic world.

The winners now join a growing global network of emerging talent committed to serving their communities.

The Challenge

Launched in August 2020 alongside the [Reimagine Podcast](#) hosted by Eric Schmidt, the Reimagine Challenge is part of a broader [\\$1 billion commitment](#) by Schmidt Futures co-founders Eric and Wendy Schmidt to identify and support global talent.

The **Reimagine Challenge 2020** called for college and university students to submit a project proposal addressing one of two topics:

Sparkling a **Global Movement**

What is one concrete way that YOU could motivate 1,000,000 people to work in concert to make the world meaningfully better within 10 years? What would you do, what would be the key steps to grow an effective massive action, and why would this have significant impact? Why should we have confidence that you will succeed and how would we know that you had succeeded?

Community Impact from **COVID-19**

What is the most surprising or unusual insight you have had about your community in the wake of the pandemic? Given this insight, what is the most important concrete action that YOU and a growing group of others could take to help your community or country better respond to changes resulting from the COVID-19 pandemic? How would you and we know you had succeeded?

The Challenge consisted of two rounds of judging—Round 1 by a panel of Schmidt Futures team members and partners, and Round 2 by an external panel of 35 global experts across science, technology, health, law, policy, education, and business. Students in Round 1 were asked to provide a short, plain text proposal no longer than 1,200 words that addressed one of the two topics above. Judges then selected a number of participants from Round 1 to provide a more extensive proposal in Round 2. This proposal could be up to 12 pages of text and be accompanied by a 60-second video pitch, as well as any graphical components that explore or dramatize the idea and explain its origins, details, and implications.

Each proposal was judged along the following criteria:

Effectiveness: How many people could this help, and how will it help them?

Innovation: How is the idea or approach different from what's already being done? What secondary effects could it unlock? How will technology help you reach scale?

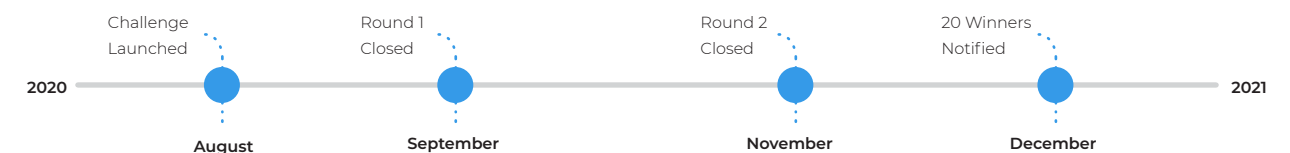
Feasibility: What would the pathway be to make the idea real? What would it take to make that pathway plausible?

Measurability: How will you know that the idea is working? To what degree of precision? On what scale (local, national, continental, or worldwide)?

Inclusion: How is this idea drawn from and capable of benefiting diverse communities?

Ethics: What would be required to ensure that people can act upon the suggestion in ethical ways?

Timeline



The Results

Schmidt Futures received 838 submissions from students enrolled in 264 schools in 40 different countries, representing 86 nationalities and speaking 53 primary languages. Participants spanned a variety of backgrounds, such as undergraduate freshman at liberal arts schools, PhD candidates in the sciences, graphic designers, and aspiring lawyers, among others.

The submissions focused on a range of issues, many of which included solutions to tackle mental health issues; expand access to telehealth services; increase access to high-quality education; mitigate the pandemic impacts on the elderly and aging population; alleviate refugee and migrant worker hardships; end global food insecurity; and more.

To address these issues, the 20 winning proposals include solutions such as smartphone apps, online resource platforms, sustainable farming tools, virtual makerspaces, activist movements, a cloud-based food tracing platform, a health consulting service, a QR code-based cashless donation system, and more.

There is much work to be done to build back better from the pandemic. These proposals offer insight into how the next generation of innovators and leaders would begin to tackle society's most pressing challenges today and in the years to come.

Results

Submissions

838



Gender representation

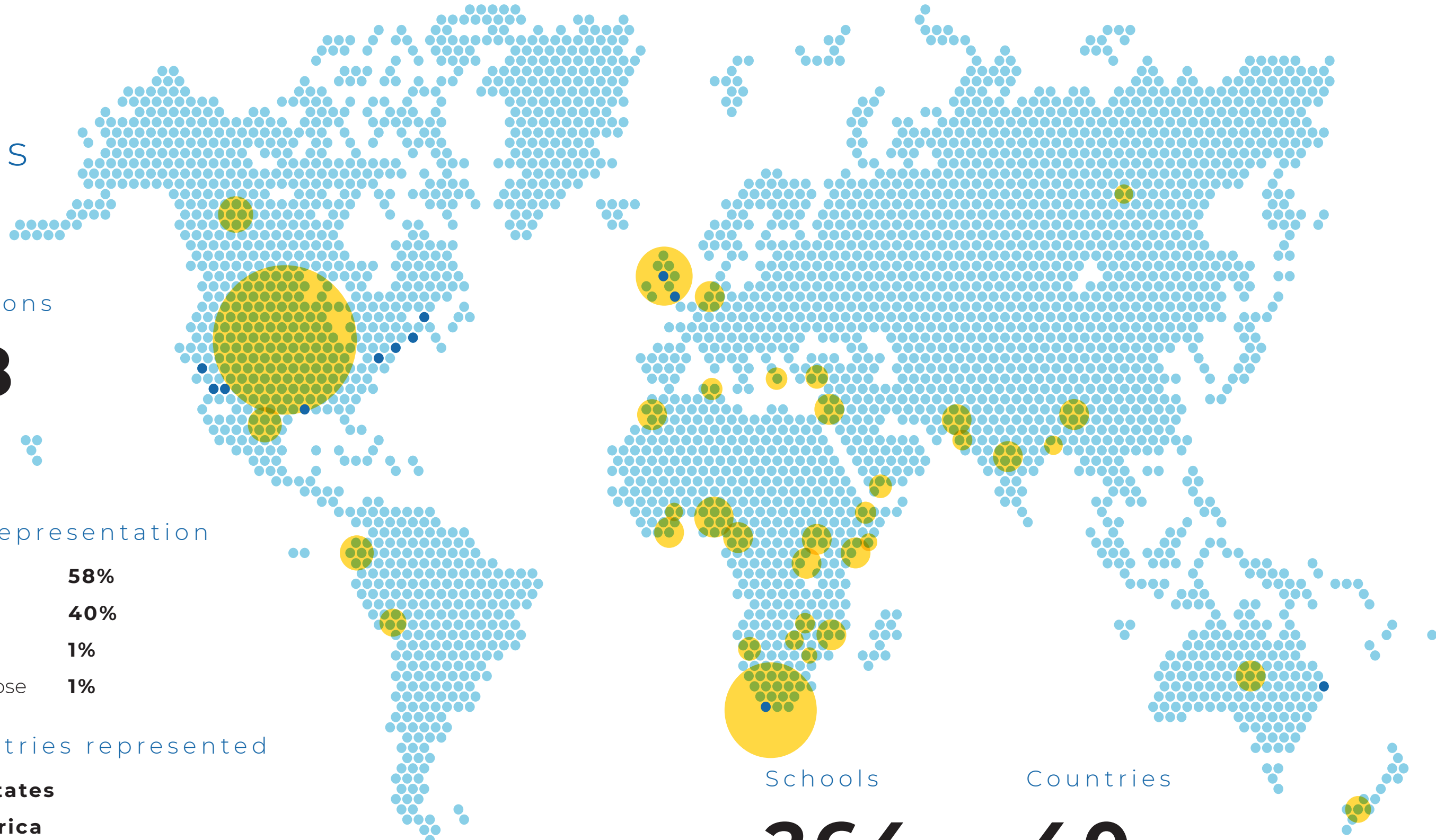
Female	58%
Male	40%
Non-Binary	1%
Did not Disclose	1%

Top countries represented

- 1. United States**
- 2. South Africa**
- 3. United Kingdom**
- 4. Nigeria**

Key

-  Overall submission locations (by School)
-  Finalist submission location (by School)



Schools

264

Countries

40

SUBMISSIONS

A hand holding a crystal ball that reflects a sunset over a body of water. The background is a blurred sunset over water with birds in the sky.

838 PROPOSALS SUBMITTED.
20 GLOBAL FINALISTS.

PROPOSAL

HEROES HIVE:

Makerspaces for
recyclers and ingenious
workers in developing
nations with high waste
mismanagement

Authored by:

Phyllis Mugadza

Nationality: Zimbabwean

Yale University

New Haven, United States

[Listen to Audio Intro](#)



IN THE RACE TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS, THERE IS NO TIME TO WASTE

For a decade now, a jingle has been stuck in my head: “Reduce, Reuse, Recycle. Don’t throw it all away, we can make a change today. Reduce, Reuse, Recycle. Whether it’s paper, plastic, glass, let’s rethink and make our planet last.” Like many others, I danced to the tune of this movement, enchanted by the melodies that accompanied the advertisements. It fostered my belief that every deposit made into the blue or green recycling bins would be reborn in some repurposed shape or form. Unfortunately, I was terribly mistaken—the metamorphosis of recycled materials transitions from cocoon straight to carcass.

The public knows little about what happens to the recyclable waste that is put in recycling bins by consumers in industrialized nations. A significant portion of the United States public believes that recycled materials are ground up by safe, clean, U.S. factories and made into new goods by American workers. According

to the New York Times opinion video “The Great Recycling Con,”¹ this is an illusion that we have bought into since we were children, commercial after commercial. Entire categories of paper and plastic are rarely recycled. According to the United States Environmental Protection Agency, in 2017, as little as 8.4% of discarded plastics went through the recycling process (a process that involves cleaning, sorting, and grinding the plastic, then turning the ground plastic into bits called flake, and ultimately converting the flake into new products).² The unrecycled waste is dumped into oceans, taken to landfills, or shipped to other countries under the pretext of recycling.

In 2019, the United States exported 436 million kg of plastic waste.² Figure 1 shows the United States’ plastic waste exports to countries identified as having high waste mismanagement.

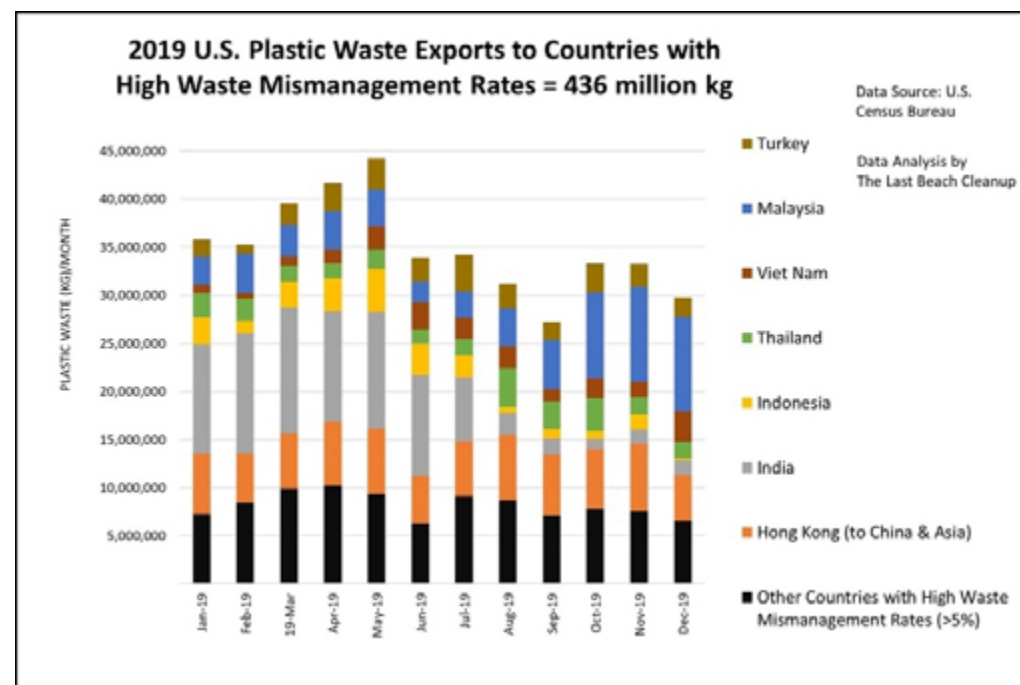


Figure 1. 2019, U.S. Plastic Waste Exports to Countries with High Waste Mismanagement Rates, <https://usatrade.census.gov>

The United States continues to export over 5,600 shipping containers (30 million kg) of plastic waste every month to countries with poor waste management systems.² Many other high-income countries, despite having waste management systems far more developed than low- and middle-income countries, have exported their waste to poorer countries as a key strategy to deal with domestic post-consumer waste.

When exported waste reaches developing countries, the social, environmental, and health impacts of this trade are devastating. In many towns and cities around the world, plastic waste is causing a growing public health emergency. New research indicates that between 400,000 and 1 million people die each year in developing countries because of diseases related to mismanaged waste.³ Waste piles often create a breeding ground for disease-carrying flies, mosquitoes, vermin, and rats. Furthermore, mismanaged waste that is openly burnt releases pollutants that increase the risk of heart disease, cancers, respiratory ailments, skin and eye diseases, nausea and headaches, and damage to the reproductive and nervous systems. Additionally, large informal dumpsites can pose direct hazards, as landslides at waste dumps are known to have taken people’s lives.

Following increased awareness of the environmental and health implications of the plastic waste trade, China enacted the National Sword Policy in 2018 that banned the importation of certain types of solid waste. The policy set strict contamination limits on recyclable materials. In response to the policy, many recyclers moved their operations from China to other countries in Asia and around the world, leading to the rise of illegal operations in developing nations.

The lack of transparency and accountability within the illegal waste trade has facilitated its growth. Some companies sell their waste to firms or brokers who act as middlemen in the process, and this ultimately interferes with the traceability of the trade. The use of brokers to trade waste means that contracts can change hands several times between the source and the destination without accountability. Furthermore, brokers are financially incentivized to maximize shipments of waste. The lack of transparency and accountability creates an open playing field for unethical business practices.

When solid waste reaches developing countries that have no government-funded waste collection or recycling systems, the burden falls on some of the poorest individuals in the world to sort through waste manually. These individuals earn a living by collecting recyclable waste.

Zooming in to Nairobi, Kenya, we find Miriam and her 11-year-old niece Rosemary collecting cardboard boxes, paper, and plastic bottles at the Dandora dump (Figure 2).⁴ They hope to sell these materials to local businessmen who control the trade and collection of waste in the dump and determine the fees to enter certain areas of the site.

Traders stationed along the edges of the dump buy soda bottles made from polyethylene terephthalate (PET) from Miriam for less than 5 cents a kilogram. This is more than she will get from the cardboard boxes she picks, but it is far less than what she can get for the same weight of metal cans. In Rosemary’s case, it will take a long time for her to earn enough money to pay for school using earnings from discarded plastic.

Waste pickers play an important environmental and economic role in reducing the demand for new raw materials



Figure 2. Miriam Nyambura and her 11-year-old niece, Rosemary. Photo by Khadija Farah for the Intercept

by the manufacturing industry. However, in most cases, their work is unregulated, and waste pickers are often a vulnerable demographic—typically women, children, the elderly, the unemployed, and/or migrants. They are forced to suffer through unhealthy working conditions and face challenges from the fluctuations in the price of recyclable materials. Additionally, a strong social stigma is associated with this type of work. In spite of all these obstacles, waste pickers in developing nations are the only group in the waste management framework who are doing the actual work of recycling. Yet they receive a very small part of the compensation that trickles down from the most profitable companies, to the brokers and then to the traders at the dumpsites who compensate the waste pickers for their manual labor.

Increased awareness about the vital role of waste pickers in developing nations has pushed governments to incentivize waste collecting initiatives. An example of a successful partnership with informal waste pickers is the Extended Producer Responsibility (EPR) initiatives in South Africa.⁵ These initiatives involve paying waste collectors for metal, plastic, and glass as well as supporting the development of small enterprises in collection and recycling. South Africa has successful EPR initiatives for tin cans, glass and PET bottles. In each case, the major players in the supply chain have collaborated to create and finance an organization that both facilitates the recovery of recyclable materials (by paying waste collectors a fair price) and guarantees a stable supply of high-quality recyclates for manufacturers. This strategy has effectively raised collecting rates, making South Africa one of the top six countries in the world for tin can collection.⁵

Successful EPR initiatives demonstrate the efficacy of waste management frameworks that include the participation of waste pickers; however, more can be done to improve the livelihoods, workplace safety, and sense of dignity of these heroes who are saving our planet. For the longest time, wealthy exporting nations have stifled the potential of low-income populations in developing nations by viewing them as labor that will do the thankless, and sometimes dangerous, work of the green economy. In particular, the global waste crisis has perpetuated the idea that the role of poorer communities in waste management frameworks is to salvage recyclable materials from dumpsites. As a result, we fail to view them beyond this role. The world has become increasingly unaware that the true power

of low-income populations in developing nations lies in their ingenuity.

I invite you to browse the internet and explore the ways in which Africans are turning trash into treasure. Africans are remaking soda cans and bottle caps into sculptures. Africans are transforming plastics into art, accessories, and useful equipment such as waste baskets. Africans are assembling bottles into flotation devices. Having lived in Zimbabwe my whole life, I am no stranger to the magnificent inventions that are created by a socioeconomically disadvantaged population. I have grown to understand that even though I have received a thorough education in engineering, I can only harness a fraction of the creative ability possessed by my gardener, Tendai.

I grew up watching Tendai make toy cars out of wire for his sons. His intuition guided him to design a makeshift version of what I later learned in my science classes is called a powertrain. He gifted his wife with a chandelier that he made out of broken glass that he found after being inspired by a chandelier in a magazine. Knowing just how much I love music, for my birthday, Tendai surprised me with a guitar that he made himself using four objects: An oil can, a piece of scrap wood, an assortment of wires for the strings, and screws as the tuning pegs. Tendai saved my family a lot of money because he knew how to fix everything without ever needing to go to the store. He would repair his boots using old, rubber tires because of the added benefit that it made the shoes waterproof.

Tendai's heightened creativity can be understood through the lens of a psychological phenomenon known as functional fixedness. Functional fixedness is a cognitive bias that limits a person to use an object only in the way that it is conventionally used.⁶ Essentially, an individual is blocked from solving a problem because they are unable to move past an object's original purpose. For example, whenever we need to drive a nail into a wall, we automatically look for a hammer, when in reality, any heavy object would do the job. When I see a comb, I see an object that detangles hair. Tendai, who has lower levels of functional fixedness than I do, can associate the comb with a wider function such as separation of thin objects. Tendai can, therefore, repurpose this device as an object that separates and arranges his paperwork. When I picked up a screwdriver, Tendai picked up a coin and used it to tighten the screws or

"pegs" on the guitar that he made for me.

At the global level, it is difficult to ignore the effect that our functional fixedness has had on our planet. Our inability to find alternate uses for everyday waste has fueled a single-use culture and a throw-away society. With the global waste crisis at our doorstep, we should feel encouraged to overcome our functional fixedness, which is a challenge in itself. The difficulty of divorcing a component from its originally intended function grows with the years of receiving a formalized education, because educational systems are structured on conventions and models that filter out a range of possibilities. Studies have also shown that individuals from non-industrialized societies, specifically those with low exposure to high-tech devices, exhibit low levels of functional fixedness.⁷

A solution to the world's waste crisis lies in the individuals who demonstrate functional fixedness immunity. Now is the time to reconsider the role of waste pickers by enabling these individuals to unleash their ingenuity. Our planet is in desperate need of a movement that will reduce, reuse, and reimagine physical waste. In a global effort to achieve this goal, we must recognize that developing nations may have poor recycling capacities but they possess the most powerful reimagining capabilities. We have much to learn from those who have been unfairly considered uneducated. The movement to reduce, reuse, and reimagine is one that values and embraces knowledge equity as a crucial component of the movement's success. Because grassroots innovators like Tendai are a source of groundbreaking ideas, the logical next step would be to equip them with the infrastructure necessary to bring their creations to life.

I am proposing the development of makerspaces in developing nations with high waste mismanagement. These spaces will provide supplies, tools, a safe working environment, and a source of income for the makers. The makerspace will be part of a larger center that works to enrich the lives of the makers by enabling them to sell their creations and by giving them the opportunity to enroll in foundational academic courses. For now, I will call this center The Hero's Hive Center (HHC). My proposal is framed around building a Hero's Hive Center in Zimbabwe that can accommodate 100 creators with the end goal of scaling in size and implementing this project in other developing nations. Figure 3 shows

a diagram of the proposed Hero's Hive Center.

Makers are enrolled at the Hero's Hive Center through recruitment initiatives or via direct application to the center. To better demonstrate the enrollment process and the daily operations of the center, I will walk through the process using a hypothetical maker, Panashe. Panashe is seventeen years old and is trying to earn money to send herself to school. She has been selling animal sculptures that she makes out of the aluminum cans that she collects. Panashe earns very little from selling her creations at the local flea markets.

Panashe hears about the Hero's Hive Center through an advert on the local radio. She decides that she wants to enroll in the Hero's Hive Center that is located close to where she lives. At the administration block of the center, Panashe is met by a Recruitment Coordinator who is able to speak the language that Panashe is fluent in. Panashe then undergoes an assessment with the recruitment coordinator where she describes the process of making her creations and she presents an elephant that she made (Figure 4).

The Recruitment Coordinator offers Panashe a station at the makerspace. In order to complete her enrollment, Panashe must complete the required training for the metalworking shop with an equipment manager as the assessment identified that she would benefit from learning how to use a lathe. Panashe is then assigned to a supervisor who will take her through the orientation process. The orientation begins with a tour of the facility that highlights the supply boxes where Panashe will find her materials and the storage areas where she will be able to store the projects that she is working on. The orientation gives an overview of health and safety procedures, rules and regulations and the protocol for reporting any concerns that arise.

Supervisors work closely with the Information Technology (IT) team and the Finance department to facilitate the online sales. Panashe works with her supervisor to market and sell her creations. Panashe selects the pieces that she would like to sell and is capable of completing orders for. Her supervisor then takes pictures of these creations and works with the IT team to upload them to the Hero's Hive marketplace, under the "Shop" tab on the website. Whenever Panashe wishes to add new inventory to her store, she can reach out to her supervisor who will carry out the same procedure.

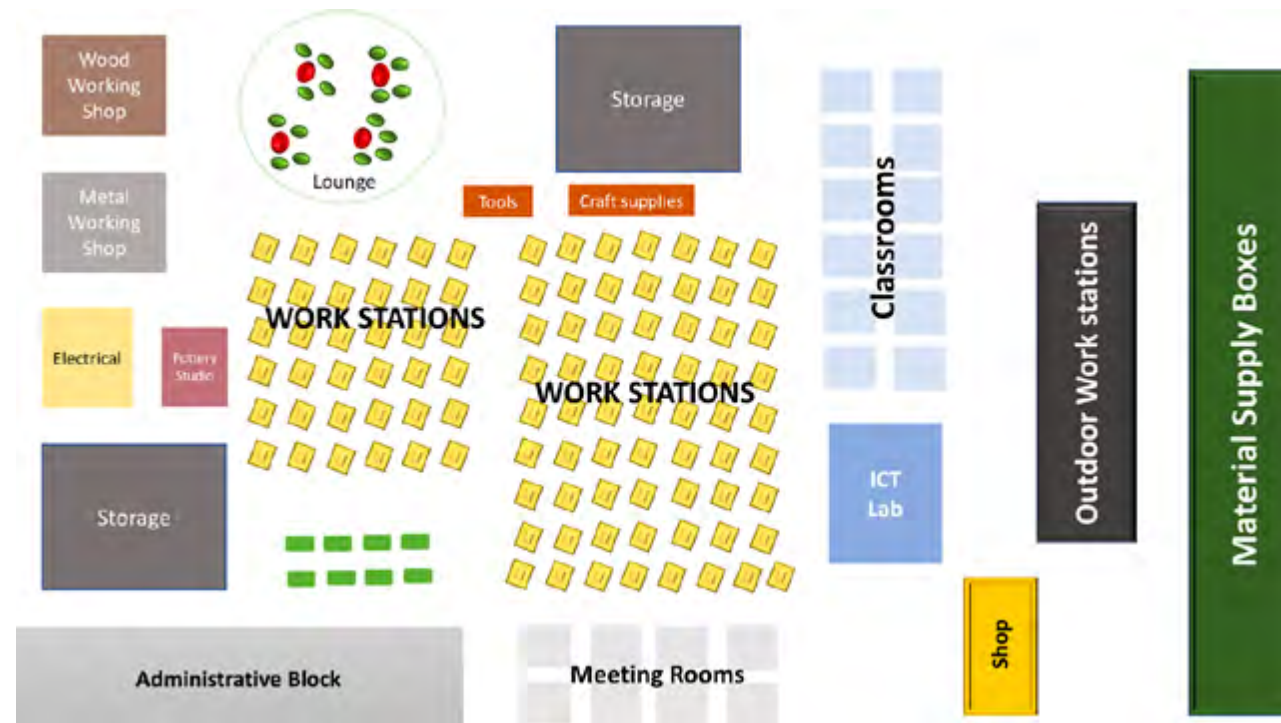


Figure 3. – Proposed layout of the makerspace at the Hero's Hive Center

Panashe has the option to choose a name for her store and to include a bio. This will allow customers to be able to filter through creations by store or by creation type when they shop.

Panashe will work with her supervisor to price her creations. When she receives an order for one of her pieces, she will be informed by her supervisor. If necessary, the supervisor will manage the communication between Panashe and her customer. Panashe's supervisor then ensures that the creation gets packed and delivered to the customer. The Hero's Hive Center receives 15% on each purchase and Panashe receives the remaining 85%. Panashe receives her payment through methods established by the finance office. In addition to the online store, Panashe is able to sell her creations in the physical shop at the Hero's Hive Center. Because there are no shipping costs associated with sales at the center, Panashe will receive 90% of that payment.



Figure 4.- A sculpture of an elephant made from tin. Unknown artist. <https://www.pinterest.com/pin/467107792573194398/>

During Panashe's assessment, she mentioned that she is raising money so that she can afford to go to school. The Recruitment Coordinator gave Panashe an overview of the foundational courses offered at the Hero's Hive Center. Panashe believes that she will benefit from participating in these courses because they will prepare her for her first year at school. Based on her assessment, Panashe is placed into English 1-Reading and Writing and Elementary Mathematics.

The courses offered at the Hero's Hive Center are designed to equip the makers with a foundation of skills that they can build on to achieve even more success. The center will begin by offering Information and Communications Technology (ICT) courses, taught inside the ICT lab as well as a Financial Literacy course. The Financial Literacy curriculum will cover the basics of budgeting, enterprise, financial terminology, and financial institutions. As the center grows, we will continue to develop the academic program. Our goal would be to expand our academic program to offer Mathematics courses up to the Algebra 1 level, and to include an English Language curriculum.

Increasing foundational course access to a population that is similar to the HHC's intended population has already proven to be successful in Cape Town, South Africa. Cape Town is home to Khayelitsha, one of the top five largest slums in the world. It can also be argued that Khayelitsha is home to the greatest ideas from the most creative innovators. The ingenuity of residents in Khayelitsha inspired the development of the Bandwidth Barn tech hub. The Bandwidth Barn is a space that allows innovators in Khayelitsha to access meeting spaces and a computer lab in order to develop their tech-enabled start-ups.⁹ Members of the Bandwidth Barn enroll in ICT skills development courses as well as in business development courses. Although the Bandwidth Barn focuses primarily on supporting ICT-based innovations, it is testament to the success of creating services that enable marginalized populations to use their creativity to improve their livelihoods and the communities around them.

The components that are necessary to make this project feasible are outlined in the HHC's proposed business model (Supplemental file 1). I have identified Multinational Corporations (MNCs) and local governments as key partners because these entities would be the main suppliers of recycled materials to the center.

Local governments can promote recycling practices in local communities by educating citizens on how to recycle materials correctly so they are in an appropriate condition once they reach the HHC. Furthermore, local governments can introduce transportation mechanisms that will ensure the delivery of recycled materials to the HHC.

Local government legislation can push multinational corporations to explore innovative ways of dealing with their waste. Companies such as Coca-Cola, Nestlé, and Unilever dominate the market in fast-moving consumer goods and they are pervasive in low-income countries.⁹ MNCs will be encouraged to partner with the HHC as a solution that keeps their products out of dumpsites and ultimately protects their image. However, MNCs must still work towards creating sustainable ways to deliver their goods.

I have also identified citizens, both in high-income and in low-income countries as key partners. The global movement to reduce, reuse and reimagine will be fueled through advocacy. Citizens must use their voices to raise awareness on the horrific and unjust ways that waste is being managed today. Citizens will advocate for the buying of goods from ethical companies such as the HHC who are committed to reducing plastic use and improving the livelihoods of its makers.

Revenue will be generated through sales from the online and physical stores. The center will also charge a small recycling fee to MNCs, local governments and private haulers who deliver recycled materials to the center. There are also many opportunities for volunteers to engage with the HHC. Exchange programs such as AIESEC fund cross-cultural exchanges that align with the Sustainable Development Goals. The Hero's Hive Center works towards more than half of the Sustainable Development Goals.

In addition to working with volunteers, makers will have the opportunity to collaborate with high school and university students on projects. There would be an increase in problem solving ability and efficiency if we connected makers to students and young professions in Science, Technology, Engineering and Mathematics fields. Therefore, I have identified co-creation as an important component in the customer relationships segment of the business model.

REIMAGINE CHALLENGE

Currently, the Agbogbloshie Makerspace Platform (AMP) in Ghana employs this collaborative approach.¹⁰ The makerspace enables grassroots makers to work with young professionals in STEAM fields to design and prototype spacecraft. Agbogbloshie is described as being the world's largest electronic waste dump. Low-Income Ghanaians working in Agbogbloshie view it as a scrap yard where they are able to mine for electronic parts that they can later sell or use to repair damaged electronic devices. Although innovation is alive and well in Agbogbloshie, there are increased health risks from fumes released when plastics and metals are burned, polluted water sources, and poor sanitation.¹¹



Figure 5- A young boy stands with a fire burning behind him at Agbogbloshie
Photo by: Kevin McElvaney for the Guardian

To illustrate the power of collaboration between a Hero's Hive maker and a STEAM professional, I will use the two inventions pictured below. Both of these images show recycled bottles cut in half. However, the bottles serve a different purpose in each image. On the left is a project done by Kenyan born and South African based architect, Kevin Kimwelle.¹² On the right is the physics-inspired eco cooler designed by Ashis Paul.¹³ Kimwelle's design demonstrates the problem-solving ability of a maker with low levels of functional fixedness. Once combined with Paul's knowledge of physics, not only do the bottles solve a storage problem, they also work to solve a temperature regulation problem in low-income households.



Figure 6- Kevin Kimwelle's "hanging" solution

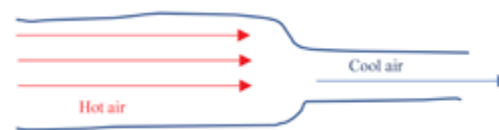


Figure 7- Ashis Paul's eco cooler

The Hero's Hive will be a source of novel ideas for the world to use. One of our key activities is to ensure that we are contributing to a body of knowledge that inspires consumers with innovative suggestions on what they can do with the waste that they would normally throw out. Empowering makers by informing them of the value of their contributions will revive their sense of dignity.

However, I do acknowledge that initially, there may be resistance within the community to enroll in the Hero's Hive Center. An opportunity of this kind will definitely raise suspicion. I developed the implementation strategy with this obstacle in mind. The phased nature of implementation will give us room to overcome these challenges.

Phase one of implementation would be to establish the online marketplace in order to gain the trust of the makers. The marketplace will demonstrate that we are dedicated to connecting the makers to customers and to promoting their talent. During this stage, we will have the opportunity to learn more about the creative processes that makers employ and the tools and equipment that they would need in a makerspace. Therefore, it would be important to form a maker's advisory board at this stage. Makers who benefit from selling through our marketplace are more likely to encourage other makers in their community to enroll, which would increase the number of makers who are utilizing our marketplace. Once we have at least 50 makers on board and a better understanding of the facilities, tools and equipment needed, we will begin the construction of the makerspace. Supplemental file 2 is a budget that estimates the cost of building the proposed makerspace.

In addition to the board of makers, the Hero's Hive Center will be led by a Board of Directors to align with a nonprofit structure. The proposed organizational structure is outlined in Supplemental file 3. The Board of Directors will elect four committees: environmental health, program development, finance, and ethics. The environmental health committee will work to ensure that the makers and employees are working in a safe environment. The programming and development committee will be spearheading sustainability initiatives. The finance committee leads through transparency as this will be key in maintaining the trust of donors, makers, and the public. The finance committee will set

standards in place to account for donations as well as govern compensation for employees. The ethics committee is responsible for maintaining ethical recruitment practices as well as ethical leadership. Recruitment initiatives must be inclusive and cater to diverse environments. To ensure ethical leadership, a Code of Ethics that covers board members and staff must be developed and be posted on the center's website. By the same token, a Conflict of Interest Policy should be included. The leadership is responsible for promoting a culture of respect by treating employees and makers fairly and by providing employment conditions that safeguard the rights, privacy, and well-being of makers and employees.

The metrics that we will use to evaluate our immediate impact will be measured at a national (local) level and at the global level. As part of our strategy to reach more makers, advocates, and customers, the Hero's Hive Center will host global design competitions (listed under Channels in Supplemental file 1). Submissions will be based on contestants creatively reimagining their waste. By tracking the number of entries, we will be able to assess how well we are reaching our target customers. We would also assess the impact of the center's outreach by tracking the number of organizations or volunteers (AIESEC, Peace Corps, etc.) that visit the center. Our global engagement can also be tracked through monitoring the website and social media traffic, calculating sales conversion rates for the online store and calculating donor retention.

Successful implementation of the Hero's Hive Center to other nations is another way that we will track our growth on the global scale. Following successful implementation in Zimbabwe, the plan is to open an HHC in Ghana and South Africa. I believe that Ghana and South Africa would be a feasible next step because there is a movement towards creating makerspaces and tech-hubs for low-income individuals in these nations.

At the local level, we will record the usage of the Hero's Hive Center by tracing the number of user days and contact hours at the center. To measure the center's engagement with private and governmental entities, we could track the rate at which materials are being delivered to the center. In order to measure the impact that the center has on the makers, we can gather success stories and testimonies. Additionally, learning-outcome assessments can be used to measure progress in four-

dational academic courses. Evaluations of the socioeconomic standing of the makers can demonstrate improvements in their livelihoods as well as in their well-being. With my training as an engineer, I am accustomed to problem solving. I set out to find a solution to the global waste challenge as every engineer would: Step one- Define the problem. I was able to identify that the core of the problem is not in the recycling systems themselves. Rather, it lies in our failure to connect the world by finding a way to close the loop of the global waste crisis in its current state. By connecting my experience of growing up in Zimbabwe to my educational journey in the United States, I have been able to overcome my own functional fixedness to generate the solution that I have presented in this proposal.



Figure 8.- Image taken from Manners Mukuwiri's interview with the BBC where he is holding one of his creations

To conclude, I would like to highlight the potential and the desire for the solution that I have presented by quoting a maker from Zimbabwe. In an interview with the BBC, here is what Manners Mukuwiri had to say:

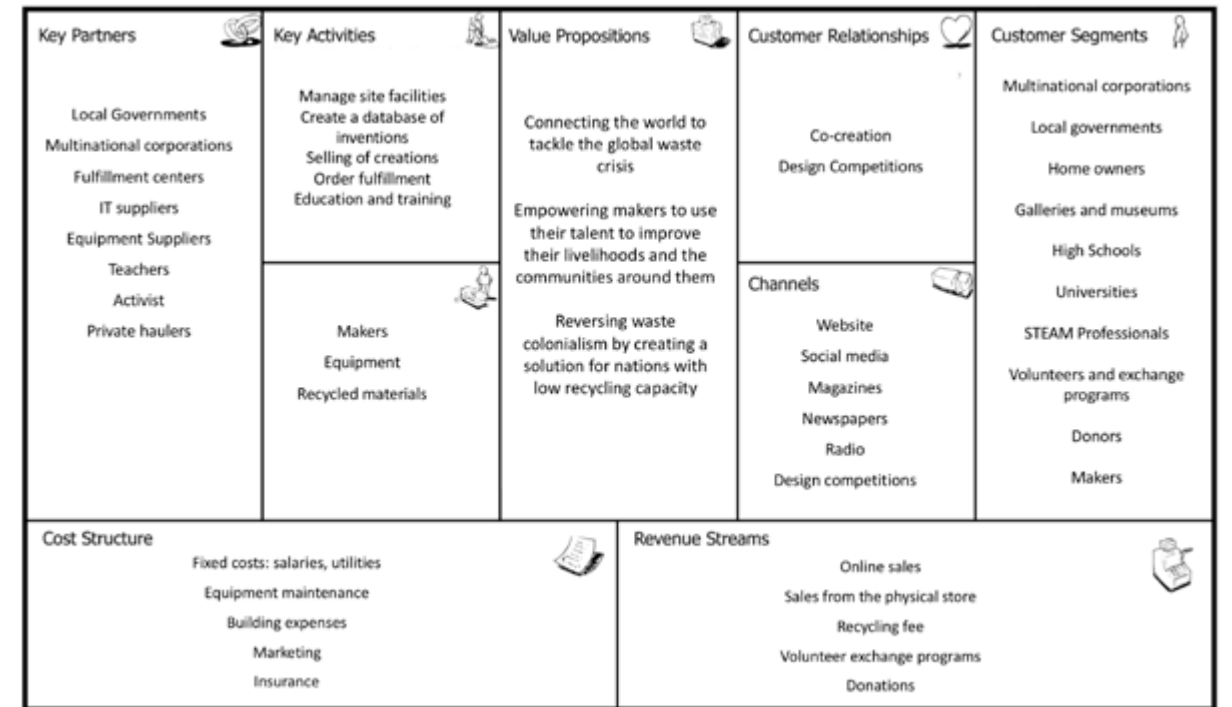
My name is Manners Mukuwiri. I am from Zimbabwe. I make crafts out of cans and bottle tops you throw away. For me, it has never been a choice, going to the streets and begging. I've never done that in my life. If I see someone with the same disability as I have and they are struggling to make a living, I encourage them to let it out, show the world what you can do. I think the world can support you.

Most of my orders are coming from international markets because here in Zimbabwe, there still needs to be a lot of awareness for people to appreciate art. My most expensive piece was an elephant. It was about 1.5m high. I sold it for \$800 USD. Now that I realize I could make a living out of this, it makes me proud as a father.¹⁴

IN THE RACE TO SAVE OUR PLANET, THERE IS NO TIME TO WASTE. THE GOOD NEWS IS THAT THE HEROES ARE READY. JOIN ME IN THE MOVEMENT TO REDUCE, REUSE, AND RECYCLE

Supplemental File 1

Hero's Hive Center- Business Model Canvas



Supplemental File 2

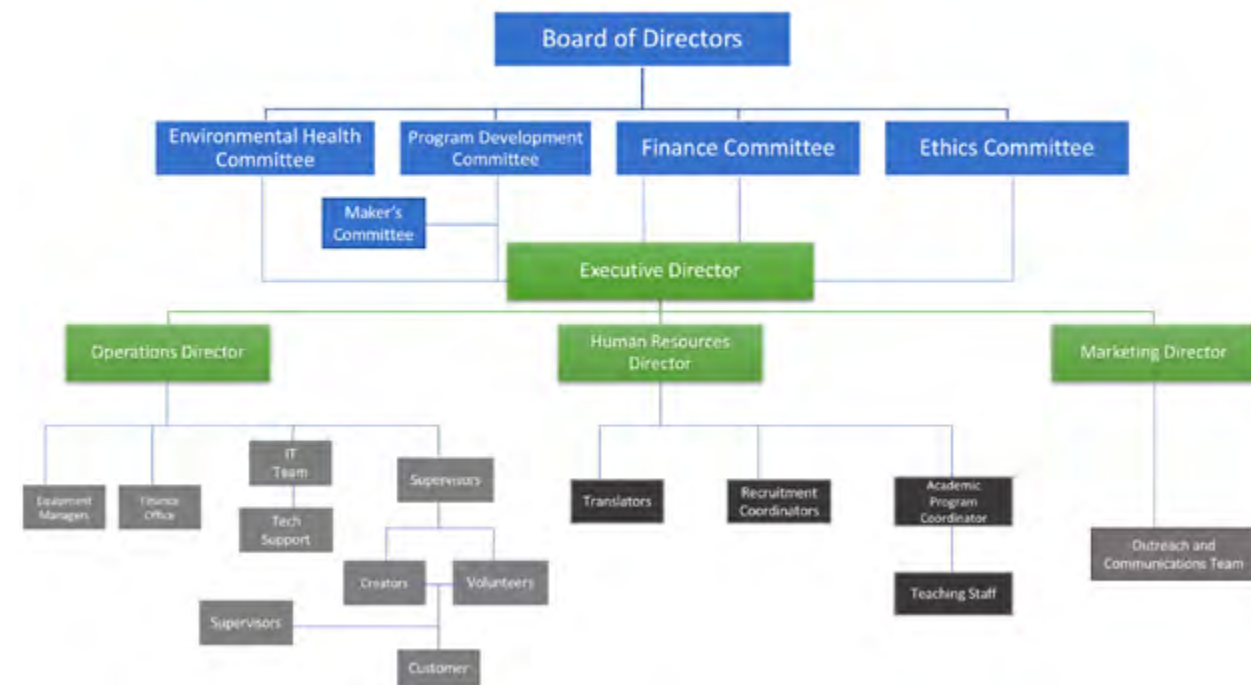
Estimated Budget for a Hero's Hive Makerspace (Accommodates 100 makers)

* Only immediately identifiable costs are included in this budget.

Description	Estimated Cost (in USD)
Construction (\$750k /5000 sf)	1,500,000
Plumbing	65,000
Electrical	300,000
Fire Protection	85,000
Ventillation	10,000
Metal working shop equipment	65,000
Wood working shop equipment	50,000
Pottery studio	35,000
Sewing machines	8,000
Bench tools	28,000
Work benches (\$120/bench)	12,000
ICT Lab	30,000
Total:	2,188,000

Supplemental File 3

Organizational Structure of the Hero's Hive Center



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About the Author

Phyllis Mugadza

Phyllis Mugadza is a senior at Yale University pursuing a Bachelors of Science in Mechanical Engineering (B.S.) as well as a dual degree at the Yale School of Public Health, working towards a Master of Public Health degree in the Health Care Management program. Phyllis cites her Zimbabwean upbringing as a source of her inspiration to use the intersection of engineering and public health studies to develop a startup built around creating a reusable menstrual product.



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P R O P O S A L

THE UNTOLD STORIES:

Migrant women in
India and empowering
their entrepreneurial
efforts

Authored by:

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Photo by Tom Chen on Unsplash

SINCE THE PARTITION IN 1947, INDIA HAS SEEN THE BIGGEST INTERNAL MIGRATION THAT AFFECTED NEARLY FORTY MILLION MIGRANT WORKERS AND THEIR FAMILIES DURING THE COVID-19 LOCKDOWN

Abstract

In India's story of growth, an important demographic has been left behind: migrant women. The key insight about my community in the wake of the coronavirus pandemic is the condition of the migrant laborers, especially the women and children from many of India's villages who travel to urban areas in search of livelihood. Since The Partition in 1947, India has seen the biggest internal migration that affected nearly forty million migrant workers and their families during the COVID-19 lockdown (World Bank, 2020). They were termed "COVID-19 Refugees." The instability during the pandemic led to food insecurity, loss of businesses, lack of healthcare facilities, and increased domestic violence towards women. The pandemic affected various groups of people differently based on existing inequalities, but the marginalized female population and their children were most adversely affected. These inequalities existed before COVID-19; the pandemic has just highlighted them.

My proposal "**The Untold Stories: Migrant Women in India and Empowering their Entrepreneurial Efforts**" uses technology and qualitative data collection methodology to empower migrant women-led home-run businesses in India. Through an ongoing collaboration with the non-profit entity Khaana Chahiye Foundation's grassroots network, the project focuses on:

- Enabling technology to strengthen collaboration

- Humanizing data with the use of storytelling
- Functioning at the grassroots level to create an empowering, scalable, and sustainable model for the future of the target population

More than 80 percent of India's workforce is employed in the informal sector with one-third working as migrant workers (International Labor Organization). Therefore, the aim of this project is to identify the communities with migrant women who are either running home-run businesses as part of the informal economy such as sewing, knitting, and food delivery or working as daily-wage workers. With the use of technology, support from the local administration and youth volunteers, the goal is to strengthen the network of women-led businesses to empower them for a better future

Project Description

Goals

The proposed outcomes of this project are to share the stories of migrant women and create a sustainable and scalable support model. Gathering qualitative stories and quantitative demographic data helps us understand the required material support, access to governmental schemes, cluster collaboration, and enabling technology to strengthen migrant women-led home businesses in different localities.

In a long-term perspective, my proposal aims to support the **United Nations Sustainable Development Goals 2030 for achieving Gender Equality and Women Empowerment**. More specifically, the long-term project-specific goals function in tandem with three other Sustainable Development Goals (see Fig. 1):

- **Reducing Inequalities:** To empower and support marginalized communities.
- **Decent Work and Economic Growth:** To ensure vulnerable communities have access to formal economy resources and stable income.
- **No Poverty:** To make sure a sustainable model of facilities, income, and growth is in place.



Figure. 1. United Nations, Sustainable Development Goals, <https://www.un.org/development/desa/disabilities/envision2030.html>

Timeline

Since September 2020, I have been working on a local and grassroots level in order to compile research and gain a working understanding of the context for this proposal. This is a bottom-up approach focused specifically on a local level so that this project begins from the standpoint of connecting directly with the people in need. The timeline for the preliminary research and data gathering framework spans nine months from September 2020 to May 2021, focusing on migrant women-led home businesses communities in selected areas of Mumbai, India. By December 2021, I anticipate having a significant base of support from local administrations, non-profit organizations, self-help groups, and youth volunteers in Mumbai. With this initial network, I will create a sustainable and scalable project model with the local government and grassroots stakeholders, aiming to potentially reach the State level by 2025. This idea can then be iterated and possibly scaled to different states in India.

Work Plan

First Step: Identification of women-led home-run business clusters

According to the Ministry of Micro, Small and Medium Enterprises (MSMEs) Annual Report 2019, about 20% of proprietary MSMEs are owned by women in India. But a large number of women-led businesses are home-run and are often not accounted for in such reports. Most women carry out their businesses as part of informal economy and outside governmental oversight, leading to lack of infrastructural, financial, and technological support for them. Therefore, the aim of this project is to identify the types of skills and occupations that of migrant women in a particular area. To implement my proposal at a local level, I am focusing on communities in the districts of Mumbai, the financial capital of India.

Mumbai is a city of migrants. Nearly six million of the eighteen million people in Mumbai are migrants (Ministry of Housing and Urban Poverty Alleviation, 2017). The majority of migrant women workers accompany their husbands from their rural homes to Mumbai as part of a family unit. They travel in large numbers to the city in search of a livelihood

and economic stability. For my field research and data gathering, I have collaborated with **Khaana Chahiye Foundation** (translation: Need food?), a Mumbai-based non-profit entity in India. The organization is working on a two-year study to create a Hunger and Poverty Map based in Mumbai, and I will be working closely with them to implement this proposal at a grassroots level. In October 2020, with the help of their network and field volunteers, I was able to identify three communities of migrant women-run businesses:

Kumbharwada, Mumbai

This is a community-led entrepreneurial network where participants earn a livelihood by selling clay pottery from home. The women in the community are also engaged as clay potters.

Reay Road, Mumbai

This community consists of unorganized daily-wage laborers, homemakers, and sanitation workers.

Thakkar Bappa Colony, Mumbai

The migrant women in this colony earn a living through their skillset with the support of Self Help Groups. They engage in domestic work, sewing, knitting, and preparing sweets to sell during festivals, to name a few activities.

I am in the process of identifying more communities of migrant women to expand my research in Mumbai in the upcoming month of December.

Second Step: Understand existing systems and services for the migrant women who run their businesses from home

Achieving the goal of this proposal requires understanding of the social, economic, and administrative barriers faced by women entrepreneurs. By gathering qualitative stories through audio-video recordings and quantitative data through user surveys, I seek to compile answers to key questions:

1. What is the infrastructural or economic support that these women require (such as banking)?
2. Do they have access to governmental welfare

schemes and skills training?

3. What are their experiences seeking regular work opportunities and stable income?
4. Do they collaborate with other women, and what do those partnerships look like?

By asking such questions, we are able to gather key insights to better understand and support the needs of these women.

After initial interviews and academic research in October 2020, the following data points were found to be vital in understanding the dynamics of the businesses led by migrant women:

- Skills and employed occupations
- Access to government relief schemes
- Access to equipment and raw material support (for example, sewing machines)
- Access to Ration Card, National Identification Card, and Permanent Account Number
- Cluster data and connections: Are they able to collaborate with other women and organizations?
- Required skills training
- Caste and class demographics and role of cultural barriers
- Internal migration patterns

Data Gathering Methodology

The data gathering methodology consists of three components to be disseminated with the support of Khaana Chahiye Foundation’s field volunteers:

User Survey: Customized questionnaires that are verbally conducted and recorded by field volunteers on a data mobile phone app such as ODK Collect, an open source Android app with multiple regional language options that can be used in place of paper forms in survey-based data gathering. Key demographic data points such as occupation type, access to National Identification Card, locality, family size, etc. are recorded. The data is then interpreted and used to create a visualization.

Audio-video based stories: It is difficult to tell a compelling impact story leveraging just the surveys of demographic and occupational data. Therefore, my approach focuses on surveys as well as talking to the women and recording their stories (with their permission) to obtain a personalized narrative. This approach is a way to humanize the data and forms the foundation of my proposal.

Cultural Probe Kits: The cultural probe is a field research approach that uses kits of materials left with research participants to complete in their own time, with data being sent back to researchers upon completion. The kit will serve as a way of co-creating and getting data directly from the participants. The kit contains essential items such as sanitary napkins, grocery kits, masks, sanitizer, flip-flops, and a shared inexpensive mobile phone for the women to capture their own lives, as well as a paper journal with crayons or markers for their children.

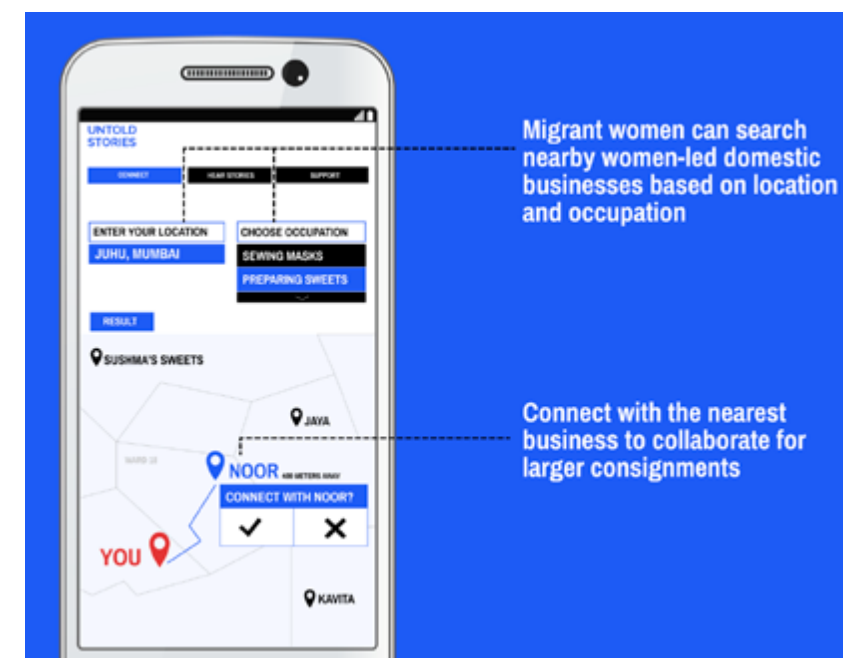
Why audio-video based storytelling?

“People think that stories are shaped by people. In fact, it’s the other way around.”

—Terry Pratchett, Author

Stories unveil opportunities for development and improvement. Stories have the power to make decision makers move in a way that statistics and reports often cannot. They bring out information that is emotionally compelling, something that is not achievable through collecting user surveys. My approach for gathering the stories of the migrant women and their home-run businesses begins with an interview with open-ended questions to gather insights. In the month of October, I was able to interview two communities of migrant women running businesses and audio record their stories.

Third Step: Using technology to create an online interface to strengthen the communities and provide reach and support



The interface will be an easy-to-use mobile-based application (see Figure 2) as well as a web-based platform (see Figure 3) in the regional language of the participants. It consists of key cluster data based on the location and occupation. It will also have the curated stories from the viewpoint of the migrant working women.

Figure 2. Mobile Application Interface is designed to offer easy access. (Note: Here, the interface is in English, considering the proposal readers. It will be tailored to the regional languages in the focused location.)



Figure. 3. The mobile app will also have a web-based platform. The “Hear Stories” tab will have the curated stories from the viewpoint of the migrant women.

The platform will serve the following functions:

1. Women and Self-Help Groups (SHGs):

- Share women's stories to inspire action from various stakeholders
- Connect with other women entrepreneurs in their locality using the application
- Build financial independence that leads to social upliftment
- Organize the community to identify individuals with particular skillsets
- Promote Collaborative engagement between SHGs, non-government organizations, and local government

2. Local administration:

- Understand key demands such as access to raw material and equipment to run businesses from home
- Measure reach of governmental support schemes such as the National Urban Livi-

hood's mission and initiatives launched by the Ministry of Women and Child Development, Government of India

- Understand the need for skills-training amongst the migrant women workers

3. Non-profit organizations and Youth Volunteers:

- Understand the community and extend support through their network
- Utilize available technology to develop new model for sustainable social work
- Provide opportunities to collaborate with local bodies to conduct projects on developmental themes
- Engage with the community as active citizens through volunteerism
- Help social workers and community organizations to enhance their model of functioning

4. Funders and Community:

The curated stories will inspire funders and the com-

munity to provide support. It will offer a glimpse into the migrant women's lives to build compassion.

As a Master's candidate from the Design and Technology program at Parsons School of Design at The New School, I have access to the required skills and technologies. I am pursuing this proposal under the guidance of my thesis professors Anezka Sebek, Associate Professor of Media Design and Anna Harsanyi, Curator, Arts Manager and Educator at Parsons. With the support of the faculty at The New School and their experience in social research and community development, I have been receiving constructive criticism and the guidance needed to prototype towards creating a successful outcome. Additionally, I have taken elective courses on the concepts of Storytelling, User Research and Interface Design, and yDesigning for Social Impact, which have informed my understanding of key concepts and honed my skills for achieving the desired proposal outcome.

Accessibility

Digital platforms have the potential to drive significant economic and social value for India. With a high mobile phone penetration rate, cheap internet data cost, and a growing number of internet users, mobile technology will have a huge impact on India's future. Based on current trends, it is estimated, “India will increase the number of internet users by about 40 percent to between 750 million and 800 million and double the number of smartphones to between 650 million and 700 million by 2023” (McKinsey Global Institute, 2019). It is imperative that by channeling this growing technology, we can create a more robust and efficient model for providing assistance to women-led businesses and hence, empowering them towards a better future.

The online platform will be available to the women through their mobile phones. With the cluster data information, the women can connect with each other in nearby districts to come together and work for larger consignments. For example, two women from Andheri are sewing masks for a contract of 500 pieces and can reach out to more women who run tailoring boutiques from home in Ghatkopar to finish the consignment on time and share profits. If more clusters of women come together to work on larger projects, they can together uplift each other. The field volunteers can also use their smartphones and serve as mediators by contacting

and connecting the women in different clusters and women who don't possess mobile phones. To make this pathway effective, support from the younger population of India to volunteer as well as local and non-profit organizations is required.

Expected Outcomes

The call to action requires coordinated efforts between a set of stakeholders (see Figure 4) such as local government, youth volunteers, non-profit organizations, self-help groups, media, and other migrant women-led businesses. All these stakeholders require efficient leadership from the government, which confers legitimacy in a democracy. Thus, the government's role is crucial in ensuring that it facilitates collaboration with private stakeholders. The **overall anticipated outcomes** are:

- A better understanding of support and access needs from the viewpoint of the migrant women to create a scalable and sustainable model that can be employed in diverse localities
- Women can access the interface and reach out to other home-run businesses to collaborate
- Women will be able to better support themselves and their families
- Valuable feedback on the community's perspective about existing governmental efforts
- Increased public awareness of stories of the marginalized women affected by the current fabric
- Gain support from the local administration, for example, the BrihanMumbai Municipal Corporation in Mumbai, the local administrative body
- Support from more non-profit organizations working towards women's empowerment and reducing inequalities
- Increased volunteering from the youth of the local community to support the women
- Informed research methodology and framework that can be implemented at a larger scale
- A better understanding of migration, which will help in the formulation of development strategies that recognize and support multi-local work opportunities for migrant workers

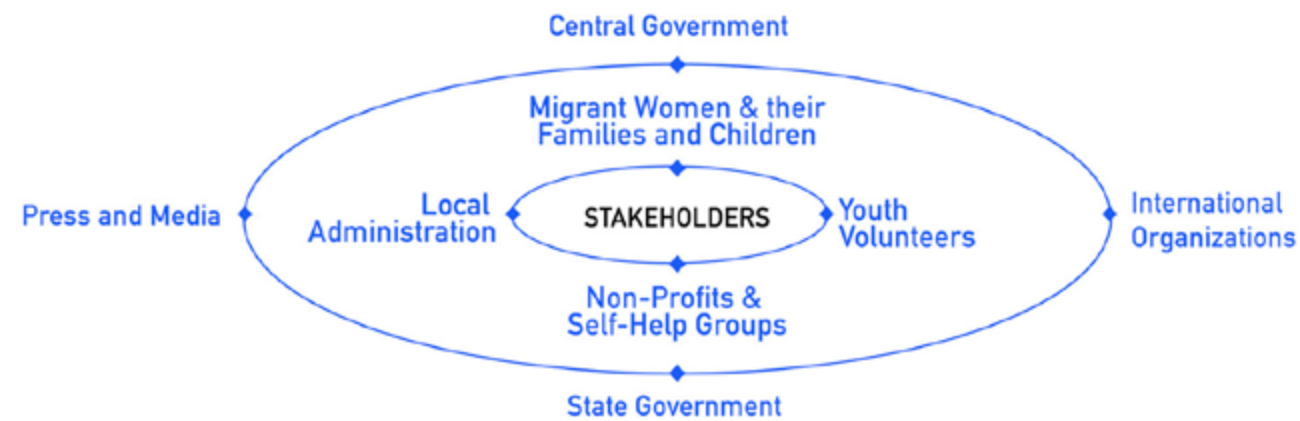


Figure. 4. Stakeholder Map

Narrative

Success Measurement

This project aims to expand its outcomes at a grassroots level by providing a model that can be scaled to a state level. Micro-evaluations through constant touch points are built into the structure of this proposal. The proposal aims to expand its structure in the long term by offering a template for others to use, eventually reaching state-wide. To measure the success at a local level, the following measures will be used:

- 1. Number of people affected:** This is the first layer of social impact. In this case, success is measured by understanding the number of migrant women-led businesses positively affected by the proposal through donations from corporate, foundation, and governmental funders and from the community at large.
- 2. Volunteerism:** Volunteerism is the core around which social initiatives are built. It serves as a catalyst of change into deeper partnership and support for the marginalized communities. An increase in the number of volunteers will be a direct indicator of positive outcome in a social initiative like this.
- 3. Social Impact Guide for Storytelling:** I am inspired by The Rockefeller Foundation's Storytelling for Digital Social Impact guide (The Rockefeller Foundation, 2014) which serves as a means to improve the well-being around the world through stories and to measure their social impact. The guide provides insights into what makes well-crafted storytelling that can communicate complex ideas to the public dialogue, in order to engage people as active participants.
- 4. Platform engagement:** With the help of Search Engine Optimization (SEO) tools, we can easily measure the response to the digital platform by understanding the website traffic and reach.
- 5. IRIS+ Core Metrics for long term measurement:** To measure the performance towards the Sustainable Development Goals, The IRIS+ Core Metrics Sets are a list of key indicators of impact that are backed by best practices and evidence. This is a methodology used to measure the effectiveness of investment by the impact investors. It can be useful to measure the success of the proposal in the long term once the required support from the local administrations and other stakeholders is fulfilled.

Challenges

Implementation of this proposal faces several challenges; a number of solutions to these challenges are proposed here:

Challenges	Overcoming the Challenges
Technological: Access to smartphones amongst the community of women	<ol style="list-style-type: none"> 1. Support from local youth volunteers acting as the mediator. 2. Material support (inexpensive smartphones) to the target group
Scalability: Reaching to a larger target group	<ol style="list-style-type: none"> 1. Continue to make connections and outreach for future collaborations 2. Building a database of potential new partners
Privacy concern: Protecting the gathered data of the population	The problem of data privacy can be solved by hosting the data on a private portal with an agreement to store and use it only for research purposes. For instance, Khaana Chahiye Foundation is developing the Hunger Map through a social technology platform, Mapunity, based in Bangalore, India.
Collaboration: Interest, cooperation, and support from local administration and volunteers	Clear communication and constant check-ins with the volunteers can help immensely
Cultural barriers: Women are not allowed to work outside their homes	Self-Help Groups are mobilized within the community, and women in these groups meet and conduct their enterprise within their locality

Significance

The societal changes in the coming decades are complex, from political, socio-economic uncertainty to rising inequality and most importantly inequalities based on gender to increasing lack of critical resources for the marginalized. India has a migrant population of approximately 139 million (Census Data, Government of India, 2011). The migrant workers are an integral part of our society, contributing to the informal sector that stands as the backbone of our economy. But the migrant workers are an invisible part of our population when it comes to support and access to a stable life. Even in that vulnerable population of migrant workers, women migrant workers are largely overlooked. The administrative framework is shaped by gendered norms leading to lack of sensitivity towards the needs of migrant women. Additionally, there are greater restrictions on women due to cultural barriers as well as them being primary caregivers.

This proposal sheds light on key aspects of women migration and employment in India. While most of the men migrate for work opportunities in urban cities, women migrate due to their marriage. The societal, religious, caste-based norms depend on a deep-rooted patriarchal value system that shapes these migration trends. There are greater restrictions for women than for men. In Indian society, it is very much understood that no matter which community, class or caste a woman belongs to, she will have to migrate where her husband lives or works after marriage. The migrant women often migrate as part of family units that live and work together. The marginalized women who accompany their husbands work as cooks, housemaids, co-workers at construction sites, or sanitation workers, or they run businesses from home. They are the silent accompanists in an overwhelming flux of mobility of men. In the narrative, where does this leave the migrant women? Do policies or the government respond to their needs? Has the COVID-19 pandemic changed their relationship to cities and employment opportunities? How do migrant women find out where and how government support services are available? I am hoping to answer these questions and support the identified marginalized women communities.

Entrepreneurship is a key force in creating pivotal social and economic outcomes for women. It not only contributes to their personal development but also aids in the nation's economic development. *“By 2030, India's working-age population will surpass an unprecedented 1 billion, and up to 400 million women's economic potential may be left unaddressed”* (Bain & Company and Google, 2019). Therefore, it is imperative to invest and support women-led businesses now. Women entrepreneurship reduces their dependence on their husbands and contributes towards a more equal society. An employed woman has a social return equally to the economic one. Employed women invest a majority of their income towards their child's education and health, which in turn benefits the generations of the future. By centering our efforts at the grassroots level and supporting women, especially migrant women, we can impact the future generations.

Ethical Functioning

With the guidance and support of my professors and partners at Khaana Chahiye Foundation, I will be paying utmost attention to the data privacy, cultural beliefs, emotions, and social boundaries of the migrant women to create a social and economic research model that is sustainable and scalable for future efforts. Khaana Chahiye Foundation has a track record of success in building trust and community partnerships. Through my collaboration with them, I will be following a transparent model for field work. I acknowledge my privilege of having the opportunity to pursue a Master's degree in the United States. But, I also understand and have the experience of working with marginalized communities in India. I feel strongly about my proposal and I want to use my skills and knowledge to contribute to the larger communities, especially the most vulnerable members of our society.

Landscape Review

As mentioned in the introduction, more than 80 percent of India's workforce is employed in the informal sector, with one-third working as migrant workers. Even though during the lockdown there was media coverage of the plight of the

migrant workers, the stories of the migrant women workers were largely invisible. In a 2005 report “Women in Motion Globalization, State Policies, and Labor Migration in Asia” Nana Oishi found that there was little support for women migrant workers (Mazumdar and Neetha, 2020). In another report by labor rights organization Aajeevika Bureau, it was found that “Migrant home based women workers, who form the lowest rungs of India's labor chain, are working for as little as 10-15 rupees (\$0.13 to \$0.20) for over eight hours a day during the pandemic, in the face of employers' apathy and the lack of access to urban welfare schemes” (Cenny Thomas and Nivedita Jayaram 2020). Migrant women workers running their businesses from home have to bear the brunt of gender-based responsibilities. They are responsible for feeding their families, arranging rations, preparing meals, childcare, and elder care that costs at least 50 rupees (~\$0.70) a day. At every instance of less daily income, women have the responsibility to manage the ration to feed their families. Therefore, it is imperative that we align our efforts at the center of supporting migrant women workers. If they are able to strengthen their home-run businesses, collaborate with other women, receive material support from the local administration, and receive fair pay, they can be more independent and support their children and their future generations.

Collaboration and Existing Efforts

In order to support the field research for my proposal, I got in touch with Khaana Chahiye, a hunger relief operation in Mumbai. Khaana Chahiye Foundation is now a registered non-profit organization in India that supports the United Nations Sustainable Development Goals to achieve Zero Hunger and Reduce Poverty by conducting food relief operations to meet the shortages caused by the COVID-19 lockdown. Through their partnership with Ghar Bhejo (translation: help them reach home) Campaign, they assisted stranded migrants to reach their home and served the migrants ample meals for their journey. With their grassroots efforts, they have served over 500,000 migrants by train and 100,000 migrants by road. Khaana Chahiye team members comprise kitchen collaborators, citizen volunteers, and coordinators who have been on the ground since March 24th, 2020 (the official start date of the nation-wide lockdown in India). They have established a partnership with the local government body in Mumbai to ensure a systemic change in policy advocacy and have the resources to access accurate data for city-wide analyses and policy intervention.

Additionally, there are several other existing efforts focused on the same problem:

Organization	Initiative
Government of India's Women Entrepreneurship Platform (WEP) https://niti.gov.in/women-entrepreneurship-platform-wep	Women-owned startups and small businesses can procure or supply raw materials to make masks as an alternate source of income.
Mann Deshi Foundation https://mannedeshifoundation.org	Finance and skills development project for rural women entrepreneurs.
Aajeevika Bureau's migrant support services https://www.aajeevika.org	Specialised initiative based in Rajasthan to provide support to rural migrants with skill training, counselling, & inclusion.
Prayas https://www.tiss.edu/view/11/projects/prayas/	A field action project by Tata Institute of Social Sciences that provides supplies to 150 vulnerable families.

Organization (cont.)	Initiative
SHEROES https://sheroes.com	Women's Internet to bring in trust, empathy, growth via content and commerce.
Association for Stimulating Know How (ASK) https://www.askindia.org	ASK maps interventions on unsafe migration and human trafficking across the country. They bring out the unmet needs of the migrant communities. ASK has conducted capacity building for NGOs working on migration issues and has designed new intervention strategies.
People Archive of Rural India (PARI) https://ruralindiaonline.org/	It is a digital journalism platform in India that publishes articles and media about occupational, linguistic, cultural diversity and the crisis that is often ignored by mainstream media outlets.
Sujata Sawant's Adarsh Foundation https://ngosindia.org/maharashtra-ngos/adarsh-foundation-mumbai/	Focuses on creating Self Help Groups and supports the groundwork for relief by partnering with organization for bureaucratic support.

I am learning from the works of the above-mentioned initiatives such as SHEROES, PARI, ASK and Adarsh Foundation, but my initiative builds in the following ways:

- Focuses on humanizing data with the use of storytelling to create a deeper impact
- Focuses on technology to foster connections amongst similar women-led businesses
- Amplifies the voices of the marginalized migrant woman by providing them with a space to share their stories
- Focuses on the grassroots level to create a self-reflecting, scalable, and sustainable model

Scale and Inclusion

The project is rooted at the local level. Scalability is the core structure of this proposal. I want to create a system for storytelling and data gathering with grassroots community organizations in order to impact the marginalized communities. This model has the potential to be scaled and implemented in other local communities with similar disparities around the world. I am taking a tiered approach in terms of implementation of the storytelling and data gathering model. This comprehensive approach allows early identification of challenges and of what is not working rather than only tracking success at the end.

Conclusion

Takeaways for Readers

To meet the UN Sustainable Development Goals, India is a key stakeholder as a nation with the world's second-largest population and the youngest population in the world. Because of the limitations of social and economic barriers, the labor class has been systematically and historically subordinated.

I want to leave the reader with the following takeaways:

- India is able to produce some of the world's best professionals in different fields. However, the social and economic inequalities have created many conditions that work against improving the lives of the most vulnerable members of society, such as the migrant women workers.
- Unequal access to technology and the erasure of the poor because of lack of data gathering exacerbates the inability of the government to provide welfare for all.
- The storytelling methodology can prove an effective tool for non-government organizations to mobilize funds and support for their causes. Currently, the method is largely used by media houses and journalists for reporting.
- Women in India, especially from the lower class and caste, function under multiple levels of oppression. They have to overcome traditional patriarchal norms while establishing their own identity as independent working women. It is this navigation through social diktats that forms a crucial portion of the proposal.

Future Implications

- Empowering women on a local level, which can ensure there is a structural approach in the larger process of women empowerment.
- Encouraging the use of technology not just in the initiatives led by women but also in the relief work conducted by non-government organizations.
- Giving a face to the data that is gathered through collaboration with non-profit organizations such as Khaana Chahiye Foundation so that the Indian government can provide services for the migrant population.

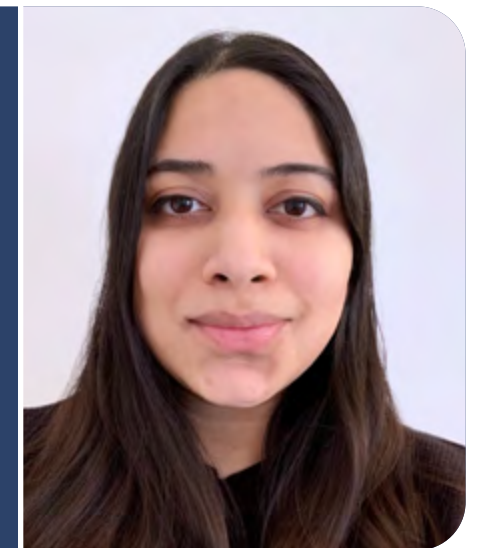
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Bhavya Gupta is a graduate student pursuing a Master of Fine Arts in Design and Technology at Parsons School of Design at The New School in New York City. Bhavya is a multidisciplinary designer, illustrator and practicing researcher from New Delhi, whose research is centered on creating social impact through design-oriented solutions.



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PROPOSAL

PROJECT VECTOR:

Data-driven virtual management and care of patients

Authored by:

Muzzammil Ismail

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THE COVID-19 PANDEMIC, DESPITE ITS DEVASTATING IMPACT ON ECONOMIC WELL-BEING AND HEALTH, PROVIDED A SANDBOX TO RAPIDLY ITERATE INNOVATION AND IDEAS FOR THE BETTERMENT OF POPULATION HEALTH

Abstract

The COVID-19 pandemic, despite its devastating impact on economic and physical well-being, provided a sandbox to rapidly iterate and ideate new ways of delivering healthcare. One such method that strongly came to the fore was the utility of telemedicine. Despite growing interest in the area, telemedicine suffers several limitations in the practical application potentially leading to further exacerbation of health inequities.

At the peak of the COVID-19 epidemic in the Western Cape province, South Africa, in the context of stagnant COVID-19 mortality rates, and with these telemedicine limitations in mind, a team was assembled to develop a virtual model to bend the curve of COVID-19 mortality. The result was the VECTOR (Virtual Emergency Care Tactical Operation) project, a project that leveraged advanced data-driven insights to virtually and pro-actively manage patients before they deteriorate.

Within weeks of instituting the model, both quantitative and qualitative outcome measures showed clear improvements. The defined cohort displayed significant reductions in mortality relative to baseline, and public feedback regarding the patient experience was phenomenal. With the positive results emanating from the VECTOR project, there has been a growing interest to scale the model further.

Distilling the overarching themes, the actionable virtual approach, and the underlying principles provides a clear pathway to a plausible implementation plan for a wide array of health conditions. Networked cross-boundary collaboration is imperative, particularly during the initial phases of the project. And practical use-cases are clearly demonstrated, bearing in mind the ethical implications of the intervention. Having accounted for all these factors, the VECTOR model offers an approach to intelligently and efficiently manage patients at a systems level with maximum impact and minimum input, and guided by advanced analytics.

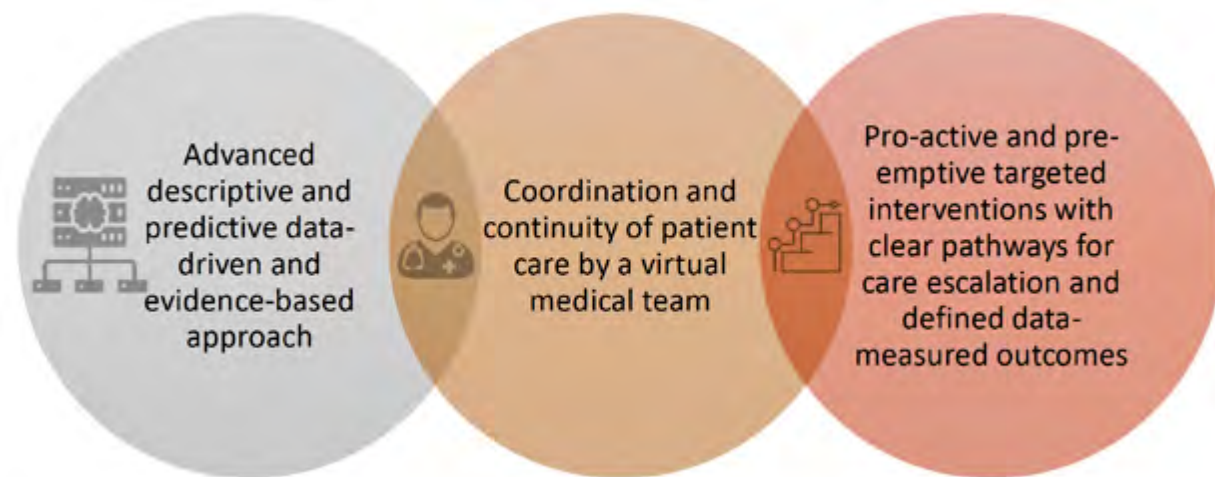


Figure 1: Overarching Themes of the VECTOR Project

Introduction

The COVID-19 pandemic, despite its devastating impact on economic well-being and health, provided a sandbox to rapidly iterate innovation and ideas for the betterment of population health. The proposal below will explore one such concept that has the potential to extend far beyond COVID-19 and fundamentally shift the mindset of how healthcare services are delivered by meeting patients where they are. We start with a landscape review to unpack the current context of virtual telehealth delivery, including its limitations. We then explore how, in the midst of a global pandemic, an interesting insight led us to undertake a riveting journey toward a new way of delivering care and broke our mental model of what good healthcare delivery looks like. Building on this response, we will explore, in granular detail, how it could be leveraged and actioned to the wider global community.

Landscape Review

What other efforts are out there (if any) to address this problem or elicit a similar change?

After reviewing more than a hundred peer-reviewed

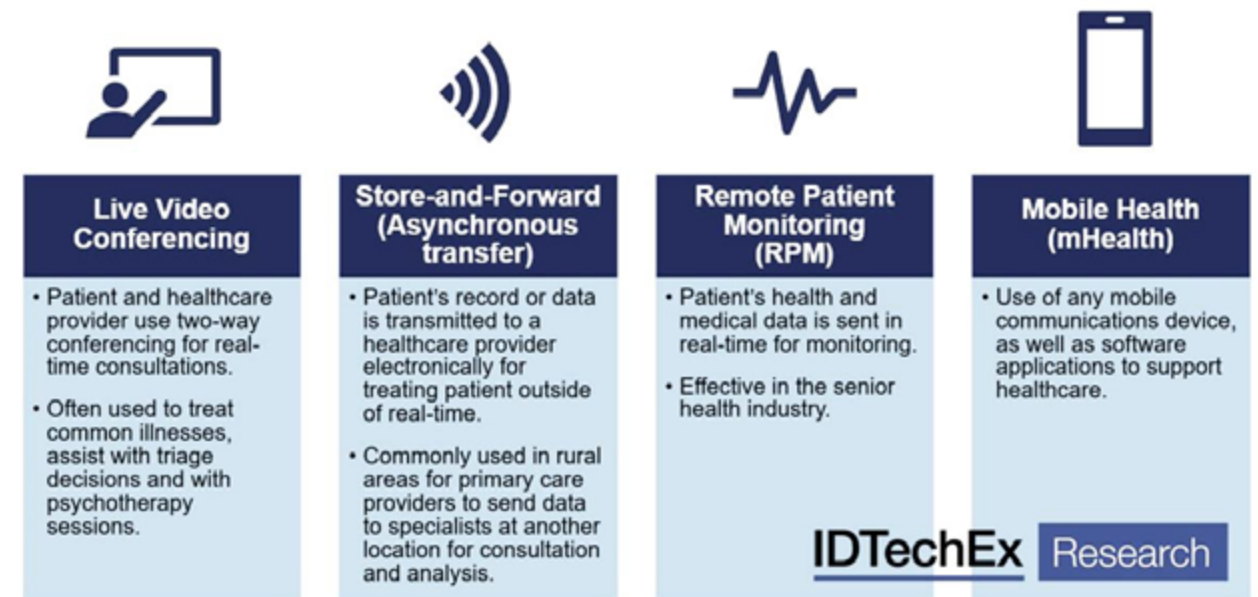


Figure 2: Types of Telemedicine (Tsau, 2020)

definitions of the word "telemedicine" the World Health Organization (WHO), by 2010, finally settled on the following broad definition (WHO, 2010):

"The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries..."

Part of the reason the WHO used a broad definition was that they acknowledged that telemedicine is a constantly growing and evolving area. At its core, though, was the literal understanding that telemedicine is "healing at a distance" (Strehle & Shabde, 2006). Over the last few decades, the concept has undergone numerous iterations and evolutions.

Despite prevailing belief, telemedicine at its core is almost a century old, having started in the 1920's but having evolved with technology to the multiple forms available today (Tsau, 2020). Doctors initially used radios to communicate with rural areas and today can be seen embracing digital health apps and wearable devices (Figure 2). Despite this opportune position to shift healthcare delivery models, the uptake and adoption of telehealth has been slow. That is, until the COVID-19 pandemic hit the world's healthcare system.

During the COVID-19 pandemic the need for virtual care increased, and the role of telemedicine came strongly to the fore once again (Monaghesh & Hajizadeh, 2020). It provided a means of access to healthcare, whilst reducing physical contact between patients and healthcare providers. The main feature of telemedicine services during the pandemic was the provision of SARS CoV-2 results by mobile notification and replacement of in-person consultation with physicians with virtual consultation.

Limitations of current telehealth strategies

Although the adoption of telehealth services has increased, it still suffered from the historic challenges that it had always confronted. This was particularly prominent in a Low-to-Middle Income Country (LMIC) such as South Africa.

The first issue is that patients require access to internet if the telehealth platform is provisioned via an online service (Chi & Demiris, 2017). In developing countries access to smartphone technology, airtime, and internet are variable, with limited penetration in low socioeconomic and rural settings. This limitation, therefore, carries the risk of exacerbating health inequities in terms of access to quality care.

The second issue with telehealth, in its current form, is the fact that not all health conditions can be effectively managed through virtual care. Using telehealth as a blunt tool in lieu of all walk-in consultations has limited viability as a sustainable and efficient model.

The next issue with current models of telehealth service delivery is that it is a largely passive approach, with the expectation that patients call a service or download an app to access a health service. This leads to patients often having to make personal judgements regarding the acuity of their conditions and inevitably presenting late when complications are not amenable to cure.

Another major challenge is that regulations for telemedicine are archaic and often not conducive to the public sector. One such stipulation states that patients had to have a pre-existing relationship with the provider, which is not feasible in large public health systems.

How is the idea or approach different from what's already being done?

The approach in the VECTOR model that differentiates it from almost every other telehealth service currently, is that it is informed by epidemiological and clinical data streaming into a publicly held data center with set algorithms to prompt specific actions based on individual risk profiles. This not only shifts the way telehealth is delivered but shifts the way healthcare is delivered. At a time when we saw the passive facility-based health system (which is by its nature reactive and reliant on patients presenting to facilities) failing miserably and mortality rates escalating, this model allowed us to move beyond to a model that improves quality and efficiency of care by marrying advanced analytics with virtual proactive health delivery. It garners the best that telehealth has to offer, mitigates against the limitations, and embeds it in a foundation of strong data and analytics.

Does your proposal build off an already existing initiative? If so, what has already been done, and how does your proposal differ, strengthen, or expand what has been done? What was the insight that caused you to think of this idea?

This proposal spawns from a project that organically grew out of the COVID-19 pandemic response in the Western Cape, South Africa. It also built upon the investment the province had made in developing an integrated public health data center (Bouille et al, 2019). Over the last eight months the most surprising insight for me, personally, was that even though our health system was following protocols and guidelines to deal with COVID-19 we were not, initially, able to reduce mortality in those that were passing away from the disease. Our overall mortality rate was remaining stagnant. We needed to recognize that our trajectory in terms of COVID-19 management required correcting and we needed to quickly innovate a new way of bending the curve of mortality.

A few of us started digging into the data, uncovering growing bodies of evidence that elderly COVID-19 diabetics were at most risk of death (Bouille et al, 2020). We

then consulted widely with Emergency Medicine and Family Medicine doctors to validate the data, and spoke to Endocrinologists, Public Health Specialists, and Virologists to better understand what can be done for this vulnerable cohort of individuals. We discussed with acute and intermediate care hospitals regarding their experience with diabetics and their capacity to manage these patients. With the understanding of the why of the problem, we started a proposal, based on evidence, to address the issue.

Through this, the VECTOR project was born. VECTOR stands for Virtual Emergency Care Tactical Operation. In the Oxford dictionary, a vector is something with both magnitude and direction (Oxford Reference, 2020). The direction of the project was guided by data-driven insights, and the magnitude or impact was to be a targeted reduction in COVID-19 mortality.

The project was a risk-stratified management approach, based on clearly defined data algorithms, in which all COVID-19 diabetics in the Western Cape, South Africa were stratified as low, moderate, or high risk and managed daily by a team of doctors and call center agents. High-risk patients were offered free pre-emptive and proactive admission to intermediate care for glycemic control and low/moderate risk patients were managed remotely for 10 days and were quickly escalated for medical review and admission at the earliest signs of deterioration. We moved healthcare from being a passive receiver of late presentation patients to becoming an active actor in reaching patients before they deteriorate. We could leverage the initial analysis as a baseline measure with changes in mortality being monitored on a weekly basis. Within weeks we saw, for the first time, reductions in mortality in excess of 20% relative to baseline in this cohort. This reduction is rarely seen for public health interventions introduced so rapidly. The project was literally saving lives.

The health system has made the scale-up of this work a priority and has already committed a significant allocation to this for 2021. This, too, is remarkable to see how a telemedicine model went from "out of reach" to implemented, budgeted for, and scaled within a matter of months! With the positive results coming from this project, I would propose scaling up the model further to other health services. There is no shortage of conditions that can almost certainly benefit from a data-driven population approach to active healthcare delivery. Let's

explore the lessons learnt and what concrete actions can be taken from the experience to pave the way forward.

Project Description

What would the pathway be to make the idea real? What would it take to make that pathway plausible?

The design principles and pathway to make the VECTOR project a reality are as follows:

First, there should be access to integrated laboratory, pharmacy, and demographic data. This allows for descriptive exploration of the data and defined baseline measures leading to specific cohorts of concern. In the absence of an integrated dataset, at a minimum, access to laboratory data with accompanying patient demographics provides a strong starting point on which to build descriptive and predictive analytic capacity to determine who is at highest risk and needing the greatest care as early as possible.

Second, the initial analysis should be shared with a broader team including relevant clinical, managerial, and operational persons. This allows for validation of the data, incorporation of evidence and experience, and brainstorming of an appropriate systems-level intervention. Approaching the health issue in this manner also ensures inclusion by bringing everyone involved in the care of a particular cohort of patients along in the journey for better and purposeful proactive management. With feedback from all relevant stakeholders, further granular analysis, including temporality and cohort profiling, could be done.

Once adequate descriptive analysis has been established, a suitable algorithmic risk stratification approach should be applied which leverages predictive analytics (e.g. supervised machine learning). This allows the intervention to be intelligent in its approach and ensures efficient use of resources with maximum benefit. This is particularly important in LMIC countries where budgets are constrained and demand on public health services is high.

Next, the defined virtual intervention should be demonstrated systematically and aligned to the risk-stratified cohorts. Higher risk cohorts should receive more intense virtual care during a period of high risk, whilst lower risk cohorts can be managed by scripted non-medical personnel with clear red flags for escalation of care. This leverages the “Hawthorne Effect,” which states that individuals (or patients in this case) modify their behavior positively when they feel they are being observed (McCarney et al, 2007). There would also be clear oversight of all tasks with all telehealthcare and process measures recorded. All virtual health providers would be linked to multidisciplinary teams available in the patient’s geographic area and could thus facilitate the coordination of appropriate in-person care as required.

Last, there should be on-going monitoring of the outcome measures using the same data that defined the cohort for intervention. This allows for extremely accurate measurability and accountability, down to a patient level, of the efficacy of the approach. Should the virtual intervention not yield a shift or improvement in the outcome measures then the intervention would need to be reviewed and adjusted accordingly. Due to the nature of the VECTOR model, this can flexibly be done without significant disruption to workflow processes.

What is your plan for implementation including what would happen first, second, ..., last?

The lessons learnt from the VECTOR project for COVID-19 diabetics provide a clear understanding of

an implementation approach. It follows the pathway as outlined above and can be seen summarized in Figure 3 below:

What can you do now to start this initiative, and how could you scale this to have a larger impact?

One of the core principles of the idea that should be emphasized is that it is a data-driven and data-measured approach on a systems level. This allows it to be flexible to different health conditions, allows it to be scalable to populations of defined cohorts of patients before they deteriorate, and allows clear measurability of impact before and after a virtual intervention is introduced.

Two practical use cases may be:

- Supporting diagnosed TB patients to complete a full six months of TB treatment without defaulting from care¹
- Escalating treatment in long-standing, poorly controlled Type 2 diabetics to insulin care with virtual support during the transition²

Both use cases would require laboratory, pharmacy, and demographic data on patients as the foundation of the initial analysis. Defined cohorts, leveraging advanced analytics, can then be identified. A virtual care team will, thereafter, actively support these cohorts of patients with a defined objective. For TB patients, the cohort that is algorithmically found to be at higher risk of defaulting will be regarded as high risk and followed up more intensely to ensure that they are supported

during their treatment journey. Diabetic patients with historically high HbA1C’s and remaining on oral anti-glycemic agents despite early signs of micro or macrovascular complications can be identified and virtually supported to successfully transition to insulin therapy with support by a virtual diabetic nurse trained in this function.

Following the success of the VECTOR project for COVID-19 diabetics in the Western Cape, South Africa, there has been a keen and concerted interest in scaling the model to other health conditions in the province. We are now utilizing the momentum of the project to have an exploratory look at TB data in the province and attempting to unpack and understand temporal trends over time, and profiling cohorts of concern. We are fortunate to have access to an integrated data source with which to work with and, as described in the pathway above, are now sharing the initial findings with the wider TB community. If anything, this represents our commitment to taking the initiative forward.

Scalability of the VECTOR model can be viewed as both horizontal and vertical. Horizontal scalability refers to the flexibility of applying the model to other health conditions beyond COVID-19 diabetics. This may encompass conditions such as TB and Diabetes to Antenatal Care and even Immunizations. Given the current sphere of influence, this is where the project is initially managing to scale towards.

Vertical scalability refers to applying the model at a national and an international level. Given the structure of the VECTOR model, this is certainly possible with a myriad of opportunities in order to achieve it. It would allow coordination of care across an entire national health system with the potential to impact tens of thousands of patients in a relatively short space of time and with a relatively cost-effective care team all working remotely. The potential to impact and improve the quality of care whether you are situated in the deepest rural district with limited access to a doctor or are situated in a busy urban setting with long clinic queues, the VECTOR model will ensure that your care is coordinated and that you don’t fall through the cracks of an overburdened healthcare system and eventually present in a moribund state.

Currently, healthcare is delivered in siloed facilities with limited capacity to address patients that default

from care or tailor measured improvements in managing patients on a systems level. Leveraging technology by integrating real-time digital data provides an opportunity to address the quality of care being delivered to patients at a fraction of the cost of a healthcare facility. This is the strength in the projects ability to scale. Consequently, the approach would reduce the number of complications from healthcare conditions (e.g. drug-resistant TB or chronic kidney disease due to diabetes) and prevent serious, often costly, late presentations to hospitals.

Are there any significant road-blocks, barriers, or bottlenecks to achieving your goals? If so, what are they and how might you try to overcome them?

At a local provincial level, the greatest initial challenge was to garner buy-in, support, and capacity from the provincial Department of Health to implement the initiative. Fortunately, the COVID-19 pandemic provided a sandbox in which to innovate the idea, and what may have usually taken months or years to complete was achieved within weeks. The fact that the outcomes were clearly measured and demonstrated helped further the case for more widespread adoption, and within two months the small VECTOR team were seeing to every COVID-19 diabetic patient in the province. A similar process would need to be followed for the National Department of Health, and this may present a barrier in terms of vertical scalability if national counterparts are not amenable to considering a model of virtual healthcare delivery. To further strengthen the evidence-base for the approach, we will publish the findings from the project to show the value it has brought to the fore. This may assist as a tool to advocate for further expansion of the project.

An important foreseeable roadblock may be the limited availability of integrated patient-level data. This is not a roadblock at a local provincial level but may be at national or in other international contexts. At a minimum, this can be mitigated by solely utilizing laboratory-based data and its accompanying demographic information with a longitudinal view at a population level. Over time, additional available data sources can be incorporated.



Figure 3: Approach to implementation of the VECTOR project with a proposed timeline

There is also concern that local facility buy-in will be limited by the potential feeling that the targeted virtual healthcare delivery model overlaps or duplicates facility-based care. Instead, it should be made clear that virtual healthcare as demonstrated by the VECTOR model acts complementary to routine healthcare services. This potential barrier can be mitigated by involving local facility personnel in the planning process of the intervention and providing adequate feedback regarding the outcome measures of patients in their domain of responsibility. This highlights the importance of partnerships and cross-boundary collaboration, which is one of the core tenets of the VECTOR model. Over and above this, there may be a need to relook at the regulatory policy around telehealth delivery and tailor it to large public health systems. Demonstrating the practical application through a project like the VECTOR model allows for clear evidence in support of this direction.

Who is participating in this plan and what would they do? What partnerships, allies, or resources would you need in order to effectively implement your plan?

With a virtual care team, the network created between all the role-players is essential for the success of the project. This can be seen in three main spheres:

- Collaborative partnerships
- VECTOR team personnel
- Resources required for the team



Figure 4: Networked structure of resources required

At an early stage of the project, partnerships need to be actively sought with provincial and national departments of health (depending on the scale of the proposed approach). In addition, Primary Healthcare Facility teams who are directly engaged in patient management as well as Family Medicine, Internal Medicine, and Public Health Specialists should all be brought into the initial phases of exploratory analysis as partners during the process. This is then complemented by partnerships with Public Health Laboratory Services, or a Health Data Centre, as an important source of data and patient contact details.

VECTOR team personnel should be led by a Project Manager/Process Analyst for project oversight, a Data Science/Public Health lead for technical and analytic support, and a Family Physician lead for clinical and operational support. This core team would then support Medical Officer capacity to manage high-risk telephonic patient consultations, Call Centre Agent capacity to manage low-moderate risk telephonic consultations and Allied Health capacity to manage virtual multidisciplinary team care. The Medical Officer, Call Centre and Allied Health capacity would all work remotely and could expand or contract based on the number of patients being targeted.

Resources to support the team would include an omnichannel platform for communication to patients via a means most accessible for that patient: for example, an SMS followed up by a phone call seems to have the widest and most effective reach. Over and above the tools to communicate, the team would require access to an online platform for daily patient line lists, brief capture of their consultation, and outcomes of their engagement.

Do you have multiple pathways to achieving success?

The VECTOR project is fortunate in that it can be adopted in as small or as large a way as possible. It is currently embedded as a systems-level intervention to all COVID-19 diabetics in the Western Cape, South Africa, with considerable opportunities for expansion to TB, diabetes and other health services on the horizon. Despite this being its current trajectory of growth, there may also be pathways to prototype the model at both a national level and in other international contexts as well. Sharing the idea and proposal with wider global

audiences will hopefully stimulate and inspire people to consider the same or a similar model for their immediate context.

Narrative

Why is your idea important and/or why now?

The COVID-19 pandemic surfaced a host of issues in society by placing a spotlight on socioeconomic disparity, financial vulnerability, and healthcare access. As we slowly rise from the furnace of the pandemic, we need to take heed of the lessons it has taught. In the context of a significant strain on an already thin health budget, we are entering a time where the attainment of Universal Health Coverage (UHC) is paramount. We need to be agile and intelligent with our approach to healthcare delivery in order to provide equitable, quality healthcare services without causing undue financial burden on the population we serve. The WHO (2017) stated that the global diffusion of eHealth and telehealth services would be a cornerstone to achieving UHC, but using it as a blunt tool in lieu of in-person consultations is simply not efficient. The VECTOR model aims to address that limitation by layering a pro-active, data-driven and risk-stratified approach to virtual care. It takes what many people realized was the future of healthcare and makes it practical and attainable even to an LMIC country such as South Africa. The timing could not be more apt with patients having an understanding and a trust for the need to move virtually. This momentum needs to be capitalized and will support the path towards universal health coverage.

Why should we believe this project will be successful?

During the COVID-19 outbreak response, the VECTOR project had a unique opportunity to show proof of value. Four months later both quantitative and qualitative indicators are pointing in the right direction. Since the approach was embedded in a data-driven and data-measured methodology, the success of the project was clearly demonstrated by the immediate reversal of trends in COVID-19 mortality in the high-risk COVID-19 diabetics. In a relatively short space of time, we noted reductions in COVID-19 diabetic mortality in excess of

20% from baseline. In other words, for every 100 high risk diabetics that contracted COVID-19 and that the team reached, at least 20 more were saved! This has prompted a formal review utilizing a regression discontinuity design to clearly define the extent of the impact with preliminary findings, all showing significant immediate effects towards bending the mortality curve.

Mortality was not the only indicator we looked at, though, and we managed to collect a host of qualitative feedback directly from our patients. Patients from both the public and private sector, for the first time, were learning to use their glucometers, adjusting their insulin levels remotely, and even requesting to stay on the program after their high-risk period was complete. Since the proof of value has already welcomed significant accomplishment, the potential to foresee similar successes in other health conditions in a relatively short space of time is almost inevitable.

How many people could this help, and how will it help them? How is this idea drawn from and capable of benefiting diverse communities?

The VECTOR project, to date, has reached thousands of COVID-19 diabetics from every rural and urban corner of the Western Cape province, South Africa. It managed to overcome social and geographic health access disparities and benefitted diverse communities across the province. It even went as far as admitting private patients who had Medical Aid since their medical aid schemes would not cover their admission, but according to our algorithms they were high risk. This was all done with a relatively small team of medical officers and call center agents all working remotely, supported by clinical and technical support leads.

The volume of patients, though, is not the greatest value; rather, the type of patients that the team was able to reach was what was more important. The team reached a cohort of patients that were at highest risk of death with the clear mandate to, as far as possible, avert this during a high-risk period of the patient's disease journey. In terms of scalability, the VECTOR model can potentially help tens of thousands of patients, depending on health conditions and cohort profiles, with the size of the team being finely balanced by both resource capacity and patient risk. This ensures that the model is applicable in both High and LMIC contexts and focuss-

es its effort on the quality of care complementary to routine health delivery.

What would be required to ensure that people can act upon the suggestion in ethical ways?

The VECTOR model is strongly seated in the ethical principles of beneficence, non-maleficence, and autonomy. Since the care is to be delivered virtually and does not replace current care models, the risk of harm is maximally reduced. Instead, the opportunity for massive improvements in outcomes speaks to the principle of beneficence, with the project actively attempting to reduce and prevent further harm from the health condition at hand. Last, since it is an active approach to virtual care, the approach is largely distal and drives supported self-management with patients having final autonomy. In terms of responsibility, I would urge anyone considering the VECTOR model to see it as complementary to and not replacing in-person consultations, with a view that improved quality of care will, over time, reduce the burden of late presentation of severe disease complications.

How will you know that the idea is working? To what degree of precision? On what scale (local, national, continental, or worldwide)?

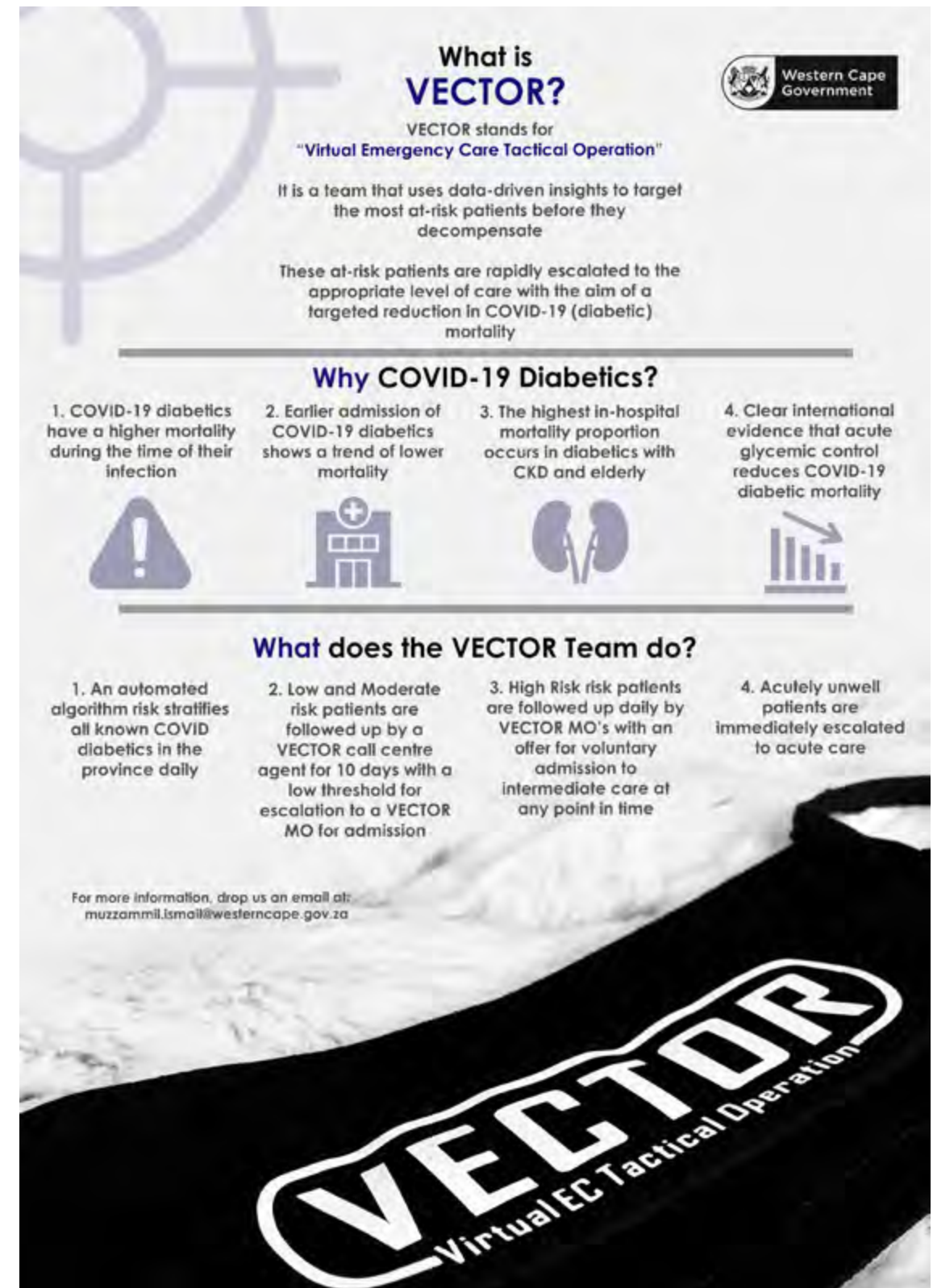
Knowing that the idea is working is part of the VECTOR model in terms of baseline descriptive measures, process measures, and outcomes measures. This is based on the IHI Model for Improvement layered by advanced analytics and virtual healthcare delivery (Courtland et al, 2009). Since the approach leverages large patient datasets for both initial and ongoing analysis, the degree of precision can be defined temporally and to a defined cohort population. This allows us not only to know if the idea is working but also to rapidly adjust the virtual intervention if no impact is initially being seen.

The scale of the project is currently at a local provincial level with a clear trajectory for horizontal scaling to other health conditions. The opportunity, though, to expand to a national or international level is extremely exciting and holds the potential to unlocking improved quality of healthcare across a diverse range of global contexts.

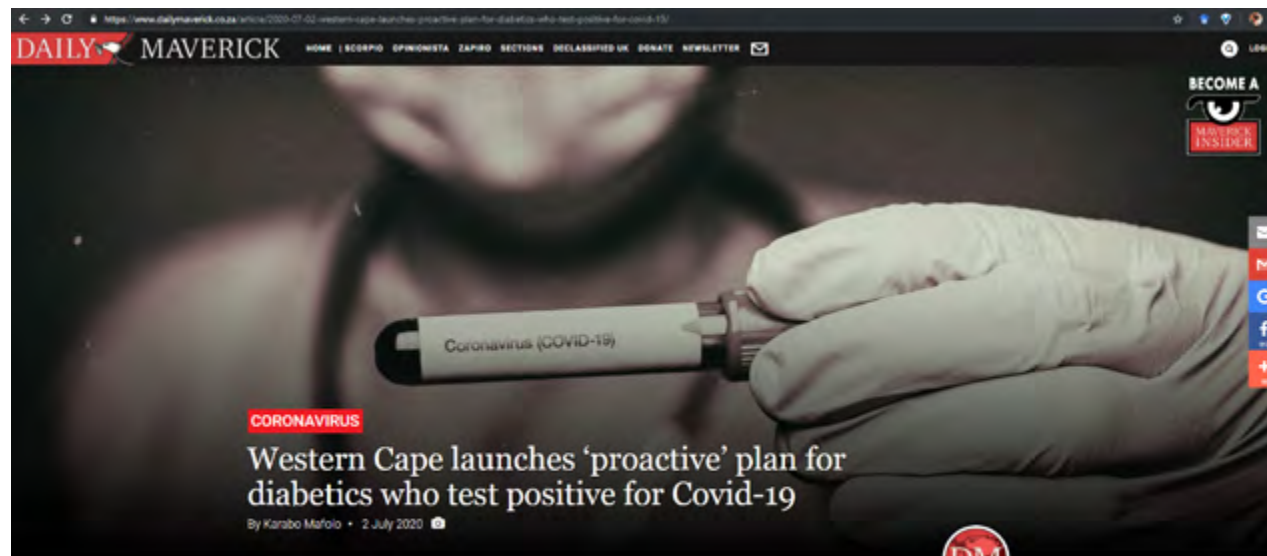
Conclusion

The VECTOR project demonstrated that the combination of evidence-based practice, advanced predictive data-driven insights, and cross-boundary collaboration with all stakeholders combined with stratified approaches and clear, smooth pathways for escalation of care allows us to be more agile and responsive to patient needs and is a powerful means of shifting a health system. We now find ourselves at a fascinating crossroads where we can systematically alter the direction of patient outcomes and have a wide impact on global population health. It all starts, though, with our ability to reimagine the future of healthcare.

Addendum A: VECTOR leaflet used for raising awareness



Addendum B: Media Coverage of the VECTOR Project



<https://www.dailymaverick.co.za/article/2020-07-02-western-cape-launches-proactive-plan-for-diabetics-who-test-positive-for-covid-19/>



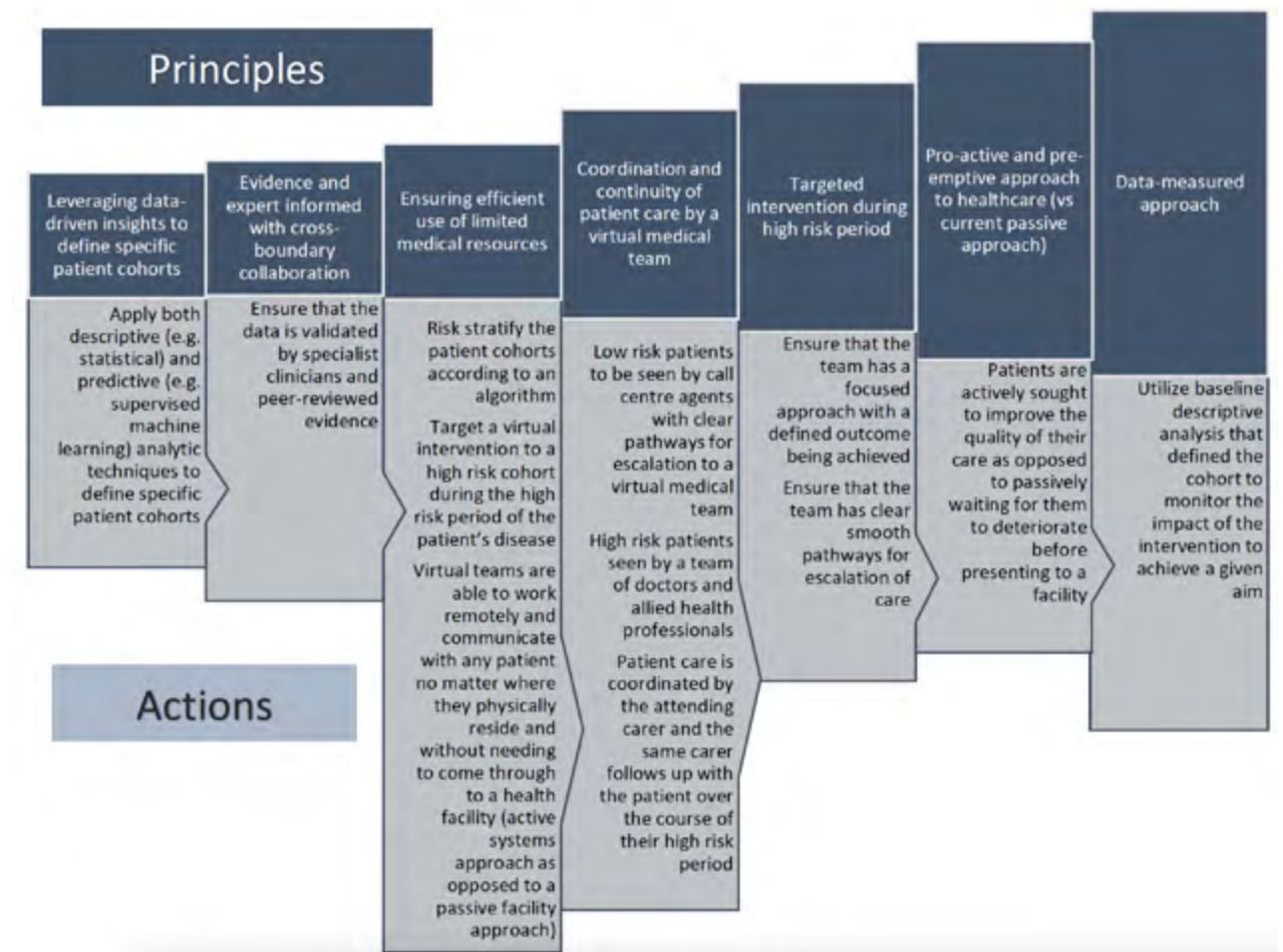
W CAPE EXPLORING NEW WAYS TO SUPPORT DIABETICS AMID COVID-19

Alan Winde said diabetes was the number one comorbidity followed by hypertension or high blood pressure.



Western Cape Premier Alan Winde gets tested for COVID-19. Image: Twitter

Addendum C: Principles and Actions guiding the project



Addendum D: The VECTOR Team for COVID-19 diabetics



Endnotes

1. *TB is the leading cause of death in SA currently - threefold higher than COVID-19
2. **Local public data suggests that 60% of diabetics in the Western Cape are extremely poorly controlled with HbA1Cs > 10

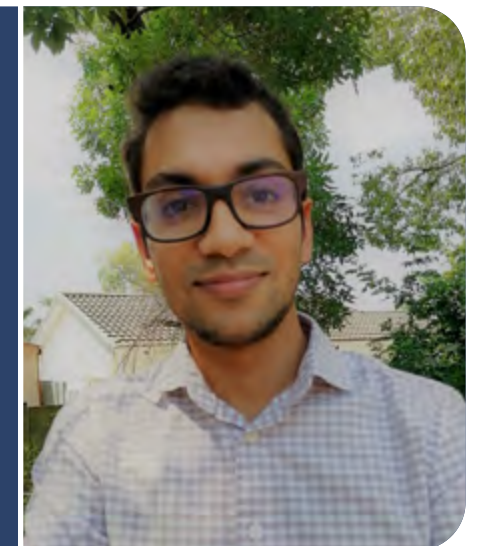
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About the Author

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Muzzammil Ismail is a medical doctor in Cape Town, South Africa, currently pursuing a Masters of Medicine in Public Health Medicine at the University of Cape Town. He is passionate about improving population-level healthcare systems and enabling data and information systems to create impact.



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PROPOSAL

CHECK- MATE:

Keeping up with
COVID-19 by color
coding the news

Authored by:

Yvette Homerlein

Nationality: Australian

University College London

London, England

[Listen to Audio Intro](#)



THE COVID-19 PANDEMIC HAS HIGHLIGHTED THE FRIGHTENING REGULARITY OF THE PUBLICATION OF MISLEADING INFORMATION, THE POLITICIZATION OF GLOBAL ISSUES WITH WIDE-REACHING CONSEQUENCES FAR BEYOND POLITICAL AFFILIATION, AND THE BROADCASTING OF RACIAL PREJUDICES IN MAINSTREAM MEDIA

As someone who recently moved to the U.K. after having lived most of my life in Hong Kong, and with close family living in Europe, Asia and Australia, I have seen massive contrasts in how different countries present and respond to information about COVID-19. In a time of global panic, it is not surprising that people will grasp at any tidbit of information relating to the pandemic, regardless of how reliable or implausible it may be: any reporter, government official, or other individual in the mainstream media who establishes themselves as a convincing voice of authority will more likely than not be given some attention by the masses.

What does surprise me, though, is that, given the general public's growing mistrust of the mainstream media, we have yet to create a simple tool to assist the public in filtering out the disinformation, misinformation, and biases prevalent in the dissemination of news. A politically, racially, or financially motivated agenda in news media can have (and, in the case of COVID-19, has had) dire, potentially life-threatening consequences (Coleman, 2020).

What is my project?

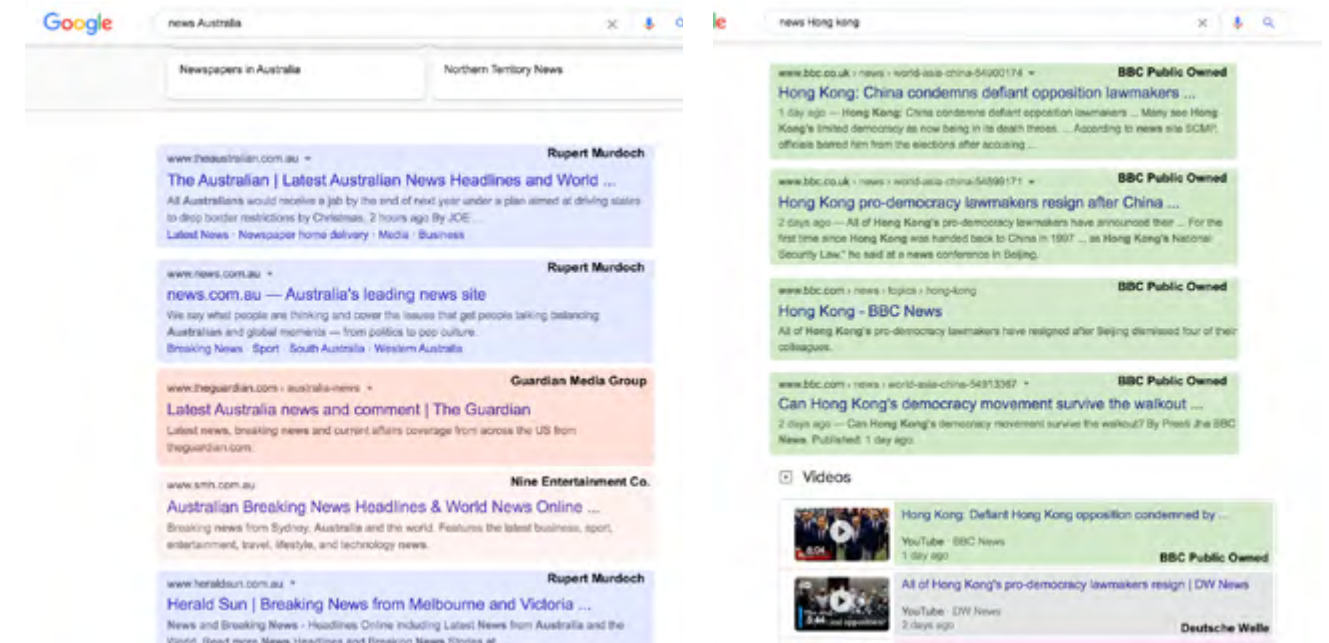
During a constantly developing crisis, such as the current global pandemic, it is important that members of the public have access to reliable news updates, and that public health policy reflects professional, accepted medical advice. Even in "normal" times, we need unbiased coverage of important news topics so that we are able to form our own independent, informed opinions and make our own independent, informed choices, in-

stead of being influenced by any one company or individual which might have its/their own political or economic agenda, hidden or otherwise. When people can't tell if a piece of news is biased or untruthful, we seek out articles in other newspapers that verify what we've read. But what if both newspapers actually belong to, and are being controlled by, the same company?

There is a real oligopoly in the newspaper industry. In the US alone, the ownership of most media outlets lies with just 15 billionaires and six corporations (Vinton, 2016), and 1,800 newspapers (45 of which had circulations of 50,000+ people) have been lost through companies closing or merging since 2004 (Abernathy, 2018). Information on such mergers and acquisitions in the media space, including information on the parent companies of news outlets, is usually only a Google search or two away. Yet to find these things out, someone would have to both a) be aware that many different news outlets are owned by the same company, and b) actively conduct research that they may not have the time or patience for.

My project proposal offers a tool that is feasible to create, easy and free to use, and tackles both misinformation and bias. My idea is to offer a mobile phone application and Google Chrome browser extension (since it is the world's most popular browser by far [Vaughan-Nichols, 2020]) that groups news outlets by their owner or parent company (e.g. The New York Post, The Wall Street Journal, The Australian, Gold Coast Bulletin, and any other Rupert Murdoch-owned newspaper would fall into a single category). It indicates the ownership of the relevant newspaper or media outlet

by color coding and labelling each article as demonstrated below:



The color creates obvious differentiation, and the labelling adds clarity, offers specific parent organization names for those interested in researching said company's background or executive personnel's personal opinions on current events, and makes it an accessible tool for the color blind. Users can use the search engine Google as usual, and use the app the way one would any other news app. With no incentive for rival media outlets to offer reports that reflect the same viewpoints or headline particular news stories, the method of cross-checking articles with others from unaffiliated newspapers should significantly reduce biases and fabrication. By raising awareness of the common ownership of various popular newspapers, we encourage consumers of news to question the similar information appearing in articles from different newspapers that are ultimately controlled by a single entity, and guide them to cross-check unaffiliated sources. This process should highlight outlying articles with disinformation, and reduce the impression of implicitly biased reporting on the reader. This tool essentially helps you cross-check the news properly, a "Check-mate," if you will.

Why is this project important?

When the COVID-19 virus was first discovered, the only confirmed information about it was that it was potentially similar to the common cold and that it could be an extremely deadly virus. Dealing with any contagious illness is difficult, but dealing with one where we don't have concrete knowledge about the symptoms, treatments, and cures is grueling.

As the novel coronavirus began to spread across the globe, people the world over understandably panicked. However, over the course of this year, scientists and medical professionals have worked extremely hard to document the known symptoms of the COVID-19 virus, the way it spreads, effective treatments, and what measures we can take to effectively protect ourselves. Yet, when evidence-based information that is crucial to containing the outbreak becomes available, it can sometimes be dismissed by a public that has become desensitized by conspiracy theories, misinformation, and prematurely confirmed research, a public that no longer knows what to believe, what information to consider, and which sources to consult. Mistrust of mainstream media outlets, the government, and public health organizations have all increased over the course of this pandemic.

Take, for example, the United States of America: according to statistics from The World Health Organization (WHO), the USA is the country worst hit so far by the novel corona virus, with over 10,000,000 confirmed cases and over 238,000 deaths from COVID-19 ("WHO Coronavirus Disease (COVID-19) Dashboard," 2020). In this dire situation, it is important to have trusted media outlets with reliable information about the illness and the pandemic for the public to act on.

As with many other issues in the US, particularly since 2020 is a US Presidential election year, COVID-19 has been politicized. There has also been an increase in the number of xenophobic and racist statements made, and articles written, about COVID-19. President Trump, for example, threatened to cut funding to the WHO, after accusing them of being "very China-centric." His repeated use of terms like "Kung Flu," "Wuhan virus," and "China virus" insinuate that the accountability for the spread of COVID-19 (and, by extension, the many American lives lost to the virus) lies solely with the country which first detected it. Five to six million people in the USA are of Chinese heritage ("Chinese | Data on Asian Americans," 2017 & Qiu, 2019), and, no doubt, a larger swathe of the population does not condone racism. Trump is creating a divide during a time when other country leaders are calling for unity to fight the virus.

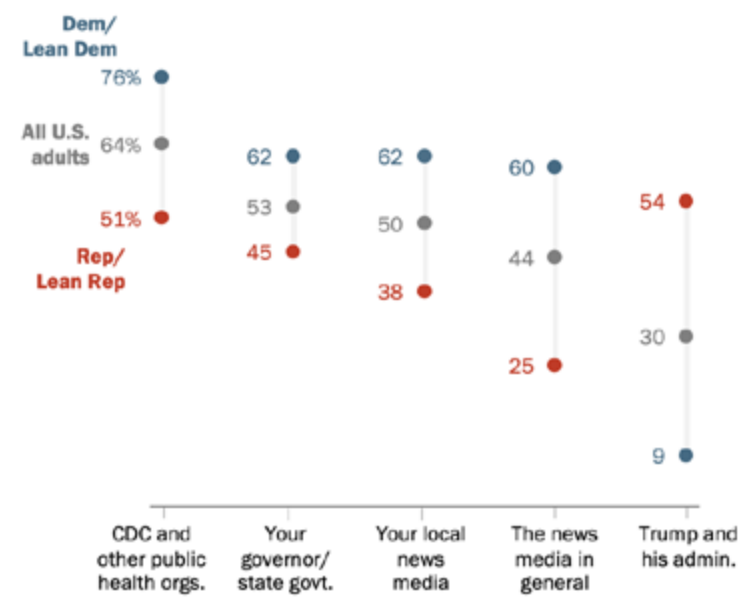
A survey of 47,000 US citizens showed that infection rates and demographic characteristics had less sway over the average survey responder's decision to back public health policy than whether the proposal had been made by the Democrats or by the Republicans. The politicization of the disease has led various news outlets to side with certain ideas on public health policies, like potential lockdowns, on the basis of partisan affiliation rather than on the objective recommendations of scientists and medical professionals who better understand the virus.

Trump has also, throughout his presidential term, continuously discredited journalists and reputable news organizations, dubbing most mainstream media "fake news" (Hetherington & Ladd, 2020). He has also offered "medical" advice that contradicts those of medical professionals. These actions have made it more challenging for the American public, who are then put in the difficult (and potentially vulnerable) position of having to decide which sources of information to believe and whose recommendations to follow. These issues have led to a disparity in the trust of various important information outlets between the Democrats and the Republicans, as illustrated in the graph to the right.

The average level of public confidence in information coming from a president and his administration is disturbing. Trump's many inaccurate statements and projections about the virus, such as that it would clear up in April 2020 and that 99% of COVID-19 cases were harmless (Paz, 2020), become especially troubling in view of research conducted by the Pew Research Centre. This research shows that more Republican members of the public trust the word of President Trump than the recommendations of public health organizations such as the Center for Disease

Americans give CDC highest marks, White House lowest on getting coronavirus facts right; wide partisan divides

% of U.S. adults who say each gets the facts right almost all or most of the time when it comes to the coronavirus outbreak



Source: Survey of U.S. adults conducted June 4-10, 2020. "Three Months In, Many Americans See Exaggeration, Conspiracy Theories and Partisanship in COVID-19 News"

PEW RESEARCH CENTER

Figure 1.

Control (CDC). With Democrats believing the CDC and acting on its recommendations, and Republicans following President Trump's guidance, the scene may be set for dissent and disagreement among the American public, fanning the flames in a time when it is critical for the community to work together, following the same recommendations and guidance in order to curb the spread of a virus that can infect, and has infected, many.

Figure 1 also shows that the American public's average level of confidence in news outlets for COVID-19 information sits at just 44%, and research conducted in February 2020 showed that the U.S. public's trust in news media in general is even lower, at 29%. This mistrust of the mainstream media is not limited to the geographical confines of one country. The same research showed that trust in the media hovered at between 20-30% in 13 countries, including Italy, the Philippines, and the UK (a graph is shown on page 1 of the supplemental document). This is an issue because the general news media is meant to keep us abreast of global developments (Reuters Institute for the Study of Journalism, 2020).

Public health organizations, such as the CDC and the NHS, are obviously excellent sources from which to receive updates about COVID-19 developments, but

mainstream media adapts data into a much more digestible form with snappy headlines, clear infographics, and fluid writing. As important as keeping up with the COVID-19 situation is, there are also other major news events that continue to happen around the world, e.g. ongoing conflicts, political affairs, and the environmental crisis just to name a few. Therefore it is reasonable to assume that people are more likely to open a news app or flip through a newspaper and get both their pandemic-related and non-pandemic-related updates in one place. But how can we know if what we're reading is correct?

At school, students are made to fact check and cross check every detail of their assignment, to verify and authenticate their statements using multiple sources. Yet, in the "real world," this does not always happen - a busy working population may lack the time or patience to conduct such checks. When you rely on a single news source, not only might you remain suspicious of the facts presented to you, it may be easier to internalize certain repetitive biases reporters display.

The chart below from the Ofcom News Consumption Survey 2019 illustrates the most commonly read newspapers (inclusive of online browsing) in the UK in 2018 and 2019.

Newspapers (printed or websites/apps) used for news nowadays
All using newspapers (printed or websites/apps) for news

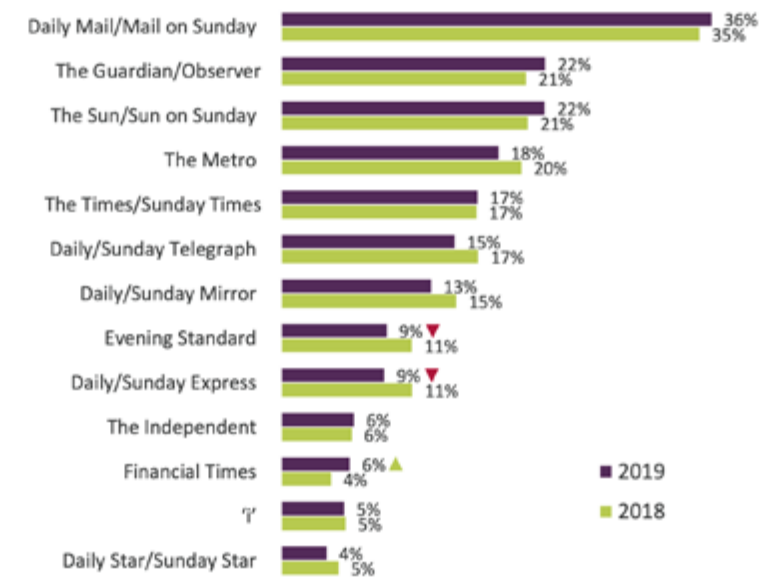


Figure 2.

The figures indicate that most news readers peruse at least two newspapers. While this is encouraging, and a step towards diminishing mistrust and biases by cross-checking news, several of these newspapers are not independent of their peers. Among the top five newspapers shown in the chart alone, the Daily Mail/Mail on Sunday and The Metro are both owned by DMGT (Daily Mail and General Trust plc) (“About Us | DMGT,” n.d.), The Sun/Sun on Sunday and The Times/Sunday Times belong to the same parent organization News UK & Ireland, which is owned by Rupert Murdoch’s News Corp (“News Corp UK | News Corp,” n.d.).

Although the individual journalistic style of different reporters can, no doubt, create some distinction between these papers for readers, the headline stories and the implicit messaging will likely have similarities in the newspapers owned by the same corporation. Social psychology tells us that like-minded people are drawn to each other: actual similarities between two people have a particular impact during initial or short interactions (for example, meetings for a job interview, where a good impression might pave the way to being hired) (Montoya, Horton & Kirchner, 2008). This can lead to the unintentional creation of polarized work environments within newspaper companies where underlying biases and opinions often align. In a line of work that requires objectivity, these characteristic similarities can make it harder to have a genuine debate on a topic and fairly represent opposing views.

What else has been done to encourage transparency / diminish implicit bias and misinformation?

I believe that my proposed project has a more straightforward way to tackle these issues than other tools that are currently available to the general public. I didn’t want to simply make a fact checker, or write a list of the owners of every single newspaper or news website - these have both already been done. There are currently available projects and tools which attempt

to address the challenges posed by the spread of disinformation and false claims. They do not, specifically, address biases and opinions, but the objectivity that is implied when we discuss facts.

In 2017, a French “collaborative verification project” called CrossCheck was initiated by a company called First Draft and Google News Lab. First Draft is a non-profit organization that aims to protect communities from the damage caused by the spread of disinformation. Crosscheck had been created to combat the spread of false information around the upcoming French Presidential election in May of 2017. However, the CrossCheck team constituted of 37 partners, over 100 journalists, and 12 journalism students in France and the UK who would actively conduct investigative research into rumors being spread online and rectify articles, making it a difficult project to fund extensively. The goal of the project was, first and foremost, to debunk misinformation; not to change the way that users interact with news online. (“CrossCheck Behind the Scenes: Learn How to Debunk,” 2017 & “Q&A How Cross-Check used social media monitoring to find fake news,” 2017)

There are several sites dedicated to scouring the web and social media for viral misinformation and false statements such as Altnews.in and Snopes.com. Staff at Factchecker.in, for example, use information in the public domain, from official data sources, and information obtained through contacting local authorities or any persons about whom dubious statements have been made to verify or debunk viral claims, and provide context for misleading information (“About Us | FactChecker,” 2014). Tools such as InVID (a chrome plugin) and FindExif.com help to determine if an image or video has been warped or edited (“Top 8 Tools To Fact Check Your Research,” 2020). However, once again, most of these resources require the active participation of staff or users to flag potentially false information, conduct research, and write new articles where necessary.

Finally, there are hundreds of articles online that offer guidance and tips on how to spot fake news, including encouraging the use of the fact-checking sites mentioned above.

Considering these solutions, four major issues come to mind:

- First, projects like CrossCheck run by an active team can be costly in terms of both time and money. Production of high quality material requires a team of experienced journalists to conduct serious investigations. If they are paid, these wages likely come at a high cost. If they are only volunteers, the amount of time put into the project and articles published may have varying consistency and regularity.
- Second, sites and tools that offer fact checking services require active participation from consumers of news. These sites rely on people being suspicious of the veracity of an article to begin with in order for them to consider using a fact-checker to verify the information. What if an article, even if subtly misleading, sounded entirely convincing? The reader would have no reason to make use of something like Factchecker.in, since most people simply don’t think it’s necessary, or have the time or inclination to go to the lengths of verifying every single article they read. Conducting research into who owns your newspaper and what opinions they have regarding political, social, ethical, and economical issues must be initiated by the consumer as well. This requires a lot of effort from people who just want to browse a few newspapers.
- Third, some of these tools rely on the general public to submit dubious articles, flagging them for the website’s team to look into before publishing a response. Again, this requires active participation from users and some degree of altruism for the tool to have any impact at all.
- Finally, while these solutions, although cumbersome, do assist in informing the public and in combating the spread of fake news, they do not address opinionated reporting and facts presented in a misleading manner. These would both influence the reader’s own implicit biases without having technically misinformed them.

My proposed Chrome extension and phone app Check-mate will not encounter such issues. In response to the points set out above:

- First, the projected initial cost of creation and the follow-up costs of maintenance (discussed

below) are, together, less than the annual wage of a journalist (“Experienced Journalist Salary | PayScale,” n.d. & “Salary: Journalist | Glassdoor,” 2020).

- Second and third, Check-mate does not require active participation from users once installed. It will be pre-programmed with information about newspaper ownership (this is publicly available) then color code and label search results as needed. Users would Google their questions as usual or read the headlines through the app as they would on their regular news app(s) respectively.
- Finally, the issue that I address with Check-mate is not just that of identifying and rejecting fake news. By bringing additional transparency to the ownership of online news media, we encourage readers to consult multiple articles from different news companies, with the intention to diminish the influence of a single false article or journalists’ individual biases.

How feasible is this project and its projected achievements?

While this project is attempting to address serious and complex issues, Check-mate, in and of itself, is quite straightforward in terms of creation and methodology, making it a very feasible and practical idea.

There are currently 188,620 available extensions for Google chrome and over three million apps available for download from the Google Play Store as of 2020 (Cimpanu, 2019 & AppBrain, 2020). There are multiple tutorials online, most notably on the chrome.Google.com website itself, with instructions on how to create your own extension, with some even promising to have it up and running in 10 minutes.

The creation and coding for a phone application is more complicated, since it is its own tool and not an addition to a pre-existing search engine (like the Chrome

I WANT CHECK-MATE TO BE AVAILABLE AND ACCESSIBLE TO EVERYONE, WHICH MEANS THAT IT SHOULD BE COMPATIBLE WITH DIFFERENT DEVICES, BE AVAILABLE IN MULTIPLE LANGUAGES, AND BENEFIT DIVERSE COMMUNITIES

extension is), but the way Check-mate will work is not overly convoluted. Many mobile apps require complex coding because they have features like requiring users to log in, storing user data (like progress in a game), or beautiful transitions between pages. Check-mate will need none of these, log-ins will not be required since a news app should not need to store individual personal data, and as the main focus is to raise awareness and inform, the code can be bare-boned in terms of aesthetic design. There are tutorials on how to make your own apps, as well as freelance coders and tech companies who can create your project for a fee.

Armed with my laptop, an online tutorial, enough free time, and a stable WiFi connection, the cross checking Chrome extension is, conceivably, something that I could make and begin using immediately. My vision, however, is to make Check-mate available on the Chrome web store and in the Google Play Store, so that millions of other users will also have access to it. Through the use of advertising (where there is budget for it), word of mouth, and other marketing techniques, my hope is that people who read their news through online platforms or via their phone will feel that this is something that will benefit them, and download the app or add the extension.

How many people can this project help? How will it reach them?

I want Check-mate to be available and accessible to everyone, which means that it should be compatible with different devices, be available in multiple languag-

es, and benefit diverse communities.

As consumers of news become more aware of the oligopoly that grips mainstream media in some parts of the world, they may begin to see smaller, independent newspapers as valuable sources to supplement their news updates. Under-represented communities or news platforms should enjoy a higher probability of being read and recognized, since they are more likely to offer unique perspectives which are different to those of the major news corporations.

In order to be accessible to as many users as possible, the most basic versions would have to be available in at least English, Spanish, and Hindi, as they are the most spoken languages in the world, excluding Chinese, and are important for other reasons too. (Eberhard, M., Simons & Fennig, 2020).

English is the most commonly spoken language globally (when native and non-native speakers are included), and the most wide-reaching: it is a common language in close to 150 different countries (Eberhard et al. 2020). The USA is one of these countries, and is particularly relevant and important for this project, especially since President Trump has consistently referred to, and declared, many reputable media outlets as producers of “fake news” throughout the last four years.

After Chinese Mandarin, Spanish has the most native speakers worldwide, and is the fourth most spoken language globally. In addition, YouGov research conducted in 38 countries with a combined surveyed total of 75,000 people offered insight into the level of concern specifically over fake news in online media. Brazilians surveyed were, on average, 85% concerned, followed by Portuguese at 75% concerned (Clifford, 2019). As a Portuguese-speaking country, and since Portuguese and Spanish share just under 90% of their vocabulary

(Sitsanis, 2019), Spanish is an accessible language for concerned Brazilians and Portuguese until we can add more languages into the app.

Finally, Hindi has the third largest number of speakers and is the fourth most common native language, globally. A Microsoft survey showed that false information and news stories are extremely prevalent in India. The investigation referenced in Business Insider showed that 60% of Internet users in India reported seeing fake news online, which is 3% higher than the global average (BI India Bureau, 2019), and that is just the misinformation that they are, themselves, aware of.

I have excluded Chinese Mandarin for the purposes of this discussion because Google Chrome and the Google Play Store are not accessible in Mainland China. Therefore a later iteration of Check-mate would have to be developed on another platform entirely for Check-mate to be available in Mainland China. There are only approximately 40 million Chinese speakers outside of Greater China (Qiu, 2019). This is a significant number, but not enough to merit inclusion as one of the base languages of this tool.

Ideally, as Check-mate is developed, we can continue to move down the list of the world’s most commonly used languages and include them, thus making it more and more widely available for people to use in their native languages. When possible, I would like the phone app to offer the same feature that Google does where whole web pages can be translated (on Chrome this is done via Google translate, so news consumers using laptop browsers already benefit from this). This would offer users of the app the ability to read the news in languages other than their own, and access to news and other informative resources from outside your own country is an excellent way of keeping informed on global events from a variety of different perspectives.

In order for Check-mate to reach the broadest possible audience, the app would have to be available on both IOS and Android devices. These have different programming languages (although the basic commands are similar in most languages), different costs, and different time frames in which the average app for each type of device is created. Luckily, it is possible to create a cross-platform app compatible with both (Saxena, 2018). I do believe that it is important to develop the app to suit both systems, since IOS devices are most

commonly used in North America and Australia, and Android devices are more commonly used in Europe, South America, and Asia, and some parts of Africa (“Android v iOS market share 2019,” 2019). Therefore in order for Check-mate to be available to communities around the globe, a cross-platform news app is necessary.

A Chrome extension is not only the most accessible format for desktop users, but the most feasible to create. These extensions are relatively straightforward to make at a low cost (figures below). Chrome, as of March 2020 is the world’s most popular browser with almost 50% of over four billion recorded visits going through this browser over others such as Explorer and Firefox (Vaughan-Nichols, 2020).

In conclusion, Check-mate has the potential to help millions of people as they strive to sieve through and cross-check the abundance of news articles available online.

How Check-mate could be even more impactful

This project would be more impactful if social media giants would get involved in this movement towards transparency in online news. The biggest issue with Check-mate is that the phone app wouldn’t impact other social media apps on the same mobile device. As this project currently stands, it would benefit people who use search engines and newspaper apps to find their news, but not all of the 22% of people for whom social media is their preferred source of daily news (Ofcom, 2019). I believe a chrome extension can work on the web version of Facebook, but the Check-mate app cannot replicate that on a phone. Since most mobile apps work independently of one another, phone users will have to use Check-mate specifically to check news instead of interacting directly with social media apps. If social media platforms (or better yet, news outlets themselves) are willing to clearly list parent organizations of respective newspapers on their articles, users would gain a greater awareness of potential affiliations and biases.

How much will this tool cost to make? How will we cover these costs?

The biggest challenge to overcome to implement Check-mate is finding funds for the costs of creation, upkeep, and translation. The more complicated an app, the more it will cost to create. Fortunately, the basic concept of my project is not complex. There are also many ways for websites and apps to generate revenue to cover costs. As a non-profit project, any profit made would be reinvested into Check-mate.

The cost of creation ranges depending on the freelancer or company's rates due to factors such as project difficulty, the minimum number of paid hours or minimum fee, and the level of worker experience. Creation costs increase when an app needs users to login and store individual data, and requires users to leave reviews or submit information. Check-mate does not require these features. My app has only one significant feature—highlighting and labelling affiliated newspapers—which should keep the cost relatively low. The Chrome extension, as an add-on to a pre-existing browser, also does not need a login or storage facilities. After the app/extension is created but before it's launched, it needs to be debugged.

I used an online site, howmuchtomakeanapp.com, that offered a crude estimated initial cost of around USD35,000, while another site offered a potential set-up cost of USD18,000 - 45,000 for newspaper apps specifically (Saxena, 2018). This is, as stated above, less than the average annual wage for a single experienced journalist in both the US and the UK ("Experienced Journalist Salary | PayScale," n.d. & "Salary: Journalist | Glassdoor," 2020). Check-mate filters news and encourages objectivity, the costs outlined above fund a project that could last and be useful for years.

Translation, depending on the chosen languages, can incur a hefty fee. Manual translation into commonly spoken languages will cost less than translation into obscure languages or languages that involve translators from higher wage countries. Manual translation of a document in the UK, on average, costs between 0.10

to 0.16 pounds per word ("Your guide to translation pricing - Sure Languages," n.d.). However, through the use of computer-assisted translation, many companies can quote lower fees than that, but at the potential cost of the higher quality of manual translation. In order for Check-mate to be as user friendly and accurate as possible, experienced and therefore expensive translators that are completely fluent in both languages have to be involved. One solution is to use computed translation for a first draft, then have a fluent speaker edit and correct any grammatical or semantic issues.

Future developments, such as increasing the number of languages in which Check-mate will be available and updates of the system (so the app can work with the latest IOS and Android models, will create recurring costs (Moore, n.d.).

In order to break even on initial costs and fund future developments, Check-mate, much like Google, may have to make money from advertisements. Many popular and effective forms of gaining revenue on apps—such as subscription services, selling merchandise, and sponsorships—aren't applicable to my tool. I do not believe in selling user data for economical gain, which is how many websites make revenue (Eddy, 2018). If advertisements are used to generate revenue for Check-mate, the thing that I would be sure to make extremely clear on the extension/app, even at the potential cost of revenue, is that the ads are clearly labelled, not to be mistaken as additional news stories. I do not want to mislead any users, I simply want to provide the funds to make Check-mate as widely accessible and available as possible. As an altruistic non-profit project, there is also potential to set up a means of gathering donations to crowd-fund the app, similar to the way Wikipedia is funded, for example.

Measuring the project's success

Once Check-mate is set up, how will I determine if it is successful? There are both qualitative and quantitative ways to measure this tool's impact.

Firstly, Google Play Store counts the number of downloads of each app on the platform, a quantitative measure of success. The more people that download

this app, the more people there are that become aware just how many newspapers are not independent entities. As they do, they will hopefully be led to question repetitions they've seen in affiliated newspapers, and/or begin to consult newspapers that belong to different companies to get a broader perspective on global updates.

Secondly, some app analytics allow the maker to track the number of active daily users, the countries in which the app is being used, and what language settings are being used. This information allows us to quantitatively assess how broadly Check-mate is being used, whether it has managed to breach the boundaries of borders and is being used worldwide. To reiterate, none of this data will be sold for targeted advertising.

Thirdly, the reception of donations could be an indicator that the public are finding this tool useful and meaningful enough to want to fund its upkeep.

Fourthly, companies such as Reuters conduct annual surveys into what sources and platforms people get their news from; some of these surveys from previous years have been referenced in this document. Check-mate is meant to provide the public with a greater awareness of the oligopoly in the newspaper industry and internal affiliations. If this information encourages users to cross-check facts with various sources and read new newspapers as anticipated, in global annual surveys we should see a greater distribution of readers between multiple sources, instead of the present disparity.

For Check-mate to be successful in its overarching goal of diminishing the impact of implicit bias and misinformation, people have to be willing to be open-minded and read news that might go against their preconceptions and understanding of the happenings of the world. In particular, I hope Check-mate encourages reading newspapers that offer material from the perspectives of ethnicities, nationalities, religions, and political views different to one's own. In theory, what Check-mate reveals by highlighting the ownership of major newspapers could lead to a greater number of people taking it upon themselves to consult multiple sources from different companies in order to diminish the impacts of implicit biases and false news, creating a shift towards greater cooperation and inclusivity in tackling global issues.

In conclusion, by making something as simple as a tool that color-codes newspapers, we create a straightforward guide to cross-checking the news that helps to tackle a variety of serious issues from fake news, to information presented in misleading contexts, to journalists' individual biases. Ideally, we live in a world where bias in the news and misinformation is mitigated, assisted by the layer of transparency Check-mate adds to online news media, helping foster trust and protecting news consumers' individuality when it comes to their choices and opinions about global updates, starting with COVID-19.

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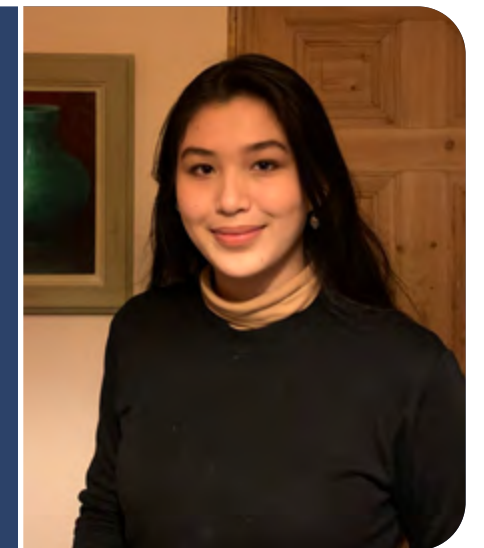
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About the Author

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PROPOSAL

RESOURCE HUB:

A consolidated search
for community
resources

Authored by:

Valeria Robayo

Nationality: American

Massachusetts Institute of Technology

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[Listen to Audio Intro](#)



MANY OF AMERICA'S MOST VULNERABLE COMMUNITIES FACE INCREASINGLY DIFFICULT CHALLENGES, UNAWARE OF THE WEALTH OF NONPROFIT ORGANIZATIONS, FUNDS, AND RESOURCES AVAILABLE TO THEM

Summary

Problem:

It is widely understood that minority and low-income populations in the US face strenuous socioeconomic and health challenges that have been compounded by the COVID-19 pandemic. With higher likelihoods of working in essential services, lower access to healthcare, and higher incidences of pre-existing medical conditions, these communities are disproportionately likely to contract, and suffer critical and expensive responses to, the COVID-19 virus (See Figure 1). In addition, the negative economic effects of the pandemic have resulted in newfound financial hardship for struggling small business owners and middle-class Americans. While many nonprofit and community service organizations have arisen to target many facets of these hardships, their impact is only as meaningful as the number of individuals they reach. Despite living in an age of information, many of America's most vulnerable communities face increasingly difficult challenges, unaware of the wealth of nonprofit organizations, funds, and resources available to them.

Race and ethnicity are risk markers for other underlying conditions that impact health — including socioeconomic status, access to health care, and increased exposure to the virus due to occupation (e.g., frontline, essential, and critical infrastructure workers).

Rate ratios compared to White, Non-Hispanic Persons	American Indian or Alaska Native, Non-Hispanic persons	Asian, Non-Hispanic persons	Black or African American, Non-Hispanic persons	Hispanic or Latino persons
Cases ¹	2.8x higher	1.1x higher	2.6x higher	2.8x higher
Hospitalization ²	5.3x higher	1.3x higher	4.7x higher	4.6x higher
Death ³	1.4x higher	No Increase	2.1x higher	1.1x higher

My Solution: Resource Hub

Piloted in the Cambridge/Boston area of Massachusetts, Resource Hub would be an online service available on mobile and web that would connect minority and low-income or financially struggling users with community resources and nonprofits targeting their needs. By asking users a series of questions relating to their demographics, employment status, and needs, Resource Hub would quickly identify legitimate resources within its database that users qualify for and could benefit from. While Resource Hub services are similar to those offered by some community centers and online databases, its approach is unparalleled in its focus on time efficiency, relevance, and reach. Namely, the mobile nature of Resource Hub would allow anyone with internet access or a data plan to locate affordable resources suiting a variety of needs in a matter of minutes, saving them the time and travel expenses they would otherwise have incurred. Furthermore, Resource Hub would make it a priority to constantly update its list of resources to ensure it represents a holistic array of services and addresses developing community needs. Lastly, by licensing our software after piloting this service in the Cambridge/Boston area and encouraging other individuals, organizations, or local governments to purchase and implement it in their localities, Resource Hub will have the potential to be scaled to service an increasing number of users across the US.

Conception

The comprehensive plan for Resource Hub was fully fleshed out in response to COVID-19, but an outline of the idea had been developing in my head for many years. As a high school shadowing intern at my local hospital and later in college as a research intern at the Health Decisions Sciences Center at Massachusetts General Hospital, I was saddened to observe that many low-income or minority patients would often miss crucial medical appointments and only come in once their disease had significantly progressed—not because they didn't assign importance to their health, but because they had limited access to transportation, inadequate health insurance coverage, or language barriers, factors that often went unnoticed by their care providers but that presented significant obstacles to attending their appointments. What was most upsetting to observe, however, was the fact that many of the often serious

diseases, wounds, and symptoms that patients would ultimately seek treatment for could have been affordably prevented, treated, or screened for at an early stage. If these patients had been aware and taken advantage of the support provided by ongoing community service initiatives, federal or local funding programs, and other accessible resources, their lives today would look utterly different. But just what factors could be hindering these resources from reaching and supporting their target populations?

To empathize with these patients' struggles, I drew on my experiences growing up as a first generation American with a bigger imagination than budget to satisfy my intellectual pursuits: leading up to my summers, conscious of the fact that expensive summer programs were not an option, I would spend multiple weekends scouring the web, searching for grant-funded research opportunities in STEM, affordable SAT study materials, and later, scholarships for college that I qualified for. While all of these experiences were an exercise in resourcefulness and tenacity, they also opened my eyes to the significant time and effort it takes to seek out resources to offset unmet needs. As a high school student, I didn't have to work a 40-hour a week job, wasn't the breadwinner of a family with children, and generally didn't yet have to take on many adult responsibilities. For today's everyday American and for the patients that I observed, however, time is an incredibly valuable and scarce resource that has the power to stand in the way of an individual's health, financial security, and more.

The highest value of Resource Hub lies in its time efficiency, that allows anyone with internet access in need of a diverse range of healthcare resources, financial support, small business advising, and more to be matched with a personalized array of local and federal programs, organizations, and funding resources that they qualify for in a matter of minutes. Resource Hub recognizes that users often have competing priorities and responsibilities in their daily lives and seeks to save its users from having to make a decision between fulfilling these responsibilities and securing their current and future well-being.

Landscape Review

After developing an outline for Resource Hub, I began searching the web for similar services that might

already exist. While I was able to find many online resource banks on the web, many of them either provided selective resources for only a specific need or provided an overwhelming database of resources that was not user-friendly.

Resource Hub ultimately stands out in its simultaneous ease of use, time efficiency, accessibility, and comprehensive database of resources covering a holistic array of needs. The following examples below show a comparison between two representative, already-existing services, and the services offered by Resource Hub.

City of Boston Community Resource Directory¹

This directory contains 191 local resources presented in a list format over 20 pages, ranging from nonprofits, to mentorship programs, to lawyer referral services, to cultural centers, and more. While this directory can be filtered by webpage, organization name, and a few other metrics, it is still quite complicated to navigate, available only in English, and presents users with a large amount of data to review. Instead of being directly matched with resources they qualify for, users of this directory have to determine their eligibility for resources only after reading long descriptions and visiting the organizational websites, a search method that is time consuming and difficult. In addition, many of the links on this directory no longer work. After being screened and coded for their eligibility restrictions and services provided and added to the Resource Hub database, Boston/Cambridge users would be able to access and receive support from the resources in this directory in a much more efficient, streamlined, and multilingual-friendly manner.

CareerOneStop²

This website contains resources mainly centered on finding employment, with a target audience ranging from young adults, to college applicants, to laid-off workers, to veterans, and related populations. This website contains various lists containing thousands of scholarships, job openings, and related employment resources that are filterable by location and keyword searches. While these employment resources are certainly comprehensive, this website's search method is not as efficient at matching users with resources that

they qualify for as Resource Hub would be, and focuses only on one service area: employment. While people in need of employment could certainly be referred to this database through our service, Resource Hub would be able to provide users with a more holistic array of resources to suit their needs, relating to employment, education, and more, and not require them to search through a database or perform time-consuming, individual Google searches for each area of need.

Implementation Details

1. Assembling a Team: ~1-2 Months

Making Resource Hub a reality will require the effort and collaboration of fellow MIT students, advice and mentorship from experienced MIT professors, and valuable insights from community partners who will promote our service to communities and individuals in need. Assembling the core team is expected to take from one to two months, but the development of mentorship relationships is expected to be an ongoing time commitment.

Core Team:

- **CEO:** Networks with local community centers, churches, and partners to start building a database of programs, organizations, and initiatives and to advertise our service. Reaches out and establishes relationships with MIT professors to receive advice on our business model and on-line advertisement strategies.
- **CFO:** Consistently applies for funding and manages advertising revenue, appeals to MIT alumni for funds, and raises money from the MIT/Cambridge/Boston community. Manages app finances and constructs yearly financial statements.
- **CIO:** Fellow MIT students, in charge of app development, who coordinate its design by cooperating with an external app-development service.

**Each core team area would be comprised of an ap-*

pointed chief officer and a number of other recruited students

Mentors:

- **MIT Sloan School of Management Professors:** Recommend additional funding sources; advise on business model and app logistics.
- **MIT Schwarzman College of Computing Professors:** Recommend affordable app-development services and important app features; advise on website advertising.
- **MIT Office of Multicultural Programs:** Provides feedback on how to ensure that our app reaches diverse audiences and is inclusive of a variety of needs and backgrounds.
- **MIT Technology Licensing Office:** Provides advice and counseling on how to license or copyright our website/app program/software.
- **Martin Trust Center for MIT Entrepreneurship:** Provides advice on funding sources and initiation logistics.
- **MIT Public Service Center:** Provides advice on funding sources; helps to connect us with additional community partners, identifies communities in need.

Community Partners:

- **Elected Officials and Community Representatives:** Would hopefully advertise app on their social media pages.
- **Local Community Centers and Hospitals:** Would recommend our service to citizens in need and recommend new resources and organizations to add to our database.
- **Future Partners Across the US:** Other college students or community members that would initiate the Resource Hub model in an increasing number of cities.

2. Building a Database of Resources: ~1 Month

Some of the first tasks for my team would involve performing a search for legitimate nonprofits, companies, and funding programs targeting a broad variety of local community needs, including but not limited to Medicare, Medicaid, tax filing services, subsidized mental health services, free or subsidized exercise clubs or programs, food security programs, small business advising, free health screenings, housing security and urban development programs, and more. Qualifying factors for each program, such as employment status, age, demographics, and more would be noted. Special emphasis would be placed on connecting with local government, community centers, and universities to identify many of these programs.

3. Finding Funding: Ongoing search

Since Resource Hub is intended to be entirely free, it would be extremely crucial to find consistent and substantial sources of funding to support its initial website and app development costs by an external developer, as well as its various advertising and outreach initiatives. As an MIT student, I would be able to apply to diverse and significant array of funding sources and could also bring in revenue from other outside sources.

3. Finding Funding: Ongoing search (cont.)

Funding Sources	Estimated Amount
MIT Sandbox	up to \$25,000
MIT Community Service Fund	\$10,000
MIT IDEAS Social Innovation Challenge	\$1,000-\$20,000
Long-Term In-App/Website Advertising Revenue	\$7,000/yr
Alumni/Community Contributions	Varies
GoFundMe	Varies
Total Funding Sources Available to Apply for:	\$75,000+

Website and App Development Cost Estimates:	Estimated Cost
Estimate My App (Oozou 2020) ³	\$34,650
Clavax ⁴	\$8,650-\$14,350
Coidea Agency ⁵	\$13,388
Initial Online & Physical Advertising Budget	\$5,000
Miscellaneous/Unforeseen Costs	\$1,000
Total Estimated Cost:	\$30,000-40,000

4. Website and App Development: ~4-8 Months

The next step would be developing a secure, multilingual-friendly website and mobile app for user interface, either by coding it ourselves or by recruiting an external developer.

Required Features:

- Possesses an algorithm that matches users to resources and organizations in our database based on self-reported user data
- Can be accessed through WIFI and data plans; saved data accessible offline
- Provides multilingual support
- Allows users to save their demographic profiles and resource suggestions by creating an account, requiring an email and password, but signing up would not be required
- Allows for constant updating of resource database
- Allows for analysis of depersonalized data trends on resource requests (with user consent) and user demographics
- Upholds a high standard of data security for users
- Allows users to submit suggestions of new resources not already contained in the database, and feedback on app usability and relevance of suggestions
- Allows users to rate resources in the database after they use them, if budget allows

User Experience:

Users would first be notified that their data will not be shared or sold and told that app security is a priority. Users would then be asked a series of questions intended to identify user needs and qualification status for various programs.* This initial survey would feature an answer logic, so that if a user does not express a need

for a particular service, related questions would be filtered out, to save the user time, i.e., if a user does not own a small business, they would not have to answer further questions on the subject. Subsequently, users would be able to browse through a list of services separated into categories such as health, financial services, housing, and more, filtered to match their needs and eligibilities. Users would have the opportunity to create an account to save their suggestions and be notified by email if new resources are added that fit their needs. After being matched to a service, users would be directed to that service's website and contact information. The user experience would end after users are directed to a service website, or leave the app.

* While our app relies on user responses to pair them with resources they qualify for, it will be the responsibility of individual organizations to verify our users' true eligibility for their services.

Possible Future Partnerships:

After the website/app development stage, we would attempt to develop partnerships with mobile phone companies and local internet service providers, to service Resource Hub for free in low-income areas to increase the reach and accessibility of our service to all populations.

5. Spreading the Word: Ongoing effort

Extensive time and effort would be placed into advertising our service by distributing informational material (posters, pamphlets, etc.) and performing information sessions in local libraries, hospitals, community centers, food pantries, homeless shelters, colleges, and other places where people normally seek help and resources. To broaden our reach, we would also set up online advertisements on Facebook, Google, and other platforms as our budget allows. To determine our target audiences for these advertisements, we would network with local governments and community centers to identify communities most in need of our services. Lastly, we would ask the previously named locations and prominent community representatives such as elected officials, school district principals and superintendents, religious representatives, and more to refer individuals to our service and post our advertisements/promote our service on their social media websites.

HAVING TO WORK SO MANY HOURS AND CARE FOR HER TWO CHILDREN AND FAMILY, LAURA HAS NO TIME TO SPEND HOURS SEARCHING THE WEB FOR RESOURCES TO COVER HER NEEDS

6. Fostering Growth: Long-term goal

With everything we will have learned from our experiences setting up Resource Hub in our pilot community, the next steps would be to expand our reach to communities all across the nation. So that our growth would not be limited to my local team's capacity alone, we would license the Resource Hub software/search algorithms with the guidance of the MIT Technology Licensing Office, and encourage other individuals, organizations, or even local governments to buy our software and implement Resource Hub in their own cities or localities. The proceeds from these sales would go towards adding new features and innovations to Resource Hub's software and/or increasing the reach of our online ads.

Operating Philosophies

Feedback-Oriented Approach:

While we will make an effort to represent all of our community's needs in our service listings, my team will be conscious that community members themselves possess the most accurate knowledge of what their needs are. We would thus have a page on our website/app where individuals could suggest unaddressed needs and organizations that could potentially be screened and added to our listing. To measure the quality of our user interface, we would ask each user to rate

their experience in terms of usability and relevance of resource suggestions. Additionally, we would continuously monitor and analyze data from website and mobile app usage and downloads, to measure our reach and the prominence of certain needs in our community, based on the services most requested. We would also follow up with community partners who have volunteered to refer users to measure their success. Lastly, we would attempt to connect with a few local organizations on our listings to see if they have seen an impactful increase in enrollment. In the long term, this could involve developing a referral code system, where these organizations could ask their users if they were referred by our service.

Commitment to Inclusion and Accessibility:

Throughout both the initiation and life of Resource Hub, my team would take special care to include resources serving a diverse range of needs for a diverse range of populations and consult with the MIT Office of Multicultural Programs for training and advice related to promoting diversity and inclusion.

Far-Reaching Effects

Galvanized by the increasing challenges faced by vulnerable communities due to COVID-19, Resource Hub's ultimate goal is to clear away any obstacles preventing community members from seeking and find-

ing help for treatable, addressable, long-standing problems they face. The following points outline further possible benefits Resource Hub could provide.

Community Data Analysis and Informed Decision-Making:

In the future, as we begin to collect and analyze depersonalized data on the frequency of specific community needs logged, resources requested, demographic trends, and more, this information could be shared with local officials and become the basis of local resource allocation decisions.

Increased Resource Efficiency:

By eliminating time constraints and information barriers that normally prevent many people from connecting with resources that fit their needs, Resource Hub prevents the time, money, and effort invested by service institutions and programs into their communities from sitting idle or going to waste.

Decreased Rates of Preventable Diseases in Disadvantaged Populations:

By making it easier and more accessible for low-income and disadvantaged populations to screen for, address, or seek treatment for their symptoms or health conditions at an early stage, Resource Hub aims to lower incidences of treatable, addressable diseases or conditions.

Conclusion

While the number of resources, organizations, and programs available to target the needs of those suffering hardship during the COVID-19 pandemic such as low-income citizens or immigrants, minorities, and small business owners has risen, there still exist many unaddressed obstacles such as time, language barriers, and more preventing these resources from reaching and supporting their target audiences. A few resource directories and websites do exist, but most are not user friendly and are time-consuming to filter through. As an MIT student, I would be able to assemble a dynamic team of motivated students skilled in computer science and management by advertising through social media pages, or even forming a club. I could seek mentorship from experienced professors and professionals all across the institute and finance the initiation and development costs of Resource Hub across a very large number of funding sources both within and outside the Institute, with a collective funding potential of roughly double my projected budget. By leveraging all of these resources at my disposal, I believe my initiative has a strong chance of making an ever-increasing impact on my community by helping it become a more efficient, accessible, and healthy place.

Hypothetical Case Study

Laura is a 42-year-old Mexican American single mother of two children living Boston. Laura works as a manager at a local restaurant that has been suffering through financial hardship due to the pandemic. Her already spartan salary has been reduced, and her health insurance benefits have been curtailed. In addition to being financially responsible for her mother who lives at home and has a disability that prevents her from working, Laura is struggling to pay for rent, provide meals for her two children who are learning remotely, and is understandably suffering from mental health issues due to her circumstances. Furthermore, Laura has an extensive family history of breast cancer that at her age requires her to get yearly screenings—something that her health insurance no longer covers. To cover her expenses, Laura has taken on a part-time job at her local supermarket where she works on weekday afternoons and weekends in addition to her job at the restaurant. Having to work so many hours and care for her two children and family, Laura has no time to spend hours searching the web for resources to cover her needs.

How could Resource Hub help Laura and her family?

After hearing about Resource Hub from a friend at her part-time job, Laura downloads the app and answers the preliminary questions on her train ride home. In a matter of minutes, Laura is matched with a variety of resources tailored to her needs and circumstances that she had not previously known existed, including among others:

- **City of Boston Rental Relief Fund:** Supports Boston residents who do not have expanded unemployment benefits and are at risk of losing their rental housing due to the COVID-19 pandemic
- **Boston Public Schools Food and Nutrition Services:** Provides weekly meal packets for children who are learning from home
- **Massachusetts Department of Public Health Care Coordination Program:** Connects eligible Massachusetts Residents with free breast cancer and cervical screenings
- **Action for Boston Community Development:** Provides free tax preparation assistance that can help reduce tax burdens and get back money that can help beneficiaries pay off debt and build savings
- **North Suffolk Mental Health:** Provides accessible services to individuals confronting emotional difficulties, mental illness, substance abuse, or other challenges in daily living at lower costs

Logging off of Resource Hub after she creates an email account to save her matches and be notified of new resources, Laura steps off her train home feeling significantly more equipped to overcome her circumstances.

*Citations for these programs and services are included in the Bibliography section

Endnotes

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Valeria Robayo is a sophomore at MIT majoring in Management and minoring in German. Valeria hopes to pursue a career in medicine, specializing in cardiovascular surgery.



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PROPOSAL

THROWING A LINE:

Growing a global
movement to increase
the provision and
receipt of mental
health first aid

Authored by:

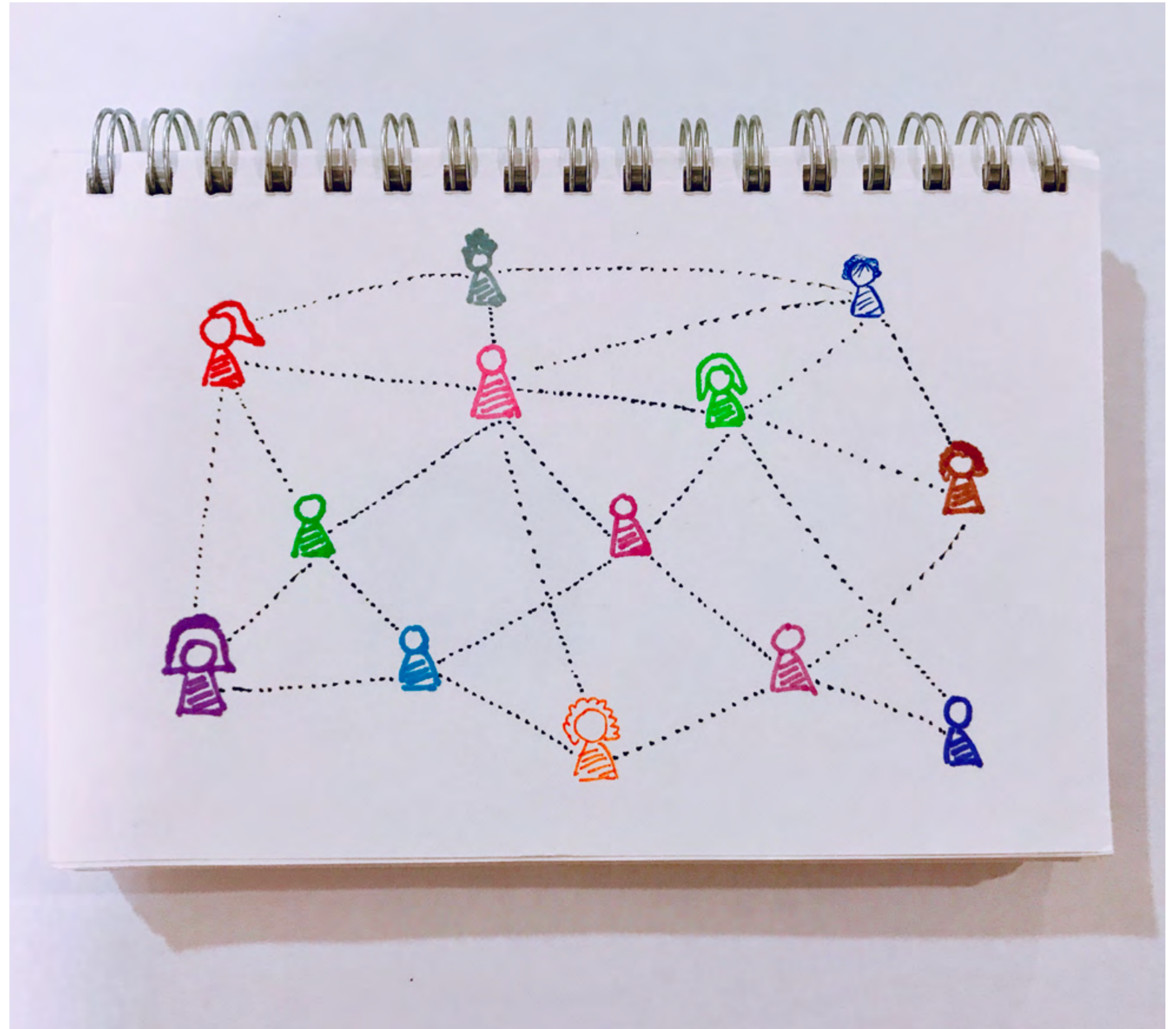
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Introduction

This report identifies a gap in the current global efforts to increase the provision and receipt of mental health first aid and details the author's strategy to launch a global movement that would address this gap.

Mental health first aid is the support given to people suffering from mental health issues by those, often not within the medical profession, who first suspect or learn of the mental health issue. The support of such people can be crucial to the wellbeing and recovery of the patient. Consequently, mental health support organizations around the world have sought through media campaigns to increase the proportion of mentally ill people who receive first aid. However, while the reach of such campaigns has increased dramatically, the number of people receiving mental health first aid has not;¹ in Australia, which is a global leader in mental health care, it is estimated that only 46% of people with mental illnesses receive mental health first aid or professional support.² Much of this lack of support can be attributed to the social withdrawal or rejection symptomatic of many mental illnesses, as well as fear of stigmatization.³ The fact that mentally ill people are more likely to withdraw socially or be socially rejected, and the fact that people are often uncomfortable talking to people to whom they aren't socially close about mental health, are significant inhibitors in the global effort to support those with mental illnesses.

Moreover, loneliness is estimated to be experienced by three in five Americans. It is a leading cause of mental illness, and it can also make it harder for people to reach out to those who could provide mental health first aid.⁴ Considering that humans meet and form friendships with thousands of people throughout our lives, the problem is not our capacity to build friendships, but rather to sustain them.

Problem and landscape overview

The current global efforts to increase the provision and receipt of mental health first aid, while effective at encouraging action once mental health decline is noticed, are not effective at putting people in the position to notice such declines in those who are most at risk of decline: socially isolated people. When considering that people are unable to notice warning signs in people they've lost touch with, nor are they very willing to start such a heavy conversation with such a person without first rekindling the friendship, it becomes clear that there is a step missing in the global effort to increase mental health first aid. This campaign aims to address this shortfall and add another component to the global effort:



Figure 1: The components of an effective global effort

Almost every person without an effective social support network has had one at some point in their life. However, they drifted apart from their social circles as time goes on for any of a variety of reasons. By reconnecting, these people may once again access support. A simplified representation of both the problem being addressed and the desired outcome of this campaign is provided below:

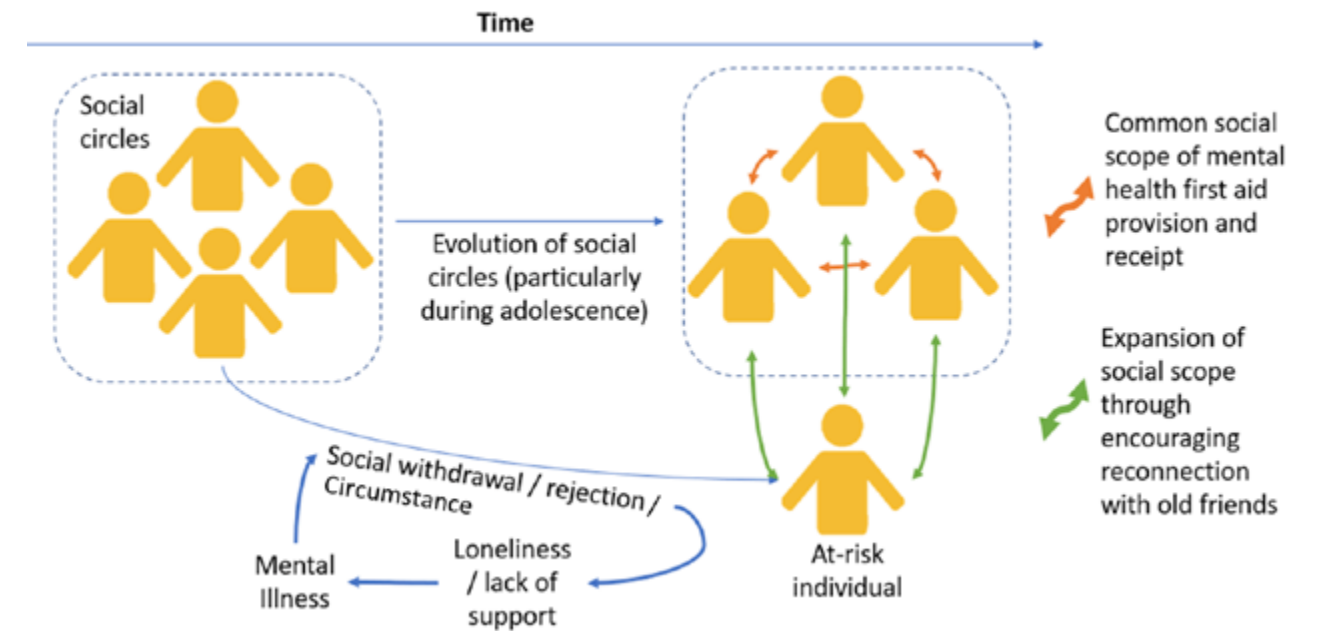


Figure 2: The problem and solution

Solution:

The #Reconnect movement

This movement will be driven by two limbs:

1. A school/university campus and subsequently broader media campaign through which people are encouraged to reconnect with those they were once close with, but no longer are.
2. A software feature integrated into a partnering social media which provides a convenient and socially palatable means to reconnect friends who have lost touch.

This campaign will be effective because:

- a. It creates an impetus for people to connect with those who may be socially isolated.
- b. People are willing, and often desire, to reconnect with those they were once close to.
- c. If reached out to first, a mentally ill person will be much more likely to confide in their old friend, or have their warning signs noticed.
- d. It promotes the sustenance of long-term friendships, reducing loneliness

Limb 1: Building the movement on campus

Before a partnership with a mental health organization or sponsor is achieved, the following plan outlines how the movement will be grown.

Year 1:

- 1) Partner with university student unions and societies. Considering young people are a vulnerable demographic with respect to mental health, universities are a great place to begin the movement. Beyond posters and social media posts, with the funding and support of student unions, on-campus and virtual events will be run, as these are engaging, enjoyable, and likely to achieve action.

#Reconnect campus events:

- An on-campus experiment where volunteers go around and challenge people to text someone they haven't communicated with in more than a year. Record whether they're willing to and, if not, what deterred them. Not only does this increase reach and is effective at achieving action, but it also gathers information about the reasons people don't reconnect, providing insight to be applied in future growth of the movement. This experiment could be videoed and turned into further publicity content.
 - A networking event with a rule that once you meet someone, you both have to set a calendar reminder to message them in a year's time. As the one-year mark is approaching, send reminders to the attendees.
 - A chill-out zone with beanbags and live music in a park on campus (or any event), but to get in you have to text a friend from primary school you haven't talked to since.
- 2) Build the brand of the movement and provide promotional material and ideas en masse. Begin contacting and providing high schools, uni-

versities and workplaces with poster templates and event ideas branded as part of the #Reconnect movement widely (As "R U OK?" currently do with success). Such things can be integrated into mental health day/week activities. Create a website, social media handles and register as an organization. The website www.reconnect.media will be used.

Driving the movement: Drawing upon principles of sociology to achieve reach and action

A successful global movement begins with a message. This message must not only reach all relevant people, but also produce action.

Achieving Reach:

To achieve reach, the message will be spread first through centralized means (advertisement or education) and then, as a result, through decentralized means (individuals spread the message among themselves).

Successfully spreading the message through decentralized means will require the substance and medium of the message to be uncontroversial, emotive, agreeable and relevant.⁵ The idea of reconnection satisfies these requirements; the notion of reconnecting with old friends is agreeable, relevant to all and uncontroversial. Moreover, it is the kind of message people are incentivized to spread given the desire for social connection is universal. The message's association with the topic of mental health provides the emotional capital and moral impetus for spreading. The message would take the form of video narratives which demonstrate and normalize the practice of reconnecting with someone you've lost touch with, as well as static poster statements conveying the benefits of, as well as demonstrating and normalizing, reconnection. This material would be adapted to appeal to varying cultures and demographics. This content will be branded by and distributed through mental health organization social media.



Figure 3: Sample of #Reconnect promotional material

The capacity for the similar “R U OK?” day content to regularly trend on social media in Australia affirms that the content of this campaign will be spread by individuals. Their promotional strategies will be emulated.

Achieving Action:

Four elements contribute a message’s capacity to produce action: credibility, emotiveness, rationality and time sensitivity. To achieve credibility, decentralized messages will be branded with the crest of a credible mental health organization or the government. To achieve emotiveness, stories of reconnection resulting in great lifelong friendship will form part of the campaign. Importantly, the potential to help friends struggling with mental health issues will not be publicized in the campaign, as this may create the perception that a request to reconnect implies that someone is worried about you. This would disincentivize people from reaching out. To achieve rationality, the personal benefits of reconnecting with old friends to yourself will be the subject of published content which promotes the value of reconnection after COVID-19. To encourage timely action, the process of reconnection will be conveyed to be not only rewarding but also simple. Such a strategy is demonstrated in Figure 3 and emulated in Figure 2. Ultimately, however, a request will be generally be actioned if the perceived benefits of doing so outweigh the drawbacks. When it comes to reconnection the drawbacks are merely the time and mental energy spent communicating. All that it will take for many people to action the request is for the thought to occur to them and for an excuse to do so to be provided, as it will through this campaign.

Catering the movement to different cultures and demographics

To be most effective, messaging mediums and content will have to change when targeting different demographics. As a general rule, the members of such communities will be consulted for insights into the most effective ways to facilitate and encourage action for each community. However, provisional ideas have been included below.

Elderly people

Elderly people are a particularly vulnerable demo-



Figure 4: Viral “R U OK?” day content⁶

graphic in the context of mental health and loneliness. In order to achieve awareness and action for this demographic, we will provide promotional material to aged care facilities but, more importantly, appeal to family members to assist their elderly loved ones to find the contact details for people who they wish to reconnect with. The content of promotional material would center around encouraging and, importantly, enabling elderly people to make contact.

Rural communities

Rural communities would be catered to through promoting the movement over the mediums of communication which will ensure maximum reach; these include country radio and at community events. In order to make the content of promotional material, or recommended events effective, the tone and strategy of commercial advertisements in the area would be analyzed to get a second-hand insight into how to best appeal to the culture of the area. This would be emulated in the promotional material provided.

Different countries

Reach and action within different countries and their different areas will be best achieved by curating the content and messaging mediums based on (a) the perspective of representatives of the people who reside there as to what will be most effective and (b) analysis of the strategies and tone which commercial advertisers employ to appeal to inhabitants of the specific area.

Limb 2: Consolidating the movement with a social media tool

A social media feature that would facilitate and promote a socially palatable and frictionless means of reconnecting with old friends has been designed to be integrated into an existing social media platform.

Components of the feature and their effectiveness

Note: The use of real organization names is purely for the purpose of illustrating what the feature would look like if these organizations were to participate and does not limit its application to these companies. Moreover, the companies referenced in the illustrations have not been consulted, and it is not implied that they are willing to take part. These illustrations were constructed by the author using figma.com and the figma.com public icon library.

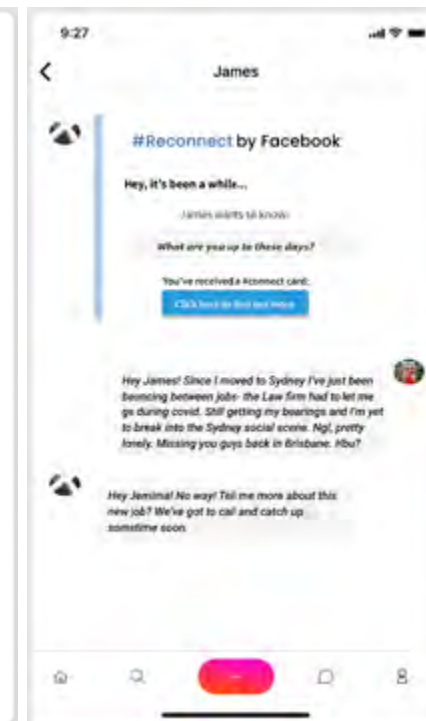
The social media feature would be a tool through which users drag and drop their friends to conversation starters, which are sent to the friends as a #Connect card. Users would be invited to use the new feature via a push notification, which would take them to the feature landing page within the social media app. From here, users are provided a brief



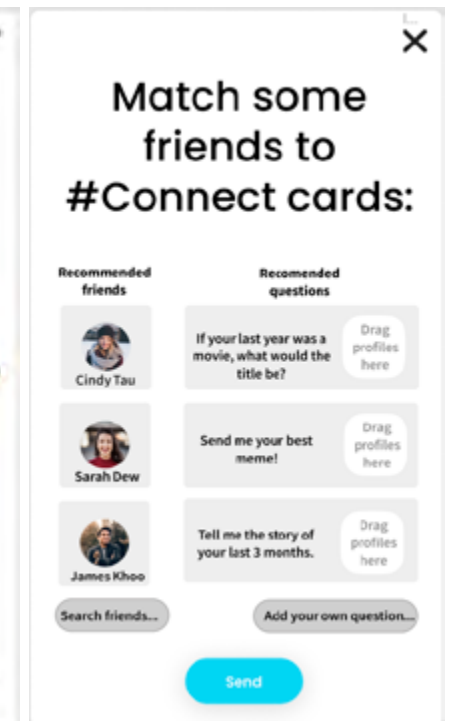
Push notification



Landing Page



Feature



Outcome

explanation of the feature and may choose to proceed to it or exit and return to the main social media platform. The feature itself would provide recommended conversation starters and recommended friends which the user can add to. Users would seamlessly send out messages to a large quantity of friends they are keen to hear from. These friends would receive the messages within the direct messaging feature of the social media.

The goal of the feature is to get as many people as possible to start conversations with people they haven't spoken to in a while and who are most likely to be socially withdrawn. For this effect, psychological principles have been applied to make the feature socially palatable and frictionless for a diverse range of people.

Firstly, while the landing page references a mental health organization, it does not make clear that this feature is designed to increase the probability of isolated people will receive mental health first aid. The reason for this is that people may worry that their message will imply that they are concerned about the recipient. The purpose of including the name of a mental health organization is merely to allow the social media company to express their support for mental health organizations and strengthen their brand image. This will be removed if not necessary to the partnership.

The feature presents itself as simply an invitation to reconnect and provides the universal experience of being too busy to keep up with people, and the context of COVID-19, as the justification for taking advantage of the tool. Providing an excuse to reconnect has the effect of not only inviting people to think of the people they may have neglected talking to, but also assuring them that their messages will not seem unwarranted or for any reason other than to reconnect. The concern that a recipient will suspect an ulterior motivation for reconnecting after a long period of time is a common reason people refrain from reconnecting with old friends- many people feel awkward sending 'out of the blue' messages. With the knowledge that the recipient will have seen the #Reconnect feature or find out about it, the sender can be assured that their message will only be interpreted as a genuine desire to reconnect.

The use of recommended questions decreases friction and takes the pressure off thinking of a leading message- a pressure which is great enough to prevent many from taking the step between wanting to talk

and sending a message.

Recommended friends may be curated in a data-driven manner, utilizing social media analytics to recommend friends who are most likely to have (a) been connected to the person in the past, and (b) become socially inactive. This increases the probability that the most at-risk people are reconnected to old friends.

Finally, the #Connect card would appear in the direct messaging space between the sender and recipient and be distinguished from regular messages. This would further provide assurance to the sender that their message would not be interpreted as "out of the blue" but rather responding to the feature's invitation. Importantly, the ability to curate your own question and search for specific people ensures that the messages are unlikely to be interpreted as trivial.

The feature would also conduct analytics on the number of people who use the feature and the types of people who do so. This would provide insights into the effectiveness of the campaign on different demographics and inform the improvement of the content and messaging of the campaign.

To the author's knowledge, no major social media company has ever provided a feature similar to the one described.

Forming a partnership between the campaign and a major social media company

For this social media tool to be deployed, a major social media company (ideally Facebook) will have to agree to its integration into their platform. The idea will not only have to reach decision makers in the company, but also be perceived as an impactful tool which also appeals to commercial incentives. A four-step plan to increase the probability that this will occur is outlined below:

1) Win the Reimagine Challenge 2020

The Reimagine challenge 2020 is perhaps the only prestigious global competition through which a movement such as this can be given not only credibility, but also publicity. A successful submission will be critical in providing

the leverage required to get the attention of, and attain meetings with, established mental health organizations and also social media companies.

2) Meet with established mental health organization and convince them to make the campaign their own

As discussed above, this will provide access to the funds required to give the movement reach, and also provide the credibility required to convince a major social media company to partner with them; Given the magnitude of positive public sentiment towards mental health organizations, a major social media company will be far more likely to adopt the social media tool if it gets the commercial advantage of associating with such an organization in return.

3) Encourage the partnering mental health organization to pitch the tool to the major social media company

The arrangement of partnerships between major mental health organizations and social media companies is unlikely to be a major roadblock. Given the very obvious and significant mutual benefit which comes from partnerships between mental health organizations and social media companies, it has been done successfully in the past.⁷

4) Collaborate with the social media company to reimagine or refine the tool if need-be

An example of a possible tool is provided in this report. However, it must be noted that the merits of an integrated social media feature should not be judged entirely by the quality of the specific example provided herein. There are limitless variations of this tool and other tools which may achieve the same underlying goal of encouraging, making socially palatable and making frictionless the reconnection of people who have lost touch. If the feature provided herein does not appeal to the social media company, this will not be the end of the road, merely an opportunity to leverage their resources to make an even better one.

Impact

A great thing about this movement is that, even at small scale, it will still have the power to make a big difference. If just one person can rekindle a friendship with someone who happens to be in a time of hardship or mental illness, at very least, their day will be brightened or, at best, their whole life could be set on a far better course. Worldwide, one in four people will experience a mental disorder at some point in their life.⁸ Every year there are nearly 100 million people worldwide who are experiencing mental or substance abuse disorders.⁹ It is likely that many of these people are socially isolated; this is substantiated by the causal link between isolation and mental illness as well as the high experimentally ascertained prevalence of loneliness in mentally ill people.¹⁰ Moreover, this number does not account for the amount of people who have not yet developed a mental illness, but are lonely and socially isolated, meaning that if they did, they may miss out on mental health first aid. This number is far more significant. Loneliness has been declared a national crisis in many countries around the world, and three out of five Americans report being lonely.¹¹ On a global scale, the number of people who lack a robust social network is likely to be staggering. This is despite the fact that humans of all cultures interact and form friendships with, on average, thousands of people throughout their lives. The problem is not that we lack the capacity to form friendships, but rather to sustain them. This movement will decrease loneliness through making it more likely for people to sustain friendships.

In order to quantify the actual effect of this movement after one million people are taking action each year, some reasonable assumptions must be made. Firstly, it will be assumed that mentally ill and lonely people will not be the ones initiating reconnection- they may only be recipients of requests to reconnect. Moreover, with reference to aforementioned statistics, it is assumed that one in five people experience loneliness, and that one in fifty are currently experiencing mental illness.¹² Of the mentally ill people, it can be assumed that 46% will not have received mental health first aid.¹³ It is also assumed that each of the one million people will reach out and reconnect with only five old friends each year. Assuming a homogenous probability distribution of selecting each type of person, one million people experiencing loneliness will be reconnected with a friend from their past. An additional connection

and source of support or merely the assurance that someone is thinking of them may be critical to the prevention or mitigation of mental illness or simply their general life satisfaction. Further, one hundred thousand mentally ill people will be reached out to; forty-six thousand of these mentally ill people will not have received mental health first aid. An additional connection with someone who they know from their past will likely be very beneficial to all those who are going through mental health struggles. However, the most significant impact will come from the reconnection between old friends and the forty-six thousand people who are mentally ill but without mental health first aid. It will be these people who may receive critical, life altering support from old friends who may notice warning signs or simply provide support without knowing. These numbers are incredibly significant, particularly considering that this assumes that only one million people will take action. To each of these people experiencing mental illness, reconnection can be invaluable. It can change the lives of everyone in that person's family and community.

Secondary effects

The secondary effects of this campaign will be divided into two categories: secondary impacts of better mental health first aid, and secondary impacts not related to mental health.

Effects of better mental health:

Mental illness leads to decreased workforce participation and impaired productivity worldwide. In Australia, estimates of the annual costs of the productivity losses attributable to mental illness range from \$10 to \$15 billion.¹⁴ In America, more money is spent by the government and public to treat mental illnesses than any other condition, including heart conditions.¹⁵ This campaign would promote early intervention and prevent such illnesses from becoming as significant as they otherwise might. With reference to the circular flow of income model, this decline in cases of serious mental illness would increase long run aggregate supply through a greater participation rate and short run aggregate demand through the higher consumer expenditure resulting from the ability of these people to remain employed (*ceteris paribus*). This would ultimately put an expansionary pressure on GDP, and a contractionary pressure on the Consumer Price Index. It should

be noted that the positive economic impacts are not alone due to the ability for the mentally ill person to overcome their illness; the family and support network of this person will also experience a greater level of potential productivity and less emotional hardship.

Effects unrelated to mental health:

By encouraging reconnection, society will be more innovative; society will be less culturally and politically polarised; Communities will be more united and; people will be more likely to foster lifelong friendships. Through greater reconnection, social networks will be larger, as people will not permanently lose as many connections. Evidence suggests that with a larger network, an individual has a greater likelihood to be host to the cross-pollination of ideas and perspectives.¹⁶ This increases their capacity and likelihood to innovate or at least have a more broadly informed perspective, the lack of which is a leading cause of political polarization. Reconnecting with those in your past also makes for a more united community. Considering that people tend to have a far more diverse friendship group in high school than they do subsequently, by reconnecting with high school friends, they will be less likely to fall into echo chambers and may further unite different social enclaves through shared social connection. Finally, one of the many impacts of COVID-19 has been that many have been forced into isolation or prevented from seeing those they typically would. This may have worn away some of the social bonds people had prior to the virus. Reconnection will therefore be an important step in recovering, as communities, from COVID-19.

Measurability

The success of this campaign would be measured through monitoring how many people access the #Reconnect website and download publicity connect to put up at their institution. We will track the actual impact of the movement through the annual anonymous surveys mental health organizations and governments already conduct regarding loneliness and the provision and receipt of mental health first aid. Moreover, the social media component of the campaign will allow analytics to be conducted regarding the number of people who take action and the types of people who do. This means that both macro and micro scale tracking of the movement is possible in most parts of the world.

Ethical considerations

Encouraging and facilitating reconnection does not leave much scope for unethical behaviour. Regardless, a few considerations have been made.

Misuse of data by social media companies

The social media component may provide social media companies with data regarding the type of people who reconnect to old friends and also encourage them to determine the people most likely to be socially inactive. This may be misused to target vulnerable people for commercial gain. However, it is unlikely that social media companies would do such a thing considering the rise of ethical practices following public scrutiny of the industry. Moreover, the magnitude of harm that could be done is quite low. Nevertheless, a company will be partnered with only if ethical use of data is assured.

People reconnecting with the intention to cyberbully, groom or abuse

This campaign, while evolving social norms by encouraging and empowering people to reach out to people in their past, does not limit the power of recipients of messages to ignore, block or report malicious behavior in the same way they currently do. It is also likely that if people have malicious intents, they would act upon them regardless of whether this campaign encourages reconnection or not. Nevertheless, to mitigate the risk, we will encourage that institutions also promote responsible use of communications and support for victims of cyber-harassment.

Conclusion

Many mentally ill people do not receive effective mental health first-aid because they lack the right people in their lives to whom they can reveal their struggles. As COVID-19 forces much of the world into isolation and hardship, innovative approaches to mental health first aid are evermore essential and sought-after by the public. There is no better time to launch a global movement such as is outlined in this report, not only due to its impact, but also its capacity to spread quickly and be actioned. A call to action as palatable as one to reach out to, and reconnect with, those we've drifted away from is one that the whole world can support, benefit from, and be united by. A movement which will rebuild our social fabric after COVID-19 is movement which will thrive.

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PROJECT DRIVEN WILL HAVE THE ABILITY TO ENCOURAGE MORE THAN ONE MILLION PEOPLE—INCLUDING STUDENTS, EDUCATORS, AND MENTORS—TO WORK IN CONCERT TO CREATE MEANINGFUL CHANGE WITHIN LOCAL COMMUNITIES

Abstract

Named after the well-known rule-of-thumb of being data-driven when making decisions, Project Driven aims to empower a diverse group of students to answer meaningful questions and create meaningful impact within their communities with the application of transformational technology skills. In its most high-level form, this Project is an educational program that will train, mentor, and facilitate students to deliver data science projects in partnership with local governments, NGOs, and small businesses that deliver tangible social impact. Project Driven will involve building a network of data science and analytics industry partners, institutions with students interested in data science, and experienced data science educators. The social impact projects will vary in length and complexity, and can include topics such as investigating the least safe areas for women, examining the root cause of homelessness, and/or evaluating the impact of a new educational program. With the scope of its impact and with this aim, Project Driven will have the ability to encourage more than one million people—including students, educators, and mentors—to work in concert to create meaningful change within local communities.

Landscape Review

The current landscape involves two types of organizations:

- 1. Data science-focused** organizations involved in data science education and/or social impact projects

The organizations in this category that I have identified as being major considerations are **Data Science for All (DS4A)**, **DataKind**, multiple data science fellowship programs, including Carnegie Mellon's **Data Science for Social Good Summer Fellowship**, the **Bluebonnet Data** program, **The Alan Turing Institute Data Science for Good Social Fellowship** (which is in collaboration with Carnegie Mellon), the **Stanford Data Science for Social Good Fellowship**, and **The Data Incubator**. Other groups that may be considered a part of this category are coding bootcamps such as Flatiron, and online education platforms such as Udemy and Coursera that provide data science education accessible globally.

- 2. Non data-science focused student programs** that would still cater to students interested in data science through providing more generalist extracurricular experiences in consulting and finance

Organizations in this category, which include **180 Degrees Consulting (180DC)** and **Girls Who Invest (GWI)**, are examples of efforts aimed at eliciting a similar change, and similar ideas that have been adopted to achieve a different goal.

To understand this landscape at a more granular level and to better design the Project Driven program, the landscape will be scrutinized according to a specific group of features.

The matrix below indicates key areas of analysis for the Landscape Review:

	Features							
	Data Science Education for beginners	Experienced Data Science Educators	Industry & institution partnerships	Selective	Intended for students	Team-based impact project delivery	Available virtually & globally	Mentorship
DS4A	Green	Green	Green	Green	Orange	Orange	Green	Green
DataKind	White	White	Green	White	White	Green	Green	White
CM Data Science for Good	White	Green	Green	Green	Green	Green	Green	Green
The Data Incubator	White	Green	Green	Green	White	Green	Green	Green
Stanford Data Science for Social Good	Green	Green	Orange	Green	Green	Green	White	Green
Bluebonnet Data Fellowship	White	Green	White	Green	Green	Green	Orange	Green
Flatiron Data Science Bootcamp	Green	Green	Green	Green	White	Orange	Green	White
Online Data Science Courses	Green	Green	Green	White	White	White	Green	White
180DC	Grey	Grey	Green	Green	Green	Green	Grey	Grey
GWI	Grey	Grey	Green	Green	Green	Grey	Green	Green

Key:

Grey = Category 2 Organization

Green = has this feature

Orange = has this feature, to some extent (eg. DS4A has only optional project delivery)

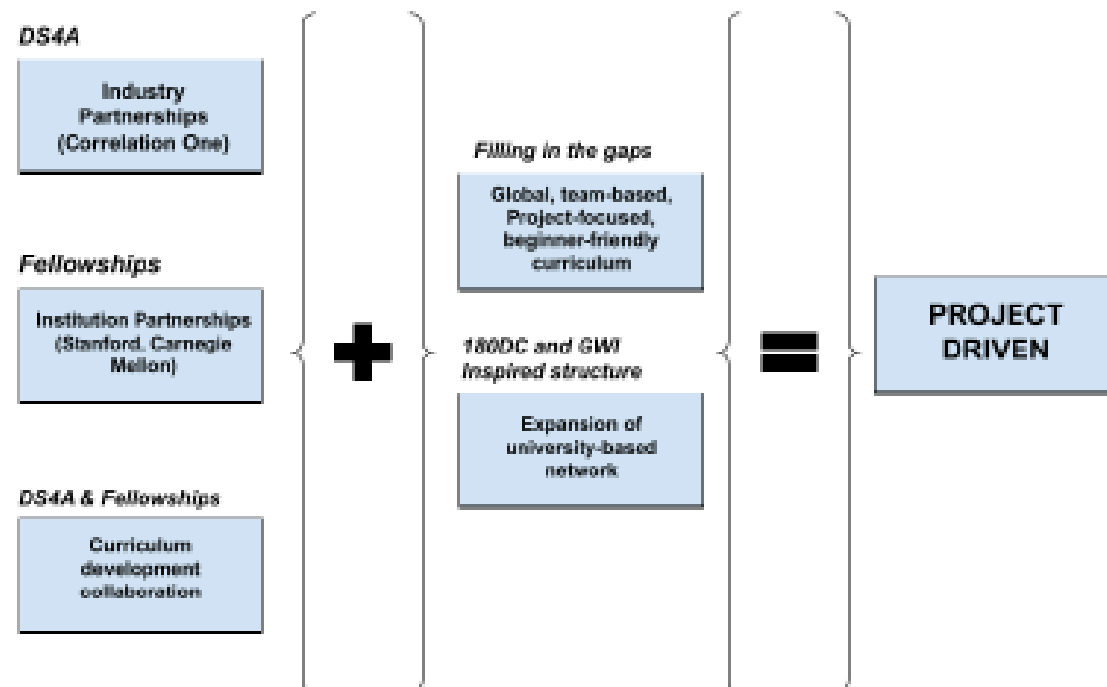
White = does not have this feature

It is apparent that no current organization contains all of these features to their full extent—although DS4A does offer every feature to some extent—and that two features in particular, “Data Science Education for Beginners” and “Intended for Students” have the lowest presence in the landscape. There are three additional points to note:

1. **Some fellowships are not free** (e.g., The Turing Institute’s partnership with Carnegie Mellon’s program) and require the student to pay significant tuition
2. **“Selective” is noted less as a feature** and more as an indication of accessibility to the program: some programs, like DS4A and the Carnegie Mellon fellowship, are extremely selective, whereas others admit more students
3. The presence and success of programs such as
 - a. 180DC (a global network of student consultants providing pro bono consultancy services for local companies)
 - b. GWI (a summer training program connecting female finance students to internships at top firms)
 - c. DataKind (a global coalition of data science professionals completing locality focused impact projects)

is an indicator of the potential and need of a program like Project Driven, which will aim to combine the structure of each of these programs to build a free, accessible program that builds upon those in Category 1.

Project Driven must engage in a meaningful collaboration with DS4A and organizations such as the Data Science for Good Fellowship program, which are also promising according to this matrix. Working to entirely differentiate Project Driven from these organizations is both counterproductive for the aim of social impact and inefficient considering the potential of these partnerships.



The way Project Driven will fit into the Landscape, then, is as a connector and as a more developed educational model. It incorporates the structure of highly effective organizational models and will become a collaboration with existing educators in the data science field, to provide a more long-term, two-pronged and all-encompassing solution. Project Driven’s impact is threefold:

1. Recruiting students from diverse backgrounds with an interest but not necessarily experience in the data science field
2. Connecting them to localized networks with global opportunity, where university-based chapters will provide students with easier access to training resources, a mentorship community, and an opportunity to innovate within a region they know well
3. Using industry partnerships to develop impactful projects within local communities

Project Driven’s row in the matrix, therefore, will indicate the full presence of all features, with “selective” referring to a simple application process checking for genuine interest and passion rather than demonstrated skill.

Project Description

Manifestation and Feasibility

Beyond imagining a reality where a program such as Project Driven exists, it is crucial to identify exactly what its manifestation will look like, as well as remaining realistic regarding its feasibility. Specifically, a manifestation of Project Driven will look like:

From the student-facing side:

- Summer or co-op program recognized globally by universities and employers with individual university-based chapters
- Access to a long-term global community of data science enthusiasts
- Curriculum catering to beginners in data science, and to students with heavy schedules during the school year [Attachment C]

- Mentors and educators from reputable data science backgrounds facilitating both data science learning and professional development of student participants
- An attainable opportunity for students from varying educational and demographic backgrounds to gain a “foot in the door” for a data science career with a significant project deliverable with impact, and with catered professional advice

From the “client” -facing side:

*Note: here, a “client” refers to the organization or company the student participants would develop their projects to support

- Working with Project Driven mentors to develop research questions and clear project brief timelines that will result in producing work with significant social impact [Attachment B]
- High-quality recommendations and a detailed final report from a small team of 4-5 devoted students with an understanding of the client’s region and work
- Actionable insights that will support the reduction of inequality within the locality of focus for the organization
- Open conversation with students and their assigned mentor throughout the project to allow for a productive feedback loop ensuring that your needs are being met

With these overarching goals for the program, Project Driven can be identified as being feasible overall. The evidence for this lies largely in the recognition of three things:

1. The models required for developing this program have been tried and tested

As discussed in the Landscape Review, Project Driven will be informed by the structures of 180DC and GWI; both organizations have demonstrated that developing highly impactful teams of students after a short period of training is possible, as is creating a reputable brand for an education training program accelerating the professional development of students from

nontraditional backgrounds.

2. There exists a sufficient and extensive client base for this program to continue running in the long term

According to studies published through The Wharton School and the reputable Medium blog Towards Data Science, as well as a significant investment by The Rockefeller Foundation, NGOs and impact-driven branches of government are continuing to gain data science and analytics use-cases. As the shift to technology, accelerated by the sudden movement towards virtual work, continues, there is an increasing need for these traditionally less “tech-savvy” organizations to implement data-driven strategies to inform decision making. Further publications also illustrate the abundance of currently unused data that not-for-profits and government branches have within their historical databases and the large benefit this data can create as it continues to grow and iterate.

3. There is a surplus of students interested in data science and mentors interested in supporting such students to build their data science careers

An in-depth article from MIT’s Sloan School of Management indicates that even after the 2020 recession, data scientists are likely to remain core to business practices in any industry, and the “data science boom” will likely recover. Additional sources corroborate this view, illustrating that the demand for data science professionals and data science education programs has been increasing exponentially. Furthermore, a significant user interview [See Attachment A] indicates that students who enter data science professions will continue to be interested in “returning the favor,” creating a steady flow of mentors supporting mentees.

Action Items and Timeline

Now that it is largely clear what this project will look like once it manifests, and that there is a feasibility at-

tached to it, the execution plan can be communicated in detail.

First, it is important to note that there are, at this point, multiple pathways to achieving success with Project Driven. Some of the potential variants include:

- The length of the program (summer or during the school year)
- The length of projects (1, 3, or 6 months)
- The style of projects (research vs automation use-cases)
- The style of deliverables (reports vs. presentations)
- Focus areas (whether they should exist or not, and if they do, will they drive client partnerships, e.g., healthcare, environment, poverty)

While Project Driven could succeed with any combination of the choices above, the optimal choices need to be identified in order to ensure the program is being curated in the best way possible for both major stakeholders—the clients and the students. Hence, the first point of action will be to conduct user research to understand what works better for these groups, and design the remainder of the program accordingly to ensure that we will be able to reach the goal of having one million people working in collaboration. Alongside this research process, building a small team of co-founders with strong data science and community-building experience will be key. In addition, the team will allocate some time each week applying to government grants for funds to support education initiatives, website hosting, student merchandise, and online environment subscriptions, such as Slack and Zoom, to facilitate community building and communication.

This iterative improvement process will continue through the next point of action, which will involve running one or two cohorts of students at a handful of universities, and collating feedback from the students’ and clients’ experiences as a result. This will be conducted as a six- to eight-month project within itself, involving building a data science curriculum, opening applications, creating partnerships with universities to promote the program, and creating partnerships with organizations such as local coding bootcamps, company recruitment teams, and University educators to deliver the curriculum. It will involve sourcing 8-10 clients for

a maximum of 50 students to work with to start, on a range of topics identified as high interest through that first phase of research. The first iteration of Project Driven will be delivered in this form by summer or winter 2022, according to this timeline.

Then, the process of scaling the program itself and building more significant partnerships would begin. After this pilot project, our team will collect feedback, improve Project Driven’s infrastructure in response, and present a pitch-deck to Carnegie Mellon, Stanford, and Correlation One with offers of partnerships that could enhance all of our efforts for social impact and building a more inclusive data science community. In addition, we will communicate with companies such as Oracle, SAP, Amazon, and JP Morgan, the companies data scientists most want to work for, to develop professional mentorship and/or recruitment support events and opportunities. To further build our network, we will appoint the first cohort of students as ambassadors at the universities in their region, and partner with mentor networks such as Mentor Mesh and Edith Labs, which are currently building some of big tech’s best mentor resources. The next iteration of Project Driven will involve at least three times more students, across at least 15 universities, with more than 25 clients and research questions being addressed, in summer 2022.

Marketing, outreach, and team building efforts will continue in the background during each of these steps, and beyond summer 2022:

- Our social media will be geared towards celebrating teams’ projects as they are completed, showcasing our mentors, educators, and program alumni, and building a great professional image and platform for our students across Facebook, Instagram, Twitter and LinkedIn
- We will write press releases and ensure that news organizations are aware of our work so that we are better able to reach NGOs that may be able to use our help
- We will continue to follow up with companies and reach out to recruiting teams to build our network in the data science field, obtaining letters of intent, and, in particular, sponsorship agreements to invest back into Project Driven
- Our team, though initially volunteer based, will grow with a model similar to that of the non-

profit Wonsulting, with recruitment based on need and compensation provided as our sponsorship pool grows

- We will continue to reach out to different universities, relying on word of mouth and organic growth, with our student alumni’s connections, cold-emailing university representatives at the top universities in every continent, and building a solid personal brand

By summer 2023, we aim to have sufficient funds and partnerships to begin building a localized and more robust online learning environment, similar to Y Combinator’s Future Founder School, with a mixture of live events and bite-sized educational content that will prepare students for their projects and facilitate team building and accessibility to students with diverse backgrounds. Anyone will be able to log in and learn, with the ability to attend certain internal events. Students who complete the application process will build the projects, but students who aren’t selected will still have access to a wealth of online resources and alumni project work that will inform their career.

In summer 2024, we will publish our first annual Youth Data Report, which will showcase to the world the work these students have been producing, as well as providing insight into the different social causes that require attention around the world. By summer 2024, the aim is to be working with 100 universities globally, with each university managing an internal team with ambassadors, and beginning to self-source clients and identify research questions that will support their communities.

Addressing Roadblocks and Risks

Four main roadblocks and risks will likely arise during of the timeline described in the previous section:

1. **Lack of Funding** - If traction isn’t as effective as expected in the earlier stages of the timeline, the project may meet dead ends. In this scenario, the most effective way to facilitate growth will be to focus energies on one or two

very impactful projects, and maximize publicity opportunities from them, building the case for partnerships and grant funding in the future. Applying to small government grants will make a difference.

2. **Team growth** - when team members don't work together as well as expected, issues can often be created internally; or, if the team grows too fast, leadership and communication issues can arise. Mitigating this will involve patience at every stage of the recruitment process, and maintaining the key principles of inclusion, excellence, and passion as core to the organization and core to any training new members are met with. In terms of dealing with this roadblock, each case will be different, but as the organization grows, it will be crucial to ensure that there is a go-to person who is trusted and experienced within each region to address disagreements.
3. **Lack of educators** - especially at the beginning of the program if key partnerships are not developed and if sufficient funding isn't obtained to pay educators, it will be difficult to find people to teach live courses to a group of students. The most effective way to combat this will be to reduce the need for live education, and invite virtual speakers for a small speaker fee to provide workshops that align with the curriculum that has been researched and intentionally planned. In addition, recruiting top data science students to teach some concepts will be effective in driving that initial pilot project, to present to groups like DS4A and eventually form a partnership.
4. **Data security** - the "clients" themselves will provide data to students to work with, so it is crucial that NDAs are signed and adhered to, and no personal information is exchanged or requested at any point. This will all be included within project training for students.

Narrative

Idea Formation and Significance

Because I am a student with a passion and interest in data science and applying technology to impact my local community, Project Driven is an idea that is very close to my heart. The initial insight was born of a range of shared experiences I noticed among my peers as we sought to navigate recruitment in data science roles, alongside a feeling of not creating impact with our time and work at school. One moment that sparked this idea was during the first client presentation I had as part of my 180 Degrees Consulting project with Venture for America. It was a data-based project where we were asked to analyze four to five years of survey data to produce a range of recommendations and insights that would allow them to make their significant program more inclusive and supportive of minorities. During that initial presentation, where we used only basic Excel, I realized that this was exactly the kind of project that would be ideal for students like me both to create impact and to develop a data science portfolio on. I also noticed, however, especially during the course of the project, that our lack of data science education as a team meant that we weren't able to build much more than a Tableau report for visualization. With some training, we would have been able to apply machine learning models and clustering to support and bolster our recommendations with the large amount of data we had.

This is where I found myself thinking about the beginnings of Project Driven, and finding organizations and fellowships like the ones I identified in the Landscape Review. After I sent in my first-round submission, I reached out to a mixture of students and professionals to conduct interviews and confirm if this was a valuable idea (see Attachment A). I found, to my pleasant surprise, that students in particular were very receptive to it.

Project Driven is important because it is needed and wanted, by both clients and students. Established organizations work with established clients more often than smaller ones, and don't often cater to those starting out in Data Science. As Data Science becomes an increasingly important and popular career choice, and even a skill-set within any other career choice, giving students

the opportunity to learn the value of these skills and create an impact with them is a process of immeasurable value. The work of one team would impact thousands, and is curated to each locality so that only those who are close to the issues at hand are working to solve them. For example, in Australia, a team could be working on identifying the root causes of the Indigenous Australian literacy gap, while in the US, a project team may work on examining data on police brutality and gun violence.

I believe that we will be successful because of how much this program can mean for the stakeholders involved, and because I have such a deep passion to drive it forward, along with a range of project management experiences at scale that will inform our team's work.

Ethics and Supporting Diverse Communities

Supporting diverse communities and upholding ethics will remain at the forefront of Project Driven. As stated in the Project Description, the three pillars of Inclusion, Excellence, and Passion will remain core values of the organization, encouraging only those who care about solving problems and solving problems well and with a diverse team of people to join the cause.

Fundamentally, the aim of Project Driven is to support diverse communities. We will aim to ensure our recruitment process is not exclusionary in any manner, and that as many people from diverse educational and demographic backgrounds as possible can have access to the resources we will provide. We will bring on board a dedicated Diversity and Inclusion Lead as we grow, who will continue to iterate on our processes to ensure that they remain open to all. In addition, on the client side, we aim to support organizations in varying sizes, geographies, and focuses within the social impact sphere, ensuring that our resources are being applied to support people within diverse communities. Diversity of thought breeds diversity of impact, and this is the principle we will work by.

Any instance of hate speech or exclusionary behavior will not be tolerated within any of our communities, and this will be made clear to any new addition to Project Driven. Pre-project training will include training on respectfulness and integrity when speaking to clients, with clear processes set out for any deviation from these principles.

Key Performance Indicators (KPIs)

As Project Driven grows, we will monitor its impact and ensure we are working towards the initial vision as precisely as possible, at every scale—global, national, and local. Our KPIs will be both qualitative and quantitative, and applicable to each scale, and each individual chapter of Project Driven within individual universities. (Figure 1.)

This data will be stored and viewed through reporting every three months to inform future decision making.

Conclusion

Overall, Project Driven will comprise a two-pronged solution, allowing for the benefit of both students interested in data science and social impact organizations who are armed with data but without the time and skillset to apply it to drive decision making. With considerations of competitive landscape, feasibility, timeline, risks, significance, and ethics, Project Driven is a robust idea that has extremely large potential for impact in the near future. The foundations are laid here in this proposal to bring one million people together to enact meaningful change, within their own local communities, while working and learning at a global scale. The implications for how many students and organizations this project could support are near infinite, and this could be the next big step in promoting project-based learning, building equality in future technology careers, and encouraging impact-driven uses of data.

KPI Summary		
Type	Label	Measure
Quantitative higher = better	Number of students who have been supported in data science careers	How many have received roles directly as a result of Project Driven?
Quantitative, Equal distribution is the aim	Number of students within each demographic	How many women, people of colour, international students and first-generation students do we support?
Quantitative	Number of mentors and educators working in concert	Are we working towards the 1 million aim within 10 years?
Quantitative	Number of people impacted through social projects	Avoiding vanity metrics here, and identifying the total population directly impacted by our projects
Qualitative	Feedback from 'clients'	Collecting survey-based feedback at the middle and end of every project to ensure that the groups we're building for are getting what they need from us
Qualitative	Feedback from students	Identifying where the program can improve and facilitate professional growth
Qualitative	Feedback from partners	Identifying growth opportunities, and improvements required to any partnerships

Figure 1.

Attachment A: Research Interviews

Interviewee Description	Notes from conversation
<p>22-year-old self-taught data science professional, co-founder & head of ML at \$2M NYC-based AI startup, ex-SAP ML Engineer</p>	<ul style="list-style-type: none"> First of all, believes this is a great idea and found that while there were programs that focused on American universities, she didn't know about these as an Australian high school student or university student as she was trying to explore the field Did not generally find online courses overly helpful, and said that she would have wanted to be a part of Project Driven if it were offered as she was learning First entered the data science field with no experience, but as a result of wanting to build out her startup idea, which required an understanding of machine learning and data science principles Believed that curricula were only helpful when they were aimed at supporting project-based learning rather than the other way around ("the best way for me to learn about data was by actually getting my hands dirty and doing all the googling and asking questions as I go") Believes that there are endless use cases for data science within governments and NGOs to create significant social impact, and that students are more than capable of being able to deliver this impact after some weeks of training As a mentor herself now, she would also be more than happy to volunteer her own time to support a team over a few months in delivering a significant project

Attachment A: Research Interviews (cont.)

Interviewee Description	Notes from conversation
<p>19-year-old second-year finance, computer science & pre-med student at UPenn, significant internship experience & interest in data science</p>	<ul style="list-style-type: none"> Has found that when recruiting for data science jobs, having significant project experience in data science, especially geared toward impact, would help a lot Would enjoy working to develop a solution for an NGO or government branch specifically in the healthcare field, because this is a personal interest Sees this as a valuable extracurricular that would be sufficient to replace a sophomore summer internship, and/or undertake as one of their main extracurriculars in school Does not find that taking data science classes, which are often difficult "weed-out" classes, is the easiest way to break into and discover a passion for data science Is currently looking at designing their own data science project after having completed an analytics internship freshman summer, but finding difficulty in finding a team to split time and responsibility Would not mind working in a team with less experienced data science enthusiasts
<p>18-year-old first-year business analytics & data science student at UPenn, moderate experience in data analytics, Generalist Consultant at 180 Degrees Consulting</p>	<ul style="list-style-type: none"> Has applied to a range of data science fellowship programs similar to the ones mentioned including DS4A, but hasn't yet been able to join any due to a lack of experience Is (similarly to the second interviewee) concerned about the need for projects on a resume to gain target data science positions Enjoys project-based learning more than a fixed curriculum Would attend Project Driven in place of a summer internship Is studying data science because of a curiosity regarding its potential for social impact at a local and global scale Is most attracted to the idea of having mentors within the data science field to ask questions to without having to cold message and follow-up with consistently Is very attracted to the idea of a 180DC program but solely with a data science focus
<p>19-year-old second-year business analytics major at an Australian university, interest but no experience in data science</p>	<ul style="list-style-type: none"> Is intimidated by some of the more advanced looking "beginner" data science courses with heavy workloads, and would like the opportunity to build their skills through a project over a few months first Is passionate about environmental sustainability, and is excited by the prospect of being able to build a resume-worthy project with a not-for-profit focused on it Would like to work with an organization supporting Indigenous Australian communities in conserving their Had a whole range of potential research questions already going off the top of their mind Loves the potential to meet new students and mentors virtually and in person through this program Feels as though there is a lot of talk around data science but a lack of support for professional development within the area

Attachment B: Sample Impact Projects from Current Landscape

Program	Title
Stanford Immigration Policy Lab	Better Refugee Placement in Switzerland
DataKind	Saving Money and Water in Drought-Stricken California
Benefits Data Trust	Making Essential Benefits More Accessible
DataKind	Using data to create paths out of homelessness
DataKind	Advancing financial inclusion in Senegal through predictive modeling
DataKind	Finding 30,000 missing children (DataKind UK)
Carnegie Mellon DSSG Fellowship	Preventing Juvenile Interactions with the Police Justice System
Carnegie Mellon DSSG Fellowship	Optimising waste collection for portable sanitization in Kenya
Carnegie Mellon DSSG Fellowship	Identifying Fraud & Collusion in International Development Projects (World Bank Group)

Attachment C: Sample Curriculum for Beginners Data Science Courses

8 week intensive with team project (coding bootcamp)

Source: Le Wagon Coding Bootcamp

DS4A is a 13-week weekends-only curriculum that follows the same structure and is non-intensive, but the curriculum cannot be attached here because it is intended only for students.

Detailed Curriculum.

Learn data science step by step, starting with the basic data toolkit in Python and Mathematics to the complete implementation and deployment cycle of Machine Learning algorithms.

Admission & Prepwork	40 hours online
1. Data Science Toolkit	2 weeks
2. Decision Science	1 week
3. Machine Learning	2 weeks
4. Deep Learning	1 week
5. Data Engineering	1 week
6. Final Projects	2 weeks

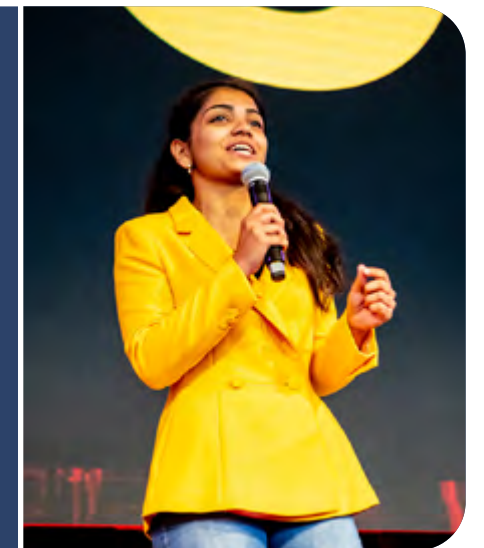
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Khushi Shelat is an undergraduate student at The Wharton School of the University of Pennsylvania. She has led an Australian national non-profit for gender equality in STEM and entrepreneurship, and is currently working on building an edtech startup that builds upon her proposal.



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PROPOSAL

INSPIRE SEED:

A web platform
to enrich foreign
domestic workers'
lives in Hong Kong

Authored by:

Glenda Xu

Nationality: New Zealand

University College London

London, England

[Listen to Audio Intro](#)



'INSPIRESEED' WILL BE AN ORGANISATION WHICH PROVIDES A WEB-BASED PLATFORM THAT QUALIFIES HK EMPLOYERS AS 'CERTIFIED HOUSEHOLD EMPLOYERS' OR 'CERTIFIED HOUSEHOLD SPONSORS'

Summary

The Pain:

Foreign domestic helpers (FDHs) who migrate from lower income countries to Hong Kong are frequently subjected to poor working conditions and treatment by unregulated employers. Systemic discrimination against their ethnicity, gender, and social class strips FDHs from having agency in deciding their own working conditions and living conditions and prevents access to equal opportunities for personal development.

The Solution:

"InspireSeed" will be an organization that provides a web-based platform that qualifies HK employers as "Certified Household Employers" or "Certified Household Sponsors." Certifications accredit employers with knowledge and training on providing good working conditions for their FDH. Certified Household Sponsors will additionally participate in a "InspireFund sponsorship scheme," which will be set up to enrich FDHs with personal development opportunities outside domestic work.

1. Introduction: who are Foreign Domestic Helpers?

In 2020, the Hong Kong (HK) government reported close to 400,000 foreign domestic helpers (FDH) as part of the metropolitan city (Statistics, 2020). This overlooked bulk of society comprises 10% of Hong Kong's (HK) workforce (Leung, 2019), and in 2019 alone contrib-

uted \$12.8 billion HKD to the city's economy, i.e., 3.6% of its GDP (Experian, 2019).

Ninety-eight percent of the FDH workforce come from Philippines and Indonesia, with the remaining migrants originating from Sri Lanka, Nepal, Thailand, and other South Asian countries (Ignacio & Yesnia, 2009). These less developed countries rely heavily on the huge remittances per year they receive from FDH (Ignacio & Yesnia, 2009). Four in five FDHs are healthy women in their twenties to forties who have migrated in search for better wage to support their families at home (Ignacio & Yesnia 2009). Many of these females were required to sacrifice their own education and career aspirations at a very early age to train as an FDH.

FDHs form the backbone of one in eight Hong Kong households in total, and one in three households with children (HELP, 2020). They carry out the bulk of the housework including cooking, cleaning, and grocery shopping; however, a substantial number of them are also tasked with caring duties for children and the elderly (Brookes, 2020). Without FDHs, only 49% of HK's working-age women with children would be able to work, but this increases to 78% with FDHs (Experian, 2019). By enabling so many HK households to earn dual income, the FDH workforce indirectly contributes another \$20.1 billion to Hong Kong's economy, allowing the city to rapidly shape itself into an economic powerhouse (Experian, 2019).

The Standard Employment Contract (2016) is a two-year binding agreement that requires domestic helpers to live-in with their employers. Employers are able to arbitrarily decide salary (minimum \$597USD pm) and whether their FDH will be given food allowance (\$144USD pm) or if they will be given left-overs household meals. The Schedule of Accommodation allows employers to decide where their FDH will sleep. Due to

HK's ongoing housing crisis, many FDHs are left with cramped, un-airconditioned make-shift rooms with little privacy (HELP, 2020). Domestic duties are also up to employer discretion. The contract does not state minimum or maximum working hours, so the standard FDH is on duty for six 24-hour days per week (Brookes, 2020). Job duties can vary from basic household chores to caring for the disabled and performing secretarial tasks assigned by their employer.

2. Defining the problem

2.1 An Unregulated Matching Process and Unprotected FDH Welfare

FDHs' well-being and livelihoods are heavily dictated by their employers. Employers determine their access to healthcare and technology and have full power in deciding when statutory leave will be taken. The live-in rule and lack of clear guidelines for working hours and job descriptions sets blurry boundaries in the employer-employee relationship. The average FDH workers report working hours of 11 hours per day (HELP, 2020) under minimum FDH salary. Based on these figures, an average FDH is heavily underpaid and overworked at \$2.08USD per hour. This can be compared to HK's minimum wage of \$4.85USD per hour.

FDHs find employers via private recruitment agencies, independent job listings online, or through online contacts. First-time migrants usually undergo comprehensive training on how to perform domestic duties and on behaving in a docile and submissive manner (Ignacio & Yesenia, 2009). In contrast to this gruelling screening process, HK employers on the other hand receive little to no training on employer conduct, laws, and regulations. The unregulated matching process places FDHs and employers on profoundly unequal footing. Matches typically take place after a single brief interview during which FDHs are given minimal information on the work setting, conditions, and treatment they will receive. Thus, the existing matching process removes a significant portion of FDHs' autonomy in making decisions regarding their future.

Once the contract is signed, they often become muted and at the mercy of their employers. Early res-

ignation or termination of contract by either party results in a severe "two-week rule" consequence imposed by the HK government, whereby FDHs must return to their home countries to restart immigration processes that take up to months (Employment Contract, 2016). These ramifications silence FDHs into subservience. If lucky enough to be assigned to a "good" employer who is "kind, respectful, and treats them like family" (Anderson, 2016), they will be able to preserve their rights as an employee. If unlucky, however, they will inevitably be stripped of the autonomy to define their own lives, which subjects them to a series of further adversities.

2.2 Discrimination, societal exclusion, and cycle of poverty

Many who have critically examined the FDH situation consider these workers as "modern-day slaves." Despite being indispensable to the city, FDHs are marginalized by HK's society. Much of the FDH stereotype is derived from the historical "Mui-Jai" bondservants that served 'superior' Chinese households in the past. For context, "Mui-Jai" were "bought" by their masters and mistresses and were bound to their households (Constable, 1996). They were characterised by being "undignified, low class, maids" that should be acquiescent and submissive to their masters (Constable 1996). Today, the treatment towards FDH workers incorporates similar undertones of thinking, which includes additional negative perceptions of these "uncultured, promiscuous and immoral foreigners" being "poor and desperate enough to leave their families behind" thus "deserving" of ill-treatment and harsh discipline (Constable, 2007).

Due to their entrenched status quo, the majority of households that employ FDHs provide only their basic needs. Despite their invaluable contributions to the city's prosperity, they are socially and economically excluded as being workers of the city. In recent years, as the FDH population has rapidly increased and has become overqualified for low-skilled work, they face strong resistance from HK criticisms of being "undevoted, lazy, too demanding" (Constable, 1996).

Indonesians are less smart, therefore make better workers (Constable, 2007, p.16)

This inhibition of FDH development perpetuates the cycle of poverty in the home countries of FDHs. With not enough high-paying skilled employment in their home

countries, many tertiary educated females choose to work low-skill, poorly motivating FDH jobs with better pay. These external factors, which restrict their freedom for personal development, results in an “adaptive preference” phenomenon, in which FDHs adjust to their inferior status and also believe that activities that “engage in productive thoughts, recreational, and/or educational” are unattainable (Nussbaum, 2003). FDHs are prone to acquiesce to their fate as modern-day servants. Efforts to challenge their fate would be considered futile and too unconventional (The Helper, 2018).

Eventually, with the cycle of skill de-improvement that prevents FDH workers from honing valuable skills that they can return home to contribute, the “Nanny Chain” persists generations onwards (GRUSKY & Hoschchild, 2019)

3. Proposal

3.1 Project description

I propose to establish a not-for-profit organization called InspireSeed. This organization will be based on an online platform and will provide the two main services:

- Workshops to train and educate HK households about employer conduct, which then accredits employers as “Certified Household Employers” upon completion.
- An InspireFund sponsorship scheme whereby “Certified Household Sponsors” can opt-in to sponsor their FDH in an extra-curricular skill, interest, or activity of choice for a given number of hours outside employed work.

InspireSeed's flowchart of services is shown in Figure 1. HK employers, particularly those looking for new FDHs, will be advertised options to register with InspireSeed online to become Certified Household Employers. Registration requires completion of carefully designed online workshops that educate employers on the following:

- Legal duties of an employer as listed on the Standard Employment Contract
- Tips and advice on providing safe, positive, mo-

tivating work environments.

This certificate will verify employer knowledge of their obligations, duties, and expectations. With the Certified Household Employer status incorporated into employer profiles during the FDH matching process, FDHs will be able to make more informed choices of their employer standard when selecting. This aims to provide FDHs reassurance that their work environment will be regulated and fulfil a minimum satisfactory standard.

Standout employers will also be able to opt in to an InspireFund Sponsorship Scheme which will upgrade their status to Certified Household Sponsor. To become a sponsor, they agree to sponsor their FDH pursuing a chosen skill, hobby, or interest of choice (e.g. financial literacy, photography courses) throughout the duration of the employment contract. Depending on both the requirements of the chosen activity that the FDH requests through a sponsorship application, and the limits of funds and hours that employers choose to offer, InspireSeed will set out a fixed contract that binds both employers and FDHs in the scheme. For example, a sponsorship agreement may include employers depositing a monthly minimum of \$100 HKD into an “InspireFund account” that FDHs can access solely to fund their activity, e.g., to borrow a DSLR camera from InspireSeed for free evening photography courses given by a university student volunteer.

The InspireFund sponsorship scheme will be established with several regulations. FDHs will be required to submit a short application prior to fund access which defines their activity, their objectives, and the plan for the use of funds. FDHs and employers will also need to provide six-monthly quick reports of their progress on the InspireFund account. Upon achieving milestones set by the InspireSeed team during sponsorship approval, FDHs will be able to develop their portfolios and showcase their skill attainment. Employer profile accounts will also mutually benefit from FDH profile progression, as their ratings will increase. Both parties will be offered redeemable rewards, e.g., gift vouchers for ParknShop supermarket as incentives to progress. Ultimately, profile progression increases both FDH worker employability and HK employer attractiveness for the future. InspireSeed will directly offer courses and activities for FDHs to select. FDHs will also be able to choose activities that they have found externally, which

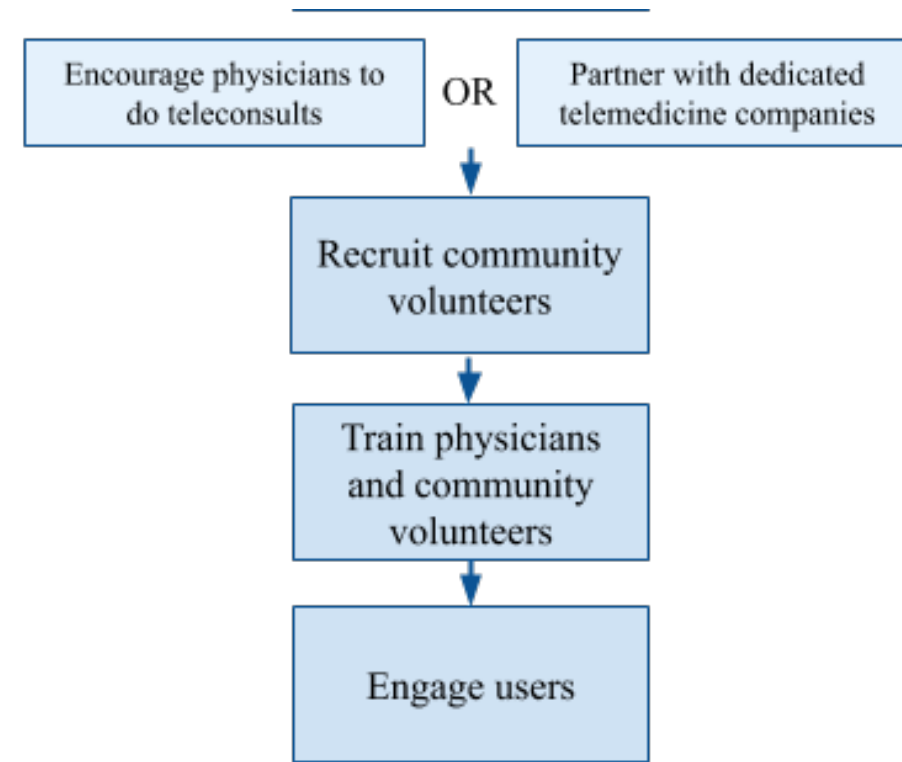


Figure 1. InspireSeed Flowchart of Services

they can propose in their applications. In addition, “FDH family access accounts” will be available. FDHs will be able to register up to two “dependent” accounts for their children to be able access a limited range of online courses that the FDH subscribes to, which add no additional costs. This allows the children of FDHs to participate in the InspireFund sponsorship scheme alongside their mothers who are overseas.

3.2 Project Mission

InspireSeed ultimately seeks to deconstruct HK so-

ciety's prejudiced perception and treatment of FDHs workers as economic entities rather than as equal members of the working population. InspireSeed will address FDH welfare using a three-tiered approach:

3 Key Objectives

1. Enforcing clearer regulation of employer conduct and work environments
2. Provide a legitimate system for FDHs to make informed choices when choosing work
3. Enriching FDH with new skills and interests

outside of “helper” role

This initiative aims to challenge intrinsic beliefs that have been accepted by both HK citizens and many FDH workers themselves, which define FDHs as inferior “servants” rather than “employees.” To do so, InspireSeed focuses on harboring mutualistic and harmonious relationships between employers and their FDHs by giving opportunities for both parties to benefit from FDH capability development. It aims to highlight to both migrant workers and HK citizens that FDHs equally deserve to have personal attainment goals outside their employment because they are “more than just maids” (The Helper, 2018).

InspireSeed hopes that by fulfilling this mission, it can contribute to diminishing the enormous class disparities in HK as well as breaking the cycle of poverty in the less developed countries that FDH workers call home. By instilling a more inspired, hopeful mindset, InspireSeed has the potential to bring social and economic improvement within and beyond the limits of Hong Kong.

4. Landscape Review

4.1 Landscape Overview

Reviewing the FDH service provision landscape as it currently stands demonstrates that it can be divided into three parts according to the three key objectives: FDH welfare rights; fair recruitment practices; FDH personal enrichment. A comprehensive landscape review can be found in Supplementary Figure 1.

FDH welfare rights

The majority of initiatives related to FDH service provision in HK fall into this category. They are aligned with the International Labour Organization 2012 recommendations for “decent work” conditions for migrant domestic workers around the world. Example organizations are the RESPECT network, Mission for Migrant Worker (MfMW), Asian Migrant Centre, and HELP for domestic workers. They campaign primarily against larger institutions such as government bodies or recruitment agencies to reform the legal framework. They engage

with FDH basic human rights, preventing exploitation, and improving FDH crisis support. MfMW and Pathfinders in particular provide necessary physical support, i.e., shelter and food to vulnerable FDHs.

Fair recruitment practices

Recently established online based agencies strive for fair recruitment practices, such as HelperChoice and Fair Employment Foundation. These tackle the pre-existing, aforementioned largely unregulated, privatized businesses that overcharge hidden, illegal costs to the FDH and employers. However, these are relatively new and stand in the minority of the overall 1,400 FDH recruitment agencies in HK.

HelperChoice uses technology recruitment services to remove FDH fees entirely. This removes the “debt bondage” that often holds FDHs hostage to their contract. HelperChoice also includes basic employer profiles that list job duties, housing conditions etc., which FDHs can review before contacting potential employees.

The Fair Employment Foundation additionally has introduced a “Fair Hiring Pledge” targeted to influential large companies like KPMG or Barclays. By signing, companies pledge to educate their employees about fair hiring and FDH employer conduct.

FDH enrichment

The final category of services currently provided are those related to FDH personal enrichment. The largest FDH empowerment organization in HK is ENRICH, which focuses on improving FDH financial literacy. Workshops (with minimal fees) are held on how to manage finances strategically to avoid debt traps. ENRICH and HelperChoice have partnered to include these workshops at a discounted price in recruitment packages that employers pay for. Employers can also choose to sponsor their FDHs to attend a single or a course of workshops at a higher price (\$500 / \$2000 HKD). Another FDH enrichment platform is EmpowerU that allows community members to sponsor FDH education scholarships, i.e., ‘\$500HKD per FDH’. This platform collaborates with The University of Hong Kong to provide accredited courses in literature, arts, culture,

and politics for FDHs; they are led by academic staff and university students.

The landscape review in Figure S1 demonstrates many opportunities for InspireSeed to lend strength from, and in turn benefit, these sibling initiatives.

Firstly, InspireSeed can align with FDH welfare rights organizations to achieve its key objectives 1 and 2 (Section 3.2). Relevant campaign content, proposed legal reform and policy changes can be extracted to construct InspireSeed’s framework for its employer workshops and certification requirements. Likewise, these organizations can use InspireSeed’s employer certification services as part of their campaigns and to shape their policy reform. With their reach to government bodies, InspireSeed can push to implement employer certification into the standard FDH contract in the long term. Moreover, workers in these organizations can be recruited to participate in InspireSeed’s team dedicated to regulating and enforcing work condition standards at the individual household level.

Fair recruitment platforms, which have direct access to both FDH and HK employers, are key partners to target for collaboration. InspireSeed will adopt similar market strategies used by ENRICH to include its services into these platform’s hiring packages. The aim will be to have InspireSeed certifications displayed on employer profiles, which will allow FDHs to filter specifically for certified or employer sponsors should they desire. It is worth noting that InspireSeed will specifically reach out to Fair Employment Foundation for potential partnership with their “Fair Hiring Pledge.” InspireSeed could amalgamate this or a similar pledge into its employer registrations as part of employer certification.

InspireSeed can partner directly with specific courses and programs, e.g., UNSUNG Heroes, The Family Zone: CPR training courses to fulfil key objective 3. InspireSeed can be used by these partners as a marketing platform in exchange for access to their products and services.

Figure S1 demonstrates a dearth of initiatives that provide “Regulation of Working Conditions”. Existing recruitment agencies, which such services would naturally fall under, do not adequately follow up on the well-being of their FDHs. Thus FDHs are left vulnerable to exploitation with nobody held accountable. InspireSeed seeks to fill this need through its employer workshop program and the certification levels, as well as providing yearly feedback opportunities and check-in surveys for both FDHs and employers (Figure 1). This provides a safe and open environment for FDHs to raise issues that will be dealt with internally among InspireSeed, the FDH, and the Employer.

4.3 InspireSeed’s Niche

InspireSeed offers an unique platform for both HK employers and their FDH workers to access services that incorporate all three product and service divisions. There are currently no initiatives that use market-based solutions to support all three of the key objectives. With its employer certification services that distinguish one employer from another, InspireSeed will be pioneering the concept of giving FDHs informed choices during employment matching. By offering profile benefits to both employers and FDHs, InspireSeed will also be one of the first FDH welfare initiatives to target the relationship between employers and FDHs rather than individual parties.

Unlike any other initiative in HK, InspireSeed’s three-in-one-stop approach will fulfill not only FDHs physiological needs but also multiple tiers of Maslow’s hierarchy (Figure S.2), uniquely driven by a “capability rather than a rights” approach (Nussbaum, 2003). These models are discussed in Section 5.2. InspireSeed will singly offer welfare services that “re-frame rights in the context of capability” so FDHs can “reclaim rights for their intended and valued quality of life” (Nussbaum, 2003).

Additionally, with the introduction of low-cost “family access accounts,” InspireSeed will be the first initiative that aims to offer enrichment opportunities not only to the FDH but also to her children back at home. This function aims to build relationships between FDH mothers and children, even when they are countries apart.

ID	Market			Product			SWOTT					
	Mission	Target	Reach	Product/ Service(s)	\$\$ (HKD)	Partners	Strengths	PA	ES	PD	WC	Opportunities
Pathfinders HK	Protect & empower FDH mothers for brighter future	Migrant mother + children in HK	HK	Shelter, medical care, food subsidies, health education, legal support, child protection	Free	-	Sole HK provider, filling market need, home reintegration services, employer engagement					Joint fundraising event, mutual promotion, collaboration for providing health related courses e.g. first aid training
HK FDH Health Initiative	Improving FDH health education	FDHs	HK	Women's health screening; FDH health fair, one-off events	Free	Pro-bono physicians, medical students	No cost for FDH, access to all FDH					Joint fundraising, recruitment for health course providers, access to university students
Enrich HK	Transforming FDH lives with financial empowerment	FDHs	HK	Financial literacy + empowerment workshop programme, app service for finance planning, 1-2-1 mentor	1 session/ full program: self funded FDH \$30/\$150; employer sponsor \$500; \$2000	Helper-Choice recruitment package	Well-established reach, financially focused, app service, sponsorship					Joint fundraising + promotion, collaboration on FDH workshops on financial literacy
RESPECT network	Campaigning for rights of FDH	Government/ institutions	EU	Recognizing FDH work as proper work, comprehensive campaign against legal framework	Free	Campaign groups around EU, ILO	Analysis of flaws in FDH contract, strong campaign voice					Use their key recommendation for ILO convention on domestic work to frame employer/ work condition regulations
Helper-Choice	Eradicating modern slavery & exploitation of FDH	FDHs + employers	HK	Providing fair recruitment & hiring services online	No hidden fees; \$350/2wk for employer	Enrich subscription, Axa helper insurance, Yoopies	Recognised by ILO, other events e.g. 'Be a Journalist' competition					Incorporation of InspireSeed certification status into employer profile, InspireSeed subscription
Mission for Migrant Workers	Building caring and inclusive HK society	FDHs	HK	Legal case assistance, outreach service, prison/ hospital visits, shelter and food, professional referral	Free	HK council of social service	Broad services, strong campaign voice					Joint fundraising event, mutual promotion, collaboration on education courses
Fair Employment Foundation	Fixing the recruitment system of FDH with market-based solutions	Employers of large companies and institutions, FDH	HK, Philippines	Fair employment agency, Fair Hiring Pledge, Fair training center in Philippines, fair hiring & management guide	Free	Macquarie Group Foundation	21 companies signed pledge e.g. Barclays, KPMG, 2200+ educated at fair hiring sessions, existing target audience, comprehensive services					Access to established target market, collaboration with the fair hiring & management guide to create employer workshops for certification, guide for employers, fair HIRING PLEDGE!!
Asian migrant center	Promoting human rights, dignity and empowerment of FDH	Asian countries	HK	Research on migration issues, training & developing FDH welfare org., monitor policies, stakeholder conferences	Free	-	Conducting research on issues of migrant workers					Access to research publications to guide InspireSeed regulations, workshops etc. using evidence-based approach
HELP for domestic workers	Empowerment through advice, assistance, education + support	FDH	HK	Education on rights, legal support, advocacy, liaison with government agencies e.g. police, immigration	Free	-	Outreach to government bodies, resourceful legal team					Legal consult, provision of courses related to law and human rights
EmpowerU	Connect FDH with opportunities from top education partners	FDH	HK	Education of FDH on well-being and human rights in addition to literature, arts, culture, preparation for career beyond domestic work	Sponsorship of 6-month scholarship: \$500 per FDH, \$2500 for 5 FDH \$5000 for 10 FDH	-	University academic staff, university students, volunteers, University of HK					Collaboration to create InspireSeed courses, Incorporation of courses into InspireSeed packages

Figure S1.
Key:
PA – personal attainment services;
ES – Employer sponsorship services;
PD – profile development services
WC – work condition regulation services;
red = does not provide;
orange = partially provides,
green = completely provides

5. Proposal Details

5.1 Implementation Pathway

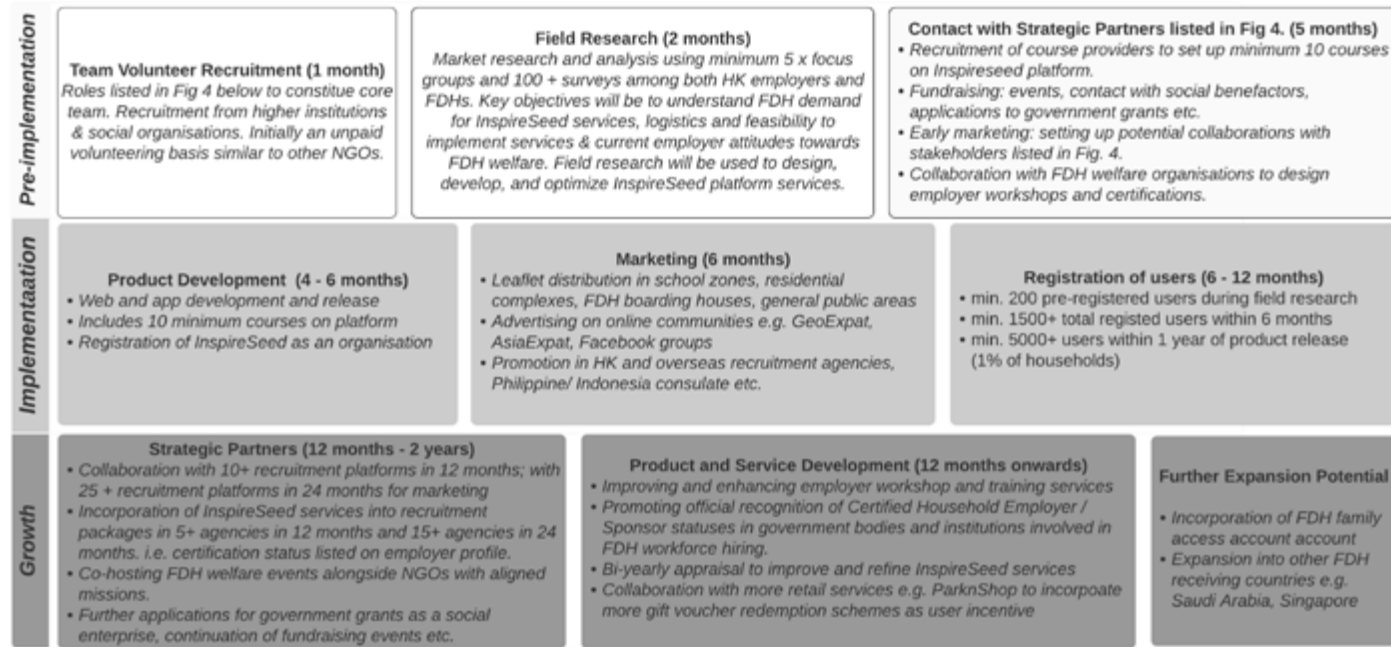


Figure 2. InspireSeed Implementation – complete establishment in 24 months divided into pre-implementation, implementation, and growth phases

5.2 Team and Strategic partners

Figure 3. Team and strategic partners
 This figure displays core team roles in the inner ring and strategic partners in outer ring Brown - product/ service providers; Green – market outreach; Yellow – other stakeholders.



5.3 10-year Scale

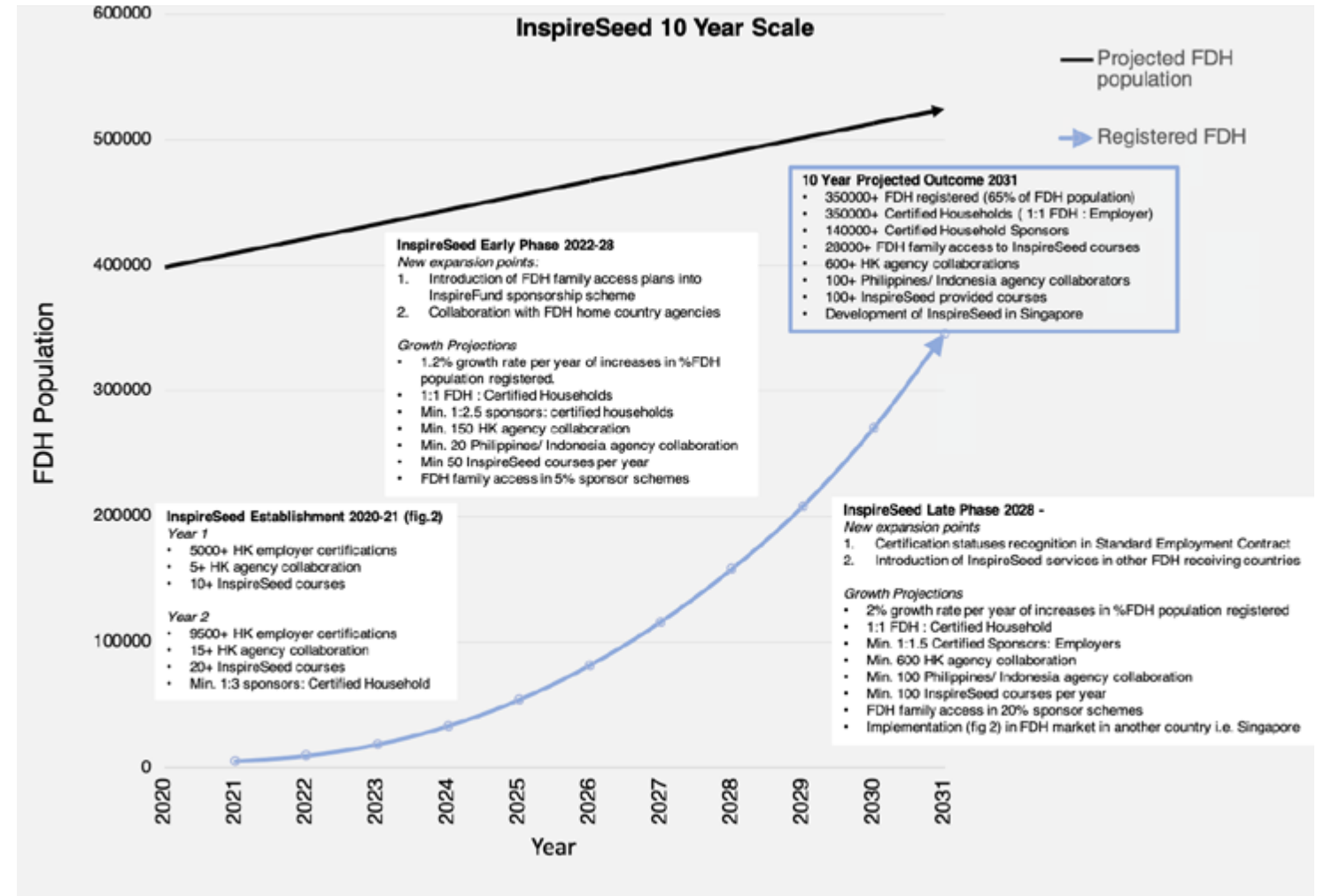


Figure 3. Team and strategic partners
 This figure displays core team roles in the inner ring and strategic partners in outer ring Brown - product/ service providers; Green – market outreach; Yellow – other stakeholders.

5.4 Outcome Measurement and Budget

Objective	Measurable Outcomes	Monitoring
Enforcing clearer regulation of employer conduct and work environments	<ul style="list-style-type: none"> No. of certified households Ratio of certified household : sponsors Average employer score of from registration workshop Assessments Follow up FDH/ employer satisfaction surveys No. raised complaints by FDH to InspireSeed Rate of employer profile milestone achieved 	6 monthly
Providing legitimate system for FDH to make informed choices of employer	<ul style="list-style-type: none"> No. website visits per week Average length of stay on website No. employer profile views per week Recruitment agency ratio of matched certified : non-certified households Follow up FDH satisfaction surveys (yearly) No. of contract renewal/ termination per yr within InspireSeed households 	1 monthly
Enriching FDH with skills and interests outside their “helper” role	<ul style="list-style-type: none"> No. of active InspireFund scheme No. course completion Average no. course completion per FDH Rate of milestone achieved % active FDH family access accounts 	6 monthly
Unlocking secondary impact on wider HK society	<ul style="list-style-type: none"> User satisfaction surveys Recorded employment statistics: No. of contract renewal/ termination per yr No. of recruitment agency collaborations Recruitment agency ratio of matched certified : non-certified households No. of website views per year 	5 yearly

This table illustrates the key objectives with addition to a wider secondary impact objective, and the methods of measuring outcomes over the 10 year development of InspireSeed. Monitoring intervals differ for each objective. Note that key results will be listed in further detail once project is implemented. NB: Budget Found in Supplementary Figure S2.

5.5 Roadblocks and Bottlenecks

InspireSeed's natural target market will be employers who are looking to hire new FDHs and vice versa. Success relies heavily on partnering with recruitment agencies to gain access their customer databases. However, many unregulated, exploitative agencies have little incentive to regulate their activity. Thus a major challenge will be to grow these partnerships to reach scale.

To overcome this challenge, InspireSeed will start by focusing on developing mutualistic partnerships with fair employment agencies listed (Figure S1). Similar to the collaboration between ENRICH and HelperChoice, InspireSeed aims to establish its certifications and sponsorship schemes in fair recruitment packages. Recognition of InspireSeed will attract more FDHs towards certified employers. Likewise, competition between employers for “better” FDHs will incentivize them to register and become certified. This dynamic will create a positive feedback effect that will quickly grow InspireSeed. Economically motivated HK recruitment agencies will be then become incentivized by InspireSeed’s ability to attract both FDHs and employers, making them likely to partner with its services.

Another potential challenge may be incentivizing registered employers to upgrade their status from being a Certified Household Employer to a Certified Household Sponsor. It is likely that many will be unwilling to make additional financial commitments for their FDH to pursue activities unrelated to their domestic work. A solution to widen this bottleneck will be initially to minimize the employer’s monetary commitment in participating in InspireFund sponsorship schemes. A major barrier preventing FDHs from pursuing extra-curricular activity is their live-in, unstructured working hour arrangements. FDHs often take long and informal breaks once household duties are finished. By shifting the focus of InspireFund contracts towards an agreement of time provision rather than money provision, employers may be much more willing to support their FDH in pursuing extra-curricular activities during their unutilized time.

6. Narrative

6.1 Rationale, motivations, insights

The narrative of the InspireSeed proposal ultimately lies within the hundred thousands of untold stories of FDHs. Too many young intelligent women, who take leaps of faith when migrating to HK as FDHs, have been have been worn out by years of a flawed and discriminatory social system; too many have become disenfranchised and have lost their spark for life; too many have powerlessly conceded to their “fate” as a domestic helper. There is an echo of social injustice, neglect, and disempowerment from HK’s beloved FDH population that has been ignored for too long.

InspireSeed will be created to challenge these societal norms head on. Although there has been public attention drawn towards extreme FDH abuse cases such as that of Erwiana Sulinstyaningsih 2018 and Baby Jane Allas 2019, there remains a large invisible population of FDHs which suffers daily injustices that remain un-championed. HK is expected to undergo rapid political and economic movements in the next few decades, and the projected FDH population is expected to rise to 600,000 by 2047 (Siu, 2018). There is a worthwhile opportunity here to begin reforming the perception of FDHs from being passive victims to empowered heroes.

6.2 Why will this project be successful

Human motivation is represented by Maslow's Hierarchy of Needs (Figure S.3). It suggests that personal development begins with fulfilling basic physiological needs; this then acts as a foundation for higher levels, culminating in self-actualisation.

Maslow adds, however, that most behaviors are motivated by multiple levels simultaneously (Mcleod, 2020). Sen complements this with the capability approach that argues that social justice is measured by the freedom for people to choose the “functioning they value” (Nussbaum, 2003) (Figure S.4).

Supplementary Figure S3. Maslow’s Hierarchy of Needs (Mcleod, 2020)



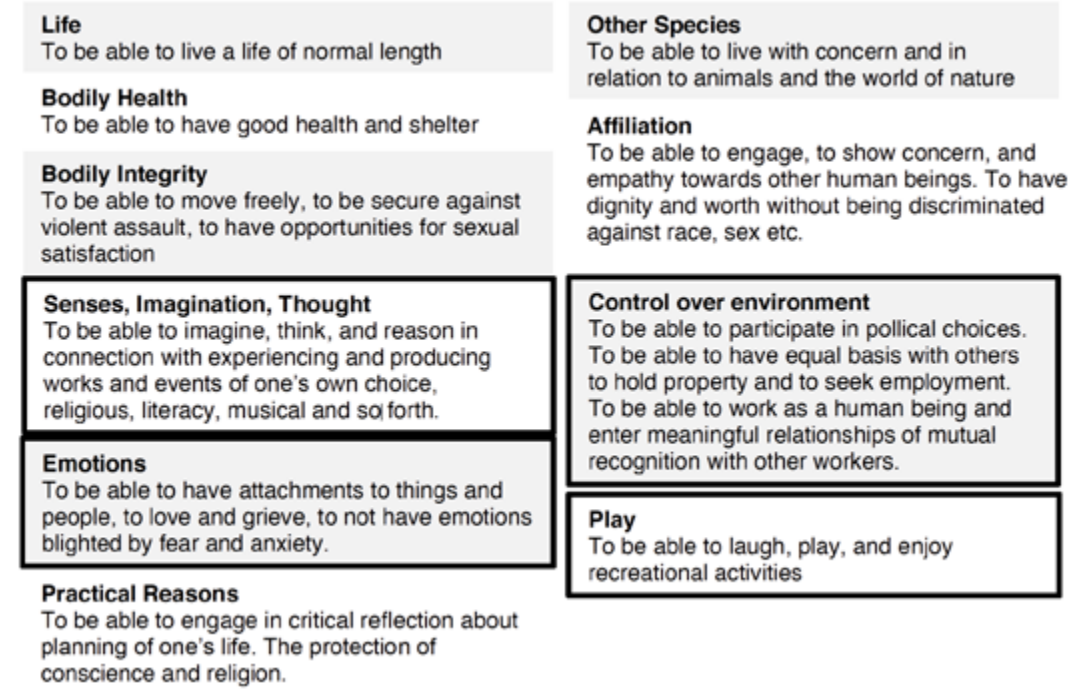
InspireSeed uses both these behavioral and psychological models to guide the design and implementation of its products and services. The models both demonstrate the need that InspireSeed aims to meet, and also act as the guide towards the proposed method to attain InspireSeed’s mission: to build harmonious employer-FDH relationships and provide opportunities to enrich FDH personal development.

6.3 Impact

With 400,000 FDHs currently in HK, and an equivalent number of households, the InspireSeed initiative has the potential to reach millions of lives within 10 years. The harmonious co-operation between HK citizens and migrant FDH workers will bridge connections between a diversity of populations from different ethnic backgrounds and economic classes and also between developed and less developed countries. A project requires only a change in mindset within a small population to unlock its extraordinary potential for further economic and social revitalization.

6.4 Ethical discussions

The InspireFund sponsorship scheme seeks to provide grants to FDHs solely for purposes of personal enrichment and skill development. InspireSeed must regulate the uses of these funds strictly to ensure proper use. Funds will be regularly tracked and held in InspireFund accounts. FDHs must submit detailed applications describing the intended use of funds prior to sponsorship participation. Under no circumstances should funds in this account be accessed by either employers or FDHs without InspireSeed approval.



Supplementary Figure S4. Ten Requirements of the Capability Approach (Nussbaum, 2003)

NB: Bold highlighted requirements illustrate the targeted capability needs that InspireSeed seeks to directly provide with its services.

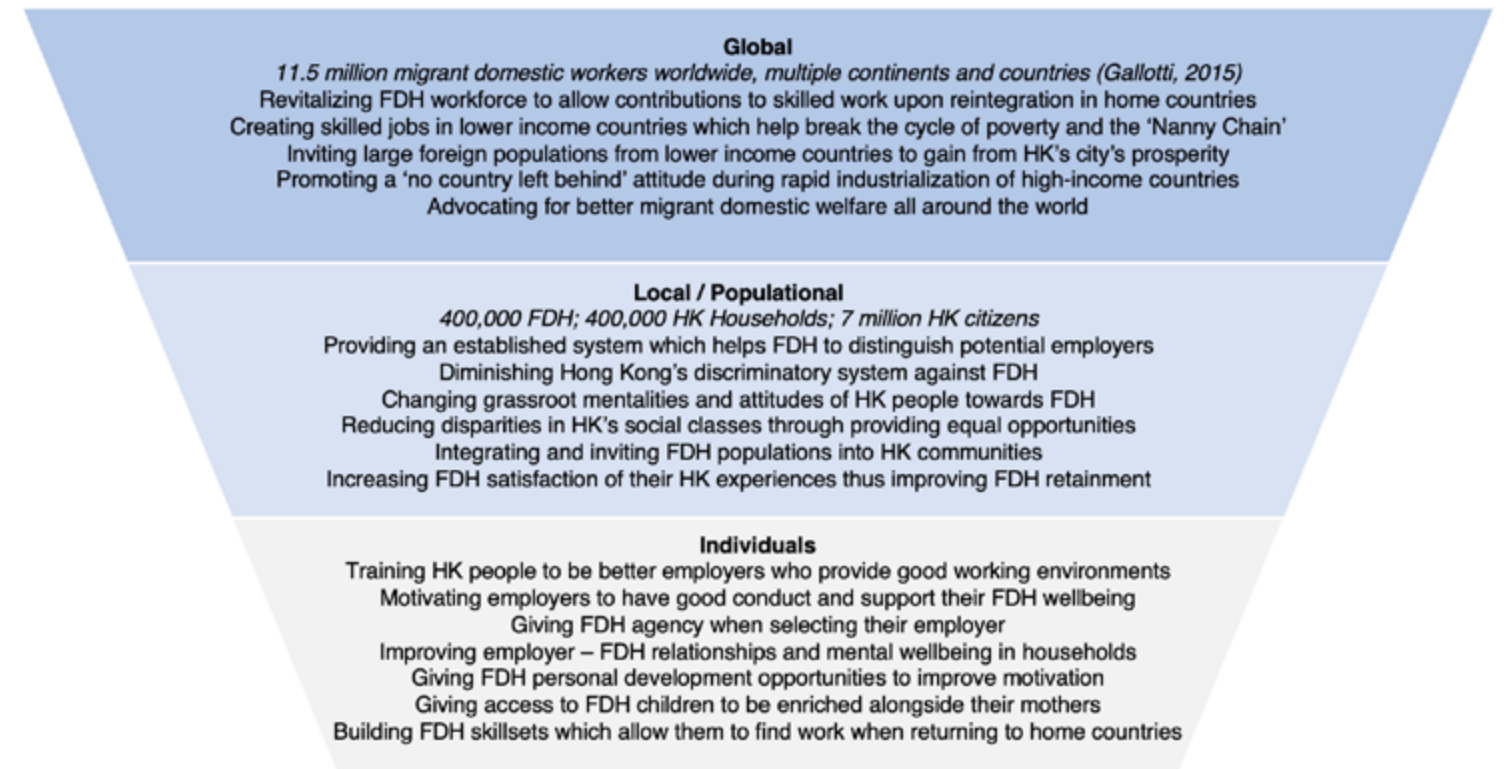


Figure 6. Individual, populational, global impacts of InspireSeed

Author's Note

I grew up having a “helper” who nurtured me like her own. She would often watch me teary-eyed because of how much I reminded her of her daughter at home. She would read all my books in secret after I was done with them and she would borrow my guitar in her free time to play music in her room behind the kitchen because she had always wanted to become a musician. As an adolescent, I felt uncomfortable every single time she, along with any other FDH I came across in public, shyly addressed me as “ma’am. There was something so profoundly incorrect about this, yet what shocked me more was that no one else I knew ever batted an eyelash.

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Supplementary Figure S2. Provisional Template Budget for 2021-2023 InspireSeed

	2021 (\$kUSD)	2022 (\$kUSD)	2023 (\$kUSD)	Assumptions
INCOME				
Project income	25.0	20.0	20.0	
Government grants	5.0	10.0	15.0	Increase as prove concept and impact
General donations	5.0	15.0	20.0	Increase as prove concept and impact
Fundraising events	3.0	10.0	15.0	Increase as prove concept and impact
Membership			10.0	Start applying \$5USD membership for households once have sufficient members to sustain
Other	1.0	1.0	1.0	
Total Income	39.0	56.0	81.0	
EXPENDITURE				
Operating expenditure				
Staff salaries and wages	0.0	0.0	0.0	Increase from 1 to 2.5 staff
Insurance	0.0	0.0	0.0	Grows with staff
Materials - excl. marketing & fundraising	1.0	1.0	1.0	Equipment for staff
Marketing - to households and FDHs	15.0	20.0	20.0	Grow user base - households and FDHs
General admin. expenses	0.0	0.0	0.0	Grows with staff (internet, phone, etc.)
Sub-total: Operating expenditure	16.0	21.0	21.0	
Fundraising expenditure				
Marketing - fundraising	1.0	3.0	5.0	Grows at similar rate to fundraising
Materials - fundraising	1.0	1.5	3.0	Grows at similar rate to fundraising
Sub-total: Fundraising expenditure	2.0	4.5	8.0	
Total Expenditure	18.0	25.5	29.0	
Income over expenditure within year	21.0	30.5	52.0	
Surplus carried from prev. year	0.0	21.0	51.5	
Balance to be carried over	21.0	51.5	103.5	

About the Author

Glenda Xu

Glenda Xu is an undergraduate student in the Medicine MBBS program at the University College of London pursuing both a Bachelor of Science (BSc) and Bachelor of Medicine and Bachelor of Surgery (MBBS). Her goal is to connect science and global leadership to pioneer solutions in health economics, politics, and translational medicine.



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PROPOSAL

GUARDIAN ANGEL:

A gender-based violence app centered in South Africa

Authored by:

Lerato Motaung

Nationality: South African

University of Cape Town

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[Listen to Audio Intro](#)



SOUTH AFRICA HAS ONE OF THE HIGHEST RATES OF GENDER-BASED VIOLENCE IN THE WORLD, WITH AN ESTIMATED 1 IN 5 WOMEN RECORDED TO HAVE BEEN SUBJECTED TO PHYSICAL VIOLENCE AT SOME POINT IN THEIR LIVES

Guardian Angel App

Background: A Culture of Violence

South Africa has one of the highest rates of gender-based violence (GBV) in the world, with an estimated one in five women recorded to have been subjected to physical violence at some point in their lives. However, these are just the numbers that we know of, numbers that have been recorded because cases were reported. The frightening reality is that for a lot of women in this country, GBV is a silent nightmare they are too ashamed to talk about. Couple that with a justice system that only seems to frustrate any efforts at breaking the cycle of shame and silence, women in this country are dying in numbers, and countless men are getting away with murder.

In 2018, following the murder of Karabo Mokoena at the hands of her partner (Maughen, 2018), women across the country took to the streets to protest the high rates of GBV in the country. Under the banner of an online movement called #TheTotalShutdown, women demanded, amongst other things, “the provision of psycho-social support to victims and survivors of GBVAW including a publication of a referral list of the places where the services will be provided” (Moosa, 2018).

Speaking at a gender-based violence and femicide summit, President Cyril Ramaphosa acknowledged that while GBV is not unique to South Africa, our average is five times higher than the global average of 2.6 per 100,000 (Ramaphosa, 2018). It is estimated that an

average of three women per day are killed by their partners, with some sources estimating that number to be as high as six women a day. Data also shows that more than half (57.1%) of South Africa’s murders are a result of intimate partner violence (Artz, 2019). Additionally, those numbers reflect that women are over-represented as victims of GBV, whereas men are the main perpetrators (CSV, 2016).

Like many complex sociological problems, the causes of GBV in South Africa can be attributed to a myriad of intersecting factors. However, at the core of GBV are the inherent power imbalances that are created by a patriarchal society.

GBV under Lockdown

As with many countries across the globe, the COVID-19 pandemic interrupted the normal socio-economic functions of South Africa. On the 15th of March, 2020, President Cyril Ramaphosa declared a national state of disaster following a spike of COVID-19 infections in the country. This declaration triggered, amongst other things, an immediate restriction on travel and the closure of schools. Later in the month, the president announced a national lockdown.

While the lockdown served to flatten the curve of the virus until such a point that the government felt it was ready to deal with an expected surge in infections, it also halted the economic activities of the country. There was one other dangerous effect of the lockdown, and that was the spike in GBV rates.

Activists across the world reported a dramatic rise in incidences of domestic violence during lockdown (Graham-Harrison et al, 2020). What made matters worse were the added restrictions on movement, which meant that many victims could not access the usual walk-in centers that were available before lockdown restrictions.

There are conflicting reports about the rate of incidences of GBV in South Africa. Some sources report that South Africa exhibited the opposite trend in terms of GBV during lockdown. Others report a downward trend in incidences of domestic violence (Gould, 2020), with activists suggesting that this might be due to the ban on the sale of alcohol during the one the highest levels of lockdown, thus drawing a link between alcohol abuse and GBV. However, other reports suggest that there was a surge in GBV during hard lockdown, with victims being forced to remain at home with their perpetrators (Shoba, 2020). Numbers reflect that common assault against women was up by 0.6% (Shoba, 2020).

Nevertheless, fears that there would be a spike in cases prompted the department of social development and NGOs to find ways to work around lockdown regulations. This included setting up a national hotline for victims of GBV, as well as offering online services that were dedicated to counselling services.

However, also fearing that the lockdown might have adverse effects on victims of GBV, many individuals took to social media to personally avail themselves to victims of GBV who did not feel safe in their immediate spaces.

While these initiatives mitigated the threat of isolation, for me they highlighted a gap that needed to be filled in the fight against GBV. The resources, albeit strained, were there, but they were scattered. Moreover, this situation exposed a gap that already existed, and that was a single source where victims could find all the information and help while being as discreet as possible.

There are currently several resources that are dedicated to GBV victims. Most notably is the GBV command center with a 24-hour, toll-free hotline that victims can call in moments of distress (Government of South Africa, 2018). Another notable resource is the Namola (safety) mobile application that, through its services, dispatches emergency or private services to

your location in moments of distress. Namola has done a great job of filling the gap between an often slow-to-respond police service and victims of GBV in distress. According to its own report, 10% of the crimes reported through the app monthly are domestic violence-related (Maswaneng, 2020). Other resources include rape crisis hotlines and shelters.

Resources are still scattered, and in moments of distress, it is sometimes difficult to make a call, especially when the perpetrator is in close proximity. Moreover, many resources, including the Namola safety app, require users to have data or WiFi to gain access to full functionality. Namola is also available in only one language: English. In a country with eleven official languages, it is important that access to resources be available in multiple languages.

Guardian Angel Mobile App Features

The solution I am proposing to fill this gap is a mobile application that has the potential to address many GBV-related issues.

This is a repository, in the form of a zero-rated app, where all organizations and individuals that work with assisting GBV victims can be found and contacted. The app will have an alert/SOS function where victims can leave their details such as location, the number of children (if any), the type of assistance they require, as well as the most convenient and safest times and ways they can be contacted. Victims would need only to leave that information, and nearby organizations will be targeted and alerted to their situation. This app will include a list and location of these organizations and individuals across the country, as well as create a profile for victims so that they can be tracked and assisted through their journeys.

The purpose of this app is to pool all the scattered resources into one application. This will entail partnering with organizations that work with GBV victims to streamline access and availability. For instance, partnering with Namola and the rape crisis center would mean that victims are immediately assisted by dispatching emergency services, and the organizations that work with rape crisis victims are alerted to the case at hand.

Fundraising

One of the difficult hurdles most victims must face when escaping domestic violence situations is the very real possibility of financial precarity they will invariably face as a result of leaving the place of violence. According to the UN, due to skewed power dynamics that result from gender discrimination, women have fewer resources at their disposal that would empower them to escape abusive situations. This also makes it difficult for them to seek justice because the person that is responsible for their livelihood is also most likely their abuser. The consequences are that when it comes to weighing their options, women choose to stay in abusive situations because they have no other means of keeping themselves, and, too often, their children, from the jaws of hunger.

While organizations do a lot to help victims of GBV mitigate the economic consequences of leaving abusive situations, their pool of resources is severely strained. By featuring a fundraising function, where members of the public can directly contribute to ongoing needs and emergencies, the app will be able to assist organizations that struggle to keep up with the resource requirements of helping victims escape from violent situations. This functionality can also include targeted fundraising that is not just monetary in value, but also includes donations of food, clothing, sanitary products, etc.

Psychological Help and Legal Services

It is common that victims of abuse live with psychological trauma during and long after they leave violent situations. The psychological help and legal services functionality of the app can be of assistance in various ways. Firstly, it will help potential victims identify the early signs of abuse so that they can leave sooner. Secondly, it can empower victims who are already aware of their situation to find the psychological strength to leave their violent situations. Lastly, it can provide extended counselling service to victims who have already left their violent situations but must deal with the resulting trauma. Victims can also use this function to form virtual support groups to empower one another through the process of recovery.

In addition, through this app, victims and survivors

could be directed to legal professionals who would assist them should they need legal assistance.

Zero-rated

Other than boasting one the highest rates of GBV in the world, South Africa is also one of the most economically unequal countries in the world. According to the World Bank, 10% of the population owns 70% of the resources, and owing to its apartheid legacy, this inequality is stratified across racial lines (Baker, 2019). Furthermore, according to the government's statistics, the bottom 60% of households depend more on social grants than the labor market. Most disturbingly, like most unequal societies, the effects of inequality affect more women than they do men.

As such, it is difficult for poor South Africans to afford the high data prices that are available from network providers. It is reported that South Africa has the second most expensive data costs among BRICS countries (van Zyl, 2016). This digital divide, according to an Amandla.Mobi¹ online petition, excludes a majority of South Africans from accessing online resources and exacerbates inequality.

As mentioned earlier, while the Namola app fills a necessary gap between state emergency services and the needs of victims, its full functionality can only be accessed when one has data or has access to WiFi.

Making the app zero-rated, meaning that it will be free across all network providers, allows even the poorest South African to access and use without needing to have data or WiFi. This will be especially useful for victims who rely on their abusers to get data. In circumstances where the abuser restricts the victims' contact with family and friends by restricting their means of communication, a zero-rated app will help them seek and access help without relying on their abuser.

Language and Accessibility

South Africa has eleven official languages, and while English is predominately used as a means of communication, many South Africans are not fluent or literate in the language. Making the app available in most, if not all, official languages will allow victims who would otherwise be excluded by language to access the app in a

language they are fluent and comfortable in. This will also ensure effective communication between organizations and victims, especially in moments of distress where victims shouldn't be strained to communicate their distress in a language foreign to them.

Accountability and Oversight

One of the obstacles in the fight against GBV is the role of police officers. In many instances of GBV—domestic violence, in particular—it has been reported that police officers are unwilling to assist victims. Officers cite, amongst other things, the belief that domestic violence is a matter between two partners. The negative and indifferent attitude the police have towards victims of domestic violence often results in victims dropping cases, or not pursuing justice at all.

One of the demands that came from the #TheTotalShutDown movement was a publication of a list of police stations and police officers who have been reported for failing to provide adequate services to survivors of GBV (The Total Shutdown, 2018).

The app will serve as an unofficial oversight measure where police officers and police stations are monitored by partner organizations in terms of how they handle cases of GBV.

Project Description

What would make this idea real?

An idea like this can only be realized if there is adequate interest in it, and if that interest results in funding. To make the idea real would entail getting buy-in from all potential partners and stakeholders. However, most importantly, all stakeholders and partners should want to be able to work together. The very purpose of the idea requires that various stakeholders and/or partners, often with conflicting interests, work together to realize the goal of making the lives of GBV victims and survivors easier.

Once interest is generated, then the next task would be to find developers that would walk us through the technical feasibility of such a project. The idea may be ambitious, and we would therefore have to scale back

or alter some of the projected features. Ultimately, the feasibility of this project depends on a thorough evaluation from app developers.

Next step involves looking for sources of funding. Some various sectors and organizations are a possible source for funding. Funding for the project includes, but is not limited to paying for the development and maintenance of the app; a legal compliance officer to ensure that all the data that is captured is legal, as well as its use; and cloud server storage for the app.

It is also important to have a risk assessment so that we minimize the risk and harm of its users.

What would make the pathway plausible?

A pilot project where a beta version of the app is tested in various contexts and environments would make the pathway plausible. Upon successful completion of the pilot project, more potential partners will be approached to expand the reach of the app and increase its functionality through the development of, and expansion, the platform.

Measurability

The app will collect user data upon signup. This data will include data points such as region, city and province. This will give us an idea of where the app has a good usership.

The time data can be determined with reference to the initial pilot, and then the full launch. If the pilot is run for three months, the full launch can be seen as an extension of this period for a total of 24 months (3+21 months), which gives us temporal data over a period of two years.

Reports made via the app with usage data could be linked to the general usership data to give us a general idea of how many people use the app as a proportion of how many people have signed up for the app (those who use it and those who download it as a precautionary measure).

A PROJECT OF THIS KIND HAS THE POTENTIAL TO REACH THOUSANDS IF NOT MILLIONS OF WOMEN. AND IF SUCCESSFUL, IT CAN BE REPLICATED IN OTHER COUNTRIES

Plan for implementation

1. Approach potential partners and stakeholders to see if they would be interested in being involved in a project of this kind.
2. Approach developers to start working on a beta version of the app.
3. Roll out a pilot project for the app using a small sample group. The pilot will be rolled out in a few strategic areas in the country to test reception and how works in different areas (urban and rural).

Roadblocks, barriers and bottlenecks.

The most obvious barrier to realizing such a goal is funding. Unfortunately, projects of this kind require a lot of money. There is not an easy way around not having a source of funding, however, if one could find a developer that would at least create a beta version of this project for free, or at a significantly reduced fee, then it would be possible to begin the process.

However, the biggest barrier here would be the cooperation of the various stakeholders and partners necessary for it to work. As alluded to earlier, in collaborations of this kind, there are often competing and conflicting interests that need to be mitigated. For instance, civil society organizations and the government often have a contentious relationship. To balance underlying hostilities and historical conflicts requires a careful balancing act. Nevertheless, it is not the first time that conflicting parties have had to be brought to the table to negotiate a peaceful working relationship. After all, our democracy is built on tense negotiations that ultimately work for the greater good.

Ethical Considerations

One of the things that need to be considered in the implementation of this idea is the collection of personal data from victims and survivors of GBV. However, in 2013, South Africa introduced the Protection of Personal Information Act (the POPI Act) which regulates, amongst other things, the use and distribution of people's personal information by both private and public bodies.

Therefore, our collection and use of people's personal data will be subject to this Act's regulation.

Narrative

As a Black woman living in South Africa, the idea of being a victim of GBV is not far removed from my reality. Like many South African women, the question "am I next?" haunts me because it is not a question of if but a question of when. This idea comes from a place of helplessness. Of not knowing what more needs to be done to help women in precarious situations.

I know that we will not eradicate GBV overnight, or even in the near future. However, what we can do in the meantime is ensure that as many women make it to a GBV-free future as possible. As such, the importance of this idea lies in the fact that it has the potential to prevent the senseless deaths of as many women as possible.

A project of this kind has the potential to reach thousands if not millions of women. And if successful, it can be replicated in other countries too. GBV is not unique to South Africa. It is the kind of violence that cuts across class, racial, and ethnic lines. Women across all lived ex-

periences are susceptible to this kind of violence. Some more than others, but the reality is that if you're a woman living in this country, this kind of violence is a threat you must live with.

While we do not have clear numbers of intimate partner violence, it is estimated that in the last year, 22,846 cases of common assault were reported, with 817 cases of murder by intimate partners reported (Shoba, 2020). The fact that these numbers are not conclusive demonstrates what we know of intimate partner violence is only the tip of the iceberg. This app will help us get a clearer understanding of how big the problem is.

It is difficult to project just how many people an app like this would help, but given that 46.9 million South Africans have access to smartphones (Gilbert, 2019), the app has the potential to reach millions of users, many of whom fall within the number of people who experience common assault at the hands of their partners. Furthermore, with smartphones becoming cheaper, the number of people with access to smartphones are projected to increase in the next few years.

We will get an idea of how well the idea is working once people start using it. Data will be collected, and the number of women saved through their use of the app will give us an indication of whether this works. However, there is always room for improvement. I don't expect that a project of this kind will not have unforeseen problems.

Conclusion

GBV is not a new phenomenon. It is a pandemic that preceded COVID-19. However, COVID-19 lockdown regulations highlighted the need to have a one-stop resource for victims, one that would be able to help them to access help in situations that are difficult. The lockdown also highlighted a need for us to find ways to reach victims without further endangering their lives. If just one life is saved through the use of this app, then it would be a job well done.

The point is to not reinvent the wheel or stretch resources that are already limited. The point is to maximize the potential of the resources that we already have to improve the lives of victims and survivors of GBV.

The secondary effects of this kind of app are almost innumerable. It could be an oversight tool to help track the efficacy of police services. It could also be a way to track where in our legal system victims are being failed. From reporting a case to securing convictions, the app has the potential to tell where and how we are going wrong.

Lastly, this app could help us further understand the triggers of GBV. Through data collection and consistent interaction with victims and survivors, we could pre-empt escalating violence and help victims get out of potentially lethal situations.

Ultimately, in the grander scheme in the fight against GBV, this app will be a small but necessary drop in the ocean of efforts meant to eradicate GBV.

Endnotes

1. <https://awethu.amandla.mobi/petitions/bring-the-cost-of-data-down>

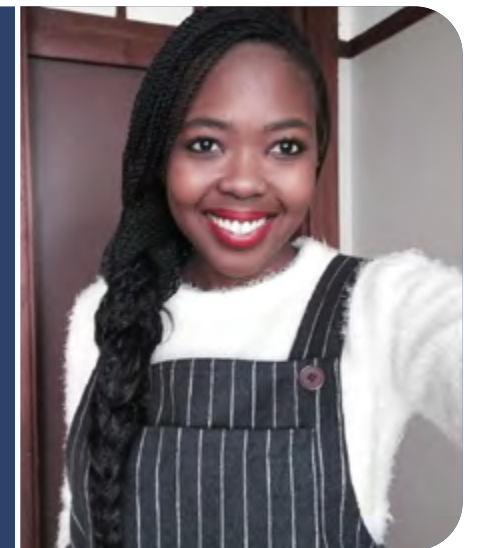
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About the Author

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Lerato is a first-year law student at the University of Cape Town. She is a passionate human rights activist whose future plans include pursuing a Master's degree in Law and entering the world of development planning.



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P R O P O S A L

FOODPRINT:

A blockchain-enabled, open-source food tracing platform to track local food supply chains

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[Listen to Audio Intro](#)



IT IS IMPERATIVE TO RE-CONSIDER THE PLIGHT OF SMALLHOLDER FARMERS. THEIR POSITIONING IN LOCAL COMMUNITIES PROVIDES THEM WITH SIGNIFICANT AGENCY TO MEANINGFULLY PARTICIPATE IN SOLVING THE GLOBAL FOOD SECURITY CONCERN AT A MICRO LEVEL

Abstract

Global food security is a growing concern. As the world's population increases, so does the demand for food. Addressing food security requires various interventions to be applied to existing food systems and their stakeholders, and measured against a globally relevant yardstick such as the second Sustainable Development Goal of the United Nations - Zero Hunger by 2030.

Smallholder farmers are one such stakeholder of existing food systems. However, the opaque nature, fragmentation, and information asymmetry that exists in conventional food systems lends itself to their exclusion and marginalization. As a result, smallholder farmers lack access to markets, services, and agricultural innovation, and find themselves as the least profitable actors in the supply chains they participate in.

Given the urgency of the global food security concern, it is imperative to re-consider the plight of smallholder farmers. Their positioning in local communities provides them with significant agency to meaningfully participate in solving the global food security concern at a micro level. To address the standing of smallholder farmers and position them as notable contributors to global food security, I propose the FoodPrint Farmer platform—a digital, cloud-based and blockchain-enabled food traceability and produce logging solution for smallholder farmers.

FoodPrint addresses the inefficiencies and opaqueness in local food supply chains whilst empowering smallholder farmers and championing sustainability through short, transparent, and traceable food supply chains. Using FoodPrint, smallholder farmers connect directly and efficiently with fair intermediaries, and in

turn consumers. Further, the intermediaries and consumers purchase produce on the platform using the FoodPrint Token, a universal food produce utility crypto-token that economizes transaction costs in local food supply chains and promotes financial inclusion.

If FoodPrint achieves global traction, smallholder farmers stand to realize increased profitability and access to services, local food systems and economies can be stimulated, and the world shifts closer towards sustainable agriculture and achieving food security.

Chapter 1 - Introduction

Smallholder farming consists of operations where the farmers operate under structural constraints such as access to sub-optimal amounts of resources, technology, and markets (Khalil et al., 2017). Be that as it may, smallholder agriculture strategically contributes to food security, generates income, contributes to national economies (especially in emerging markets), and can play a key role in improving societal dietary patterns (HLPE, 2013).

A typical food supply chain consists of producers, consumers and multiple intermediaries in between. This is illustrated in Figure 1.1.

Unfortunately, power in these conventional food supply chains is concentrated amongst the many intermediaries. The smallholder producers, although key participants in food supply chains, find themselves with access to imperfect information and limited bargaining power and wind up as least profitable.

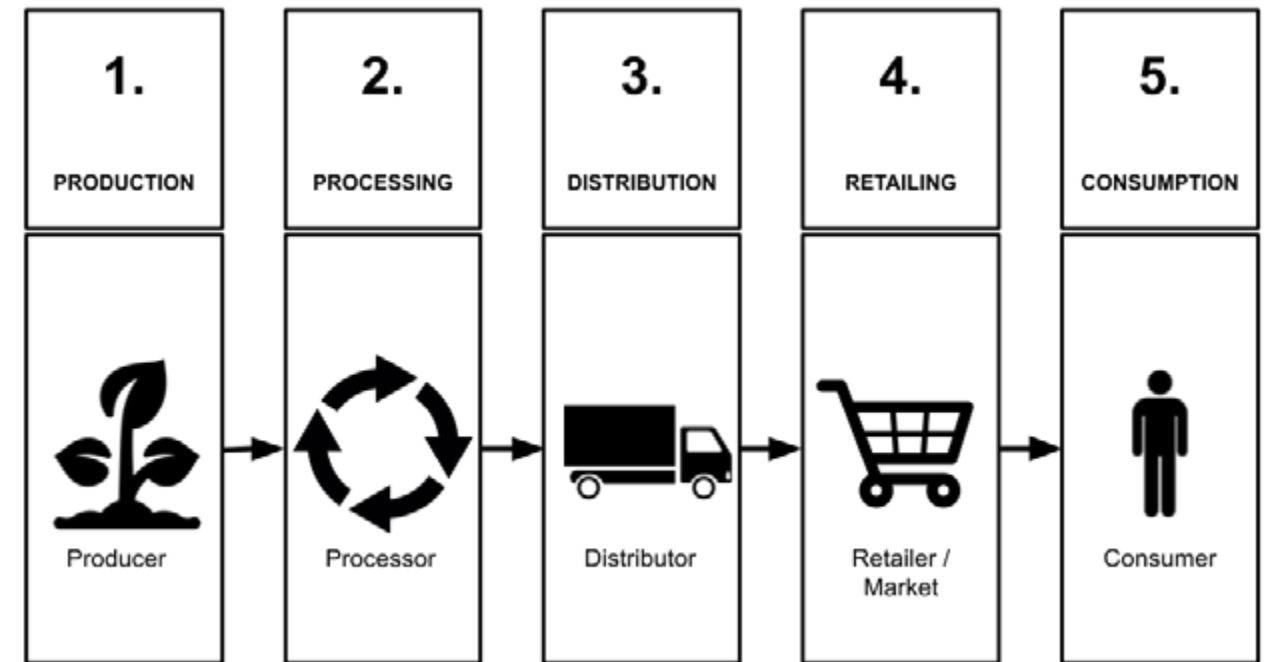


Figure 1.1: An illustration of typical Food Supply Chain operations and the associated actors (Source: Author). The initial operation is the production of produce by the producer. The produce moves along until its final destination, which is with the consumer.

Chapter 2 - Background

2.1 Problem

Conventional food supply chains are opaque, fragmented, and full of information asymmetry. The resulting externalities give rise to a number of issues across the supply chain, from the production-side to the consumption-side. These include unsustainable farming practices, production-side (preventable) food loss, and food fraud, to mention all but a few. Further, the ability of smallholder farmers to contribute towards food security is seriously hampered, and they suffer from marginalization and limited access to markets, services, and innovation. There are around 500 million smallholder farmers in the world, and they produce up to 80% of the food consumed in Africa and Asia.

2.2 The Plight of Smallholder Farmers in Inefficient and Opaque Local Food Supply Chains

As a result of the supply chain inefficiencies and opaqueness, smallholder farmers:

- Incur costs resulting from food loss.
- Lack credibility as historical production records are poorly kept and not standardized (e.g., scattered combination of paper receipts, hand-written logbooks).
- Have limited access to markets and support services (e.g., financial services).
- Are subject to inefficient price discovery mechanisms.
- In addition, the opaqueness in the food supply chains breeds information asymmetry, meaning that:
 - Consumers do not know when the produce they purchase is sourced and the conditions under which it has been grown (e.g., sustainability, fairness, farming method).
 - Determination of payment of fair prices along the supply chain is difficult to achieve.
 - The cost of identifying supply chain inefficiencies is high.

- Food traceability is time consuming and costly.
- Verification of the ethical and sustainable production of food is difficult.

2.3 Related Solutions

There are solutions that attempt to improve the outcome of smallholder producers such as Abalobi (South Africa) and IBM Food Trust (Global). The former is specific to improving the livelihood of small-scale fishermen and is currently focused on South Africa. The latter, although global, appears to be geared more towards enterprise farmer operations and not so much smallholder operations.

In my estimation, there does not appear to be a solution that is leveraging WhatsApp chatbot functionality to lower barriers to entry for digitizing smallholder farmer operations.

2.4 Towards a Better Food System

Given this background, the question of how to upgrade the world to a more transparent, traceable and sustainable food system that supports smallholder farmers emerges. More specifically:

- How to use technology to eliminate inefficiencies from the existing food systems?
- How to redesign supply chains to be shorter and to support producers?
- How to move away from conventional food systems that marginalize smallholder farmers?
- How to promote sustainable food production and achieve food security through smallholder farmers?

Chapter 3 - Proposed Solution - FoodPrint Platform and Token

To address the inefficiencies and opaqueness in local food supply chains whilst empowering smallholder

farmers and championing sustainability through short, transparent, and traceable food supply chains through, I propose FoodPrint—a food traceability and logbook solution that is cloud-based and blockchain-enabled—and FoodPrint Token (FPT)—a universal food produce utility crypto-token for use on the FoodPrint platform.

3.1 FoodPrint Platform

FoodPrint is a cloud based, open-source, blockchain-enabled food traceability platform that is under active development. Using FoodPrint, smallholder farmers log produce harvest operations. This in turn is observed by intermediaries on the platform who place orders with the farmers. When the orders are fulfilled, an official handover of the produce is recorded on the platform. Both the harvest and handover operations are also persisted onto the blockchain for purposes of decentralized transparency and traceability. Further, each farmer-produce combination has an associated FoodPrint QR Code which a consumer can scan at the time of buying produce to reveal the provenance of the produce.

3.2 FPT - The FoodPrint Token

FPT is a proposed universal food utility token for use on the FoodPrint platform. Considerations regarding FPT:

- Produce will be denominated in FPT on the platform.
- FoodPrint will allow only producers to convert FPT into fiat currency and vice-versa. Consumers and intermediaries will only be allowed to convert from fiat into FPT and not the other way.
- Once adopted, FPT will serve as a signaling mechanism for local and short supply chains that stand for smallholder farmer empowerment and sustainability.

By using FPT:

- Transaction costs in local food supply chains are economized, with the result of reducing the fee imposed by middlemen.
- Producers and consumers are incentivized to

use the FoodPrint platform.

- Increased efficiency in distribution and tracking of relief aid if required whilst reducing bureaucracy, counterparty risk, and exchange rate losses.
- Financial inclusion is enabled. Previously financially excluded smallholder farmers become active.

Figure 3.1 summarizes how the FPT works.

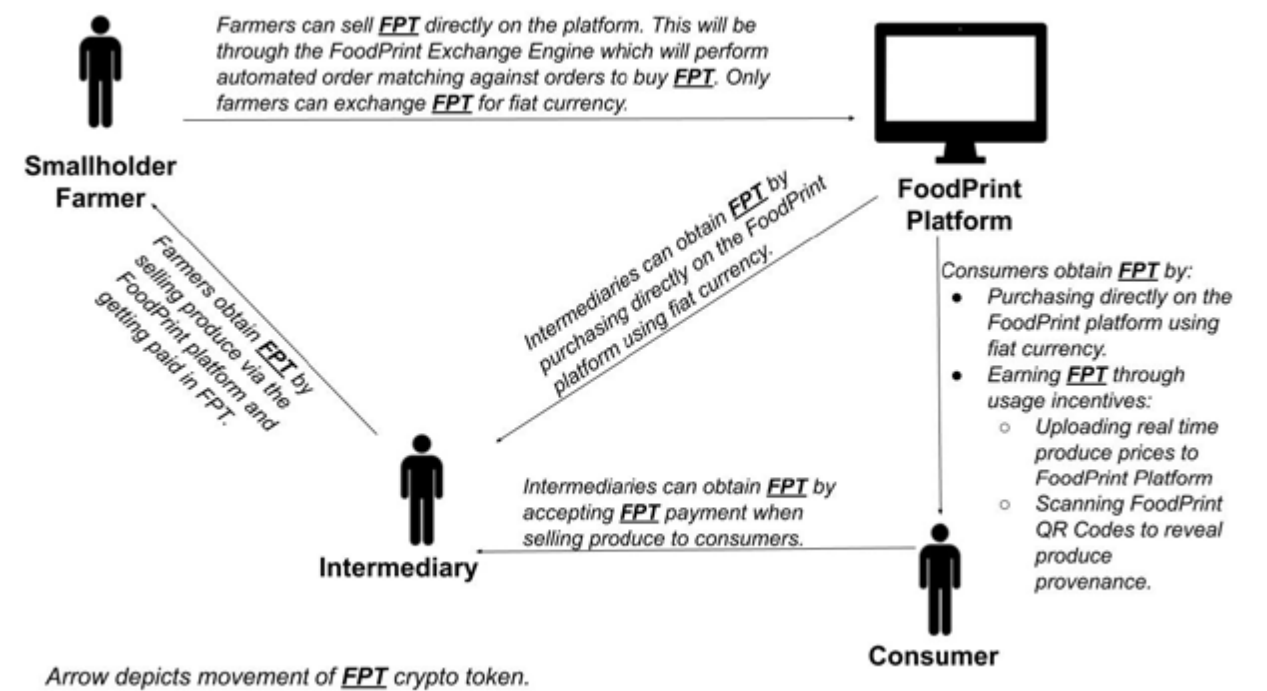


Figure 3.1: How the FoodPrint Token (FPT) works (Source: Author). Intermediaries and consumers either purchase FPT directly or an implicit conversion occurs at the time of buying produce. Intermediaries and consumers cannot sell FPT, only use it to purchase produce. Smallholder farmers receive FPT on sale of produce and only they can sell FPT on the platform.

3.3 How FoodPrint and FPT Work

The current FoodPrint alpha implementation works as follows:

- A smallholder farmer records a produce harvest operation as an entry in the FoodPrint Harvest Logbook.
- Following the transportation of the harvested produce, the smallholder farmer hands over the harvested produce to an intermediary. This handover is recorded as an entry in the FoodPrint Handover/Storage Logbook.
- A consumer buying produce from an intermediary (e.g., an agri-hub or a last-mile retailer) can scan a (farmer-produce specific) FoodPrint QR Code and see the provenance of the produce.

Imagined future capability:

- Capturing price paid by intermediaries for produce on the FoodPrint platform.

- Ability to log produce harvest and handover entries via a FoodPrint WhatsApp chatbot. WhatsApp's ubiquity enables rich customer-facing engagements.
- FPT token integration and produce purchases using FPT.
- Crowd-source data collection on the consumer side by consumers (i.e., consumers can capture on FoodPrint the price paid to the intermediary for the produce, helping to close the loop with the price paid by the intermediary for the same produce (as recorded by the farmers) and helping towards the goal of achieving efficient and transparent food pricing.
- Consumers get rewarded with FPT for uploading produce price information. Similarly, by scanning produce, consumers earn FPT.

Figure 3.2 summarizes how the FoodPrint platform works at the core level.

Figure 3.3 displays a high-level system architecture diagram of the FoodPrint platform including the proposed FPT and WhatsApp chatbot.

Chapter 4 - Implementation and Benefits

4.1 Envisaged Implementation

According to the Food and Agricultural Organization of the United Nations, sustainability projects have three dimensions: economic, environmental and social. Therefore, to implement FoodPrint effectively, a multi-stakeholder approach including the following parties is deemed necessary:

- **Producers** — Capture produce provenance information including upstream produce prices paid by intermediaries.
- **Consumers** — Request access to produce provenance data, capture downstream produce prices (paid to intermediaries) and actively support smallholder farmers.

- **Intermediaries** — Encourage adoption of solutions by producers.
- **Government** — Regulatory frameworks (government mandated traceability), subsidies, trust anchors (verification of producers, intermediaries, and claims).
- **Private Sector** — Funding.

4.1.1 Target Market

The initial primary target market from a South African perspective is smallholder and subsistence farmers, with a view to expand into global territories thereafter. This is shown in a South African breakdown (Pienaar, 2013) followed by Figure 4.1:

- Total Available Market (TAM) - 2.3 million subsistence farmers in South Africa (this includes smallholder farmers).
- Serviceable Available Market (SAM) - 140,000 smallholder farmers in South Africa.
- Serviceable Obtainable Market (SOM) - 14,000 smallholder farmers (10% of SAM).

4.1.2 Acquisition Strategy

In order to acquire users (smallholder farmers and agri-hubs), FoodPrint will primarily seek partnerships with agri-hubs who will in turn provide gateways to smallholder farmers. This strategy results from the first pilot of the FoodPrint prototype that was conducted in December 2019 and January 2020 at the Oranjezicht City Farm Market (OZCFM) in Cape Town. In this food traceability-focused pilot, OZCFM actively collaborated in the design of the prototype, recommended a number of smallholder farmers to participate, and encouraged their market patrons to use the platform to view the provenance of the fresh produce on sale during market days.

The success of the pilot particularly proved that partnership with a local food hub is an effective strategy for accessing smallholder farmers on the back of a recommendation from a trusted food supply chain participant. Further, regional and local food hubs are identified as emerging innovative intermediaries that are capable of overcoming the organizational and in-

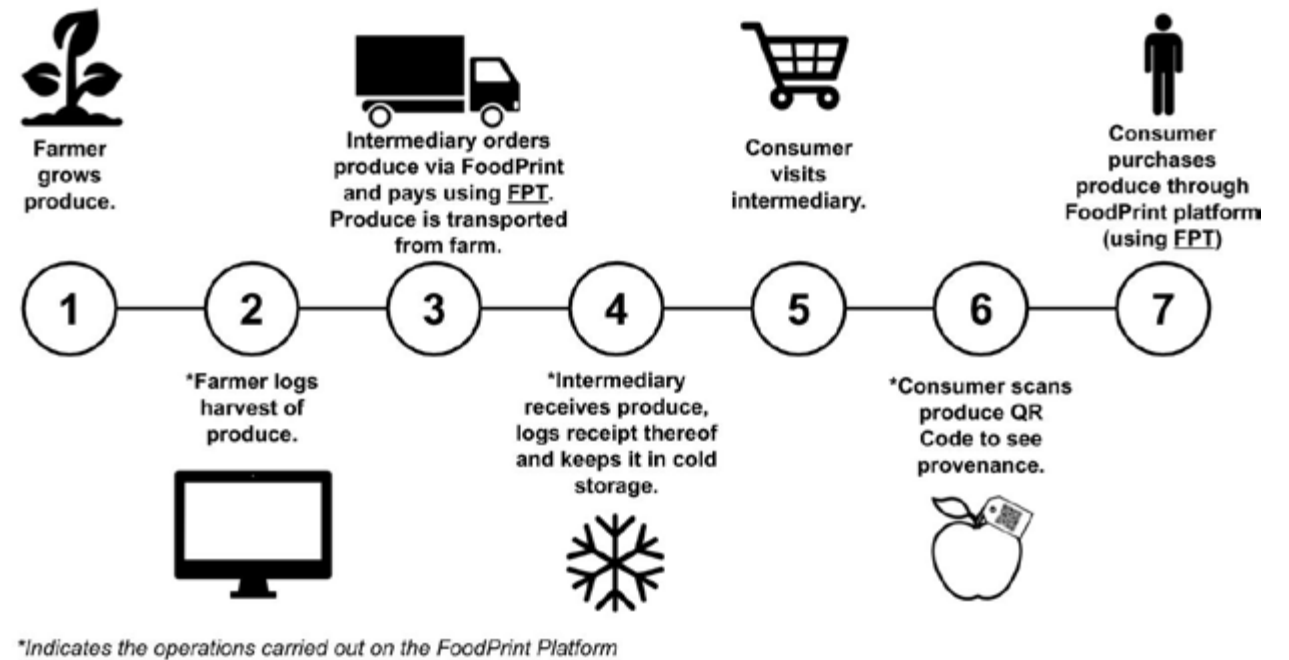


Figure 3.2: A visual representation of how the FoodPrint platform works in a local food supply chain (Source: Author). The produce harvest and storage operations data are logged onto the platform as produce moves from the farmer to the market. Once the produce is displayed for sale at the market, a consumer scans a supplier-produce specific QR code to reveal the produce provenance, from farm-to-fork.

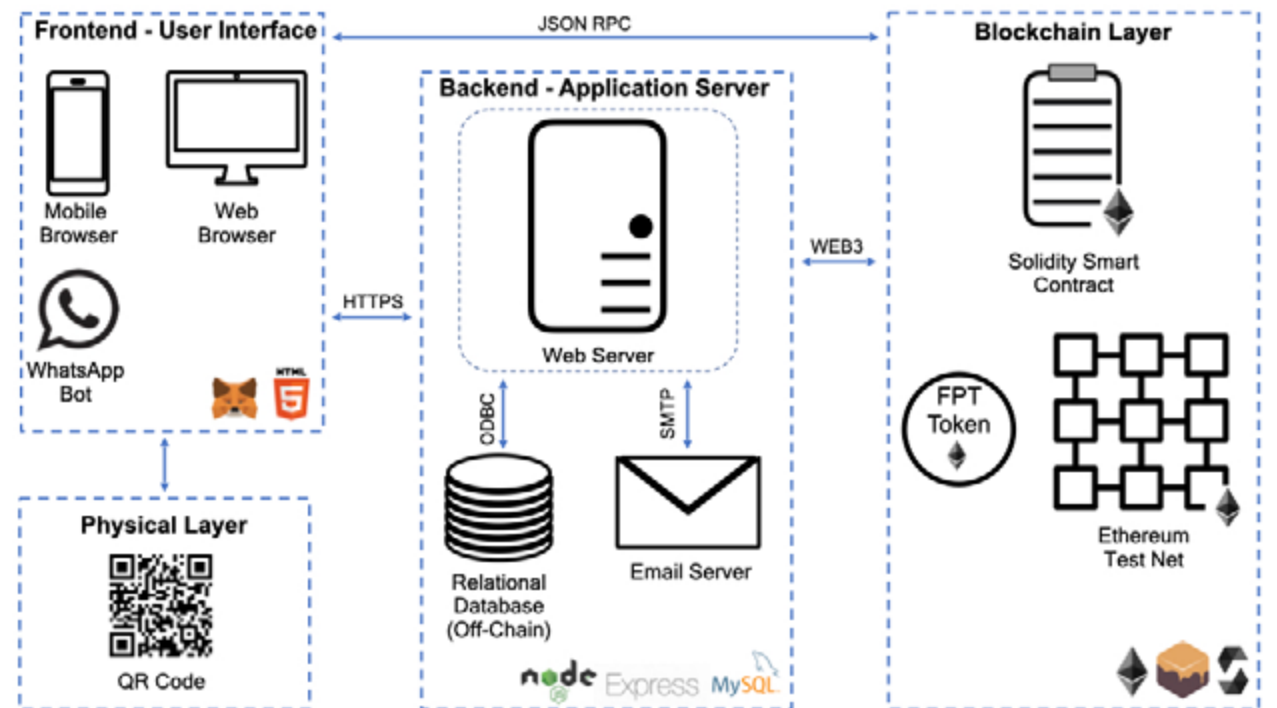


Figure 3.3: High-level system architecture diagram of the FoodPrint platform. The application server is the core engine with the application logic. The blockchain layer is comprised of the FoodPrint smart contract for persistence of produce operations on the Ethereum blockchain network as well as the FPT crypto-token. The frontend consists of the user interface that users see when accessing the platform and the physical QR codes that the users scan to see produce provenance information.

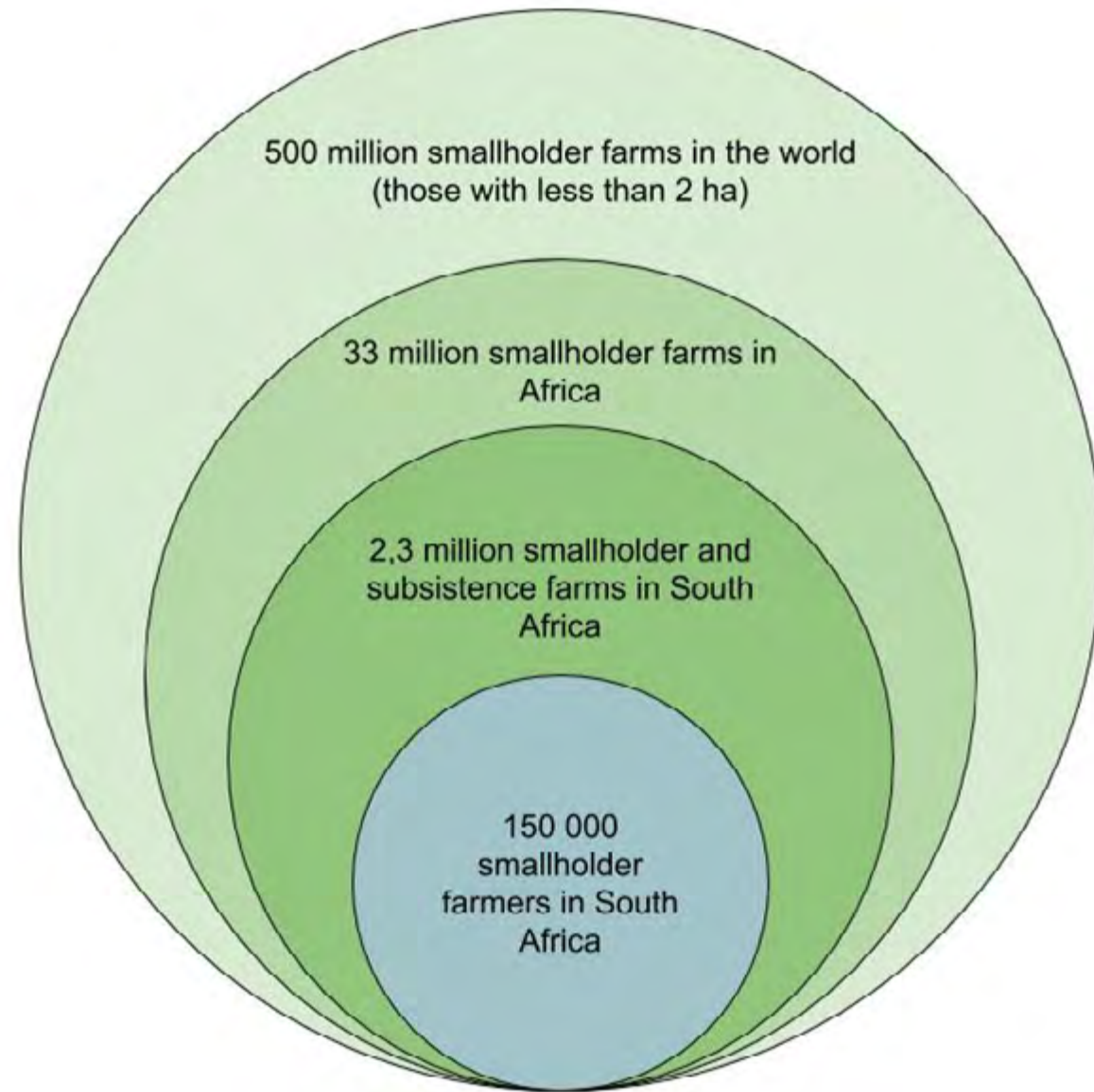


Figure 4.1: A visual representation of the FoodPrint target market from a macro to micro scale—Worldwide to South Africa.

frastructural limitations that impede small farms to reach the growing demand of local produce (Berti & Mulligan, 2016).

Following successful rollouts in South Africa, the model can be replicated in emerging economies and then developed countries.

4.2 Envisaged Benefit

FoodPrint benefits the food supply chain participants (farmers, agri-hubs, and consumers) and advances the United Nations Sustainable Development Goals (SDGs) (World Economic Forum and McKinsey & Company, 2019). These are discussed below.

General Benefit

- Authentic transparency and tamper-proof traceability achieved through use of blockchain.
- Growth for local economies.
- Reduced food waste and increased food security.
- Increased supply chain efficiency e.g., from distributed micro-payment system through FPT.
- Blockchain-based behavior endorsement of local food supply chain actors (based on participation on the FoodPrint platform).
- By using digital produce logbooks, farmers build large and smart datasets, enabling access to risk and financing instruments.
- Use of FPT increases efficiency, quick distribution, and tracking of relief aid.
- Increased supply chain efficiency.
- Scaled productivity.
- Active promotion of agricultural sustainability.

Food Supply Chain Participants

The benefits of FoodPrint for the local food supply chain participants are listed below:

Smallholder Farmers

- Enables re-localization of food supply chains (i.e., short food supply chains) which rightly positions smallholder farmers as key players.
- Results in better prices paid to farmers for their produce and ultimately a more sustainable food ecosystem.
- Digital produce logbooks mean standardized operational data collection.
- Reduces food loss at production level (FoodPrint data can be analyzed for decision making, forecasting and improved supply chain efficiency).
- Enables smallholder farmers to be on the cutting edge of innovation in AgriTech.
- QR Codes provide a new channel for customer engagement and analytics.
- Enhances smallholder farmer credibility as farmers can reliably demonstrate their production history and capability.
- Increases capability for data-driven responses to agricultural risks and disasters.

Intermediaries e.g., agri-hubs

- Reputational boost from use of transparent supply chain technology.
- Empowers intermediaries to act as food supply chain gatekeepers, given their access to trustworthy and shared produce provenance information.
- Enables intermediaries to meet customer demand for ethical consumerism in a demonstrable and open manner.
- Promote short supply chains which benefit local economies through engagement with intermediaries such as agri-hubs and regional markets.
- By honestly participating in the platform, an intermediary can be endorsed by the blockchain network, e.g., as fair and sustainable; otherwise, any violation is immutably recorded and observed by participants. Similarly, farmers can also be endorsed.

Consumers

- Promotes food democracy and citizenship.
- Improves food safety and quality.
- Reduces likelihood of food fraud.
- Promotes responsible consumption (through produce provenance information).
- Enhances farm-to-fork experience for consumers.
- Empowers consumers to directly support smallholder farmers through consumer-end data collection (produce prices) and direct donations to via FPT.
- Empowers consumers to identify mispriced produce.

SDGs

- FoodPrint also advances SDG 2, 8, 9, 12 and 17.

Chapter 5 - Success Considerations

5.1 Chances of Success

The vision to enhance the FoodPrint platform to include the FPT and WhatsApp integration comes on the back of a successful traceability-focused pilot that was carried out at the Oranjezicht City Farm Market (OZCFM) (<https://ozcf.co.za/market-day/>) in Cape Town during the last 12 months. This pilot showed that although traceability is a nice-to-have, standardized data collection at the farmer-intermediary level is key, hence the strong hypothesis on the utility of data-driven logbooks and their ability to solve the information asymmetry problem.

Whilst success of the imagined FoodPrint platform is not guaranteed, access to world-class advisory through the University of Cape Town's faculty and local ecosystem partners such as Oribi Village will be invaluable in refining the concept and steering towards solving a real need and achieving product-market fit.

Further, the success of the OZCFM-related pilot particularly proved that partnership with a local food hub is an effective strategy for accessing smallholder farmers on the back of a recommendation from a trusted food supply chain participant. Further, regional and local food hubs are identified as emerging innovative intermediaries that are capable of

overcoming the organizational and infrastructural limitations that impede small farms from reach the growing demand for local produce (Berti & Mulligan, 2016).

5.2 Success Indicators

Some metrics to evaluate the outcome of the FoodPrint project include:

- Number of producers receiving FPT-denominated tips from consumers with breakdown by country/region and produce type.
- Number of daily/weekly/monthly FoodPrint users.
- Number of FPT tokens stored in browser wallets vs. an exchange.
- Number of monthly active intermediaries.
- Average monthly spend by intermediaries.
- Number of produce harvest operations recorded on the platform per month.
- Number of produce handover operations recorded on the platform per month.
- Number of produce types purchased through the platform.
- Number of acres of farmland that is digitized.
- Number of farmers signed up on the platform.
- Number of crops tracked on the platform (and number of crop varieties).
- Number of provinces and countries represented.
- Number of services rendered through the platform (e.g., loans dispersed).

Chapter 6 - Conclusion and Future Work

6.1 Conclusion

This report discusses the use of internet and blockchain technology to promote shorter food systems that adequately recognize the role of smallholder farmers and empowers them to contribute more effectively towards realizing food security for all.

More specifically, I propose FoodPrint, an online platform for smallholder farmers to better manage their operations at scale and engage in shorter local supply chains with conscious intermediaries and consumers. Further, I also propose the FoodPrint token for use on the platform to increase efficiency and ensure financial inclusion for smallholder farmers.

If the FoodPrint initiative does indeed spark a global revolution, the following can be realized:

- Increased smallholder farmer profitability - SDG 8
- Increased smallholder farmer access to services - SDG 8, SDG 9
- Advances towards sustainable agriculture, food security & reduced food loss - SDG 2
- Promotion of local food systems & economies - SDG 8
- Increased food citizenship and democracy - SDG 12
- Improved agricultural risk management - SDG 2, SDG 9

Food security cannot be ignored. It demands urgent action and collaboration among all sectors of society - government, business and civil. As the popular Chinese proverb that “The best time to plant a tree was 20 years ago. The second best time is now.”

6.2 Future Work

Envisaged future work includes:

- Adding incident management functionality for municipalities and regional co-operatives to manage agricultural risk (e.g., incidents, early warnings, near misses), perform and document root cause analysis, distribute farmer notifications and alerts (e.g., pest infestation, diseases, warnings).
- Automating data entry using Internet of Things-enabled devices to increase accuracy, timeliness and reliability of data entry operations.

Endnotes

¹ <http://www.fao.org/family-farming/detail/en/c/1109849/>

² Around 14% of food produced is lost from post-harvest upto but not including retail level) that can be prevented through market access and technology-enabled farming (e.g. algorithmic recommendations based on historical harvest data combined with current market conditions) (FAO, 2019).

³ <http://abalobi.info/>

⁴ <https://www.ibm.com/za-en/blockchain/solutions/food-trust>

⁵ This is a summation of what FoodPrint is seeking to achieve - piggy back of a successful, familiar and ubiquitous platform to promote user uptake and ease farmer operations management. This is further discussed in Chapter 3.

⁶ <https://sdgs.un.org/goals/goal2>

⁷ <https://www.foodprintapp.com>

⁸ <https://github.com/jajukajulz/foodprint>

⁹ At present, FoodPrint can be used to record produce harvests to the cloud and Ethereum blockchain by farmers, record produce handover to intermediaries and reveal provenance by scanning a QR code. This functionality has been piloted at an urban Farmers Market in Cape Town - Oranjezicht City Farm Market (<https://ozcf.co.za/market-day/>). The WhatsApp chatbot and FoodPrint Token are imagined features for the future i.e. specific to the reimagine challenge.

¹⁰ FPT is based on Ethereum technology's ERC20 token standard for fungible tokens - <https://ethereum.org/en/developers/docs/standards/tokens/erc-20/>.

¹¹ If an intermediary prefers to view their order in fiat currency that will be possible. Further, consumers purchasing produce from FoodPrint associated retailers may on the surface purchase using fiat but behind the scenes, the necessary conversions will be applied.

¹² Cost of verification and cost of networking decrease due to introduction of blockchain (Catalini and Gans, 2020)

¹³ Given advances in mobile technology and connectivity, ordinary citizens have greater agency than before to effect change through seemingly mundane or simple behaviours.

¹⁴ <http://www.fao.org/climate-smart-agriculture-sourcebook/concept/module-a1-introducing-csa/chapter-a1-1/en/>

¹⁵ The secondary market consists of agri-hubs, food markets, high-end restaurants and consumers.

¹⁶ <https://sdgs.un.org/goals/>

¹⁷ <https://www.gsb.uct.ac.za/solutionspace>

¹⁸ <https://www.oribivillage.com>

¹⁹ That are signed up and procuring produce via FoodPrint platform, using FPT.

²⁰ i.e. From producers to intermediaries.

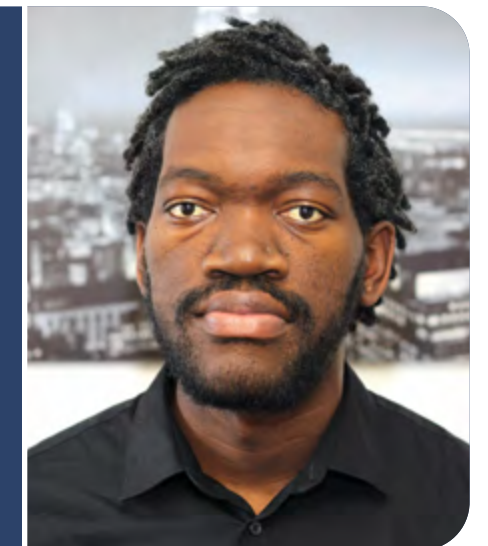
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Julian Kanjere is a graduate student at the University of Cape Town pursuing a Master of Philosophy in Financial Technology. Prior to graduate school, Julian developed enterprise and investment management software. His ambition is to harness the power of technology to advance the financial services and agricultural sectors in Africa.



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PROPOSAL

ROVERLABS TANZANIA:

A low cost virtual
health consulting
service to help
Tanzanian patients
who cannot access
medical care

Authored by:

Atish Shah

Nationality: Tanzanian

University of Strathclyde

Glasgow, Scotland

[Listen to Audio Intro](#)



IN TANZANIA, THE ACCESSIBILITY OF HEALTH AND MEDICAL SERVICES HAS BEEN INACCESSIBLE BY THE PUBLIC DUE TO INADEQUATE FUNDS, INADEQUACY OF TRAINED MEDICAL PERSONNEL, AND POOR INFRASTRUCTURES

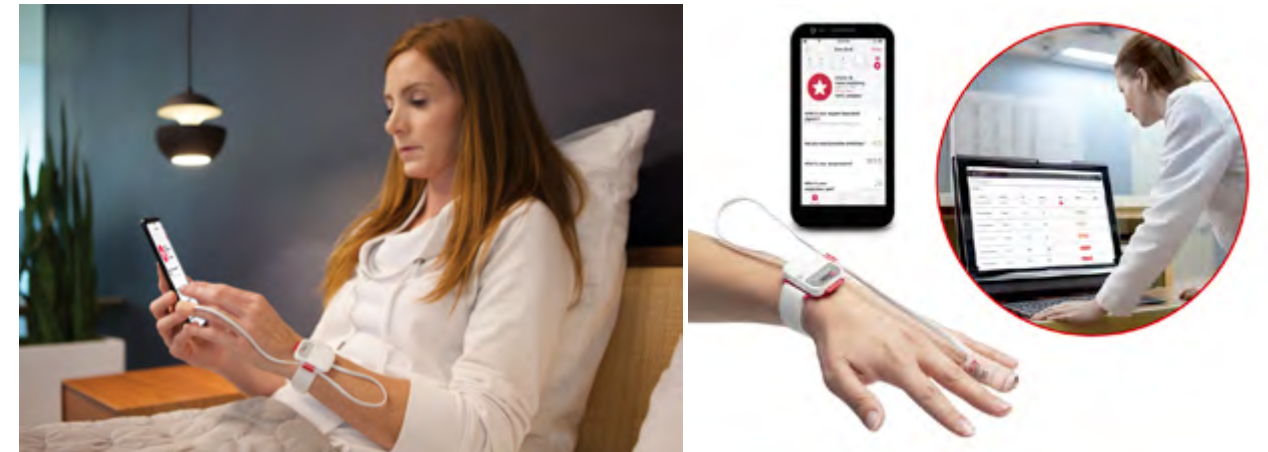
In Tanzania, the health and medical services has been inaccessible to the public due to inadequate funds, inadequacy of trained medical personnel, and poor infrastructure. Statistics show that 45% of the population are living within 1km of a health facility, 72% within 5km, and 93% within 10km (Swere, 242). Health services are offered at different levels, of which the lowest is the dispensary level, with each location serving more than 6,000 people (Swere, 242). The lack of trained medical staff is also a major obstacle in the Tanzanian health care system (Rolfe et al., 137). Most patients fail to receive timely treatment due to these challenges and may end up with serious medical conditions or even die due to the lack of timely intervention.

There are also challenges in adolescent health care provision. Health care workers are not adequately equipped to provide services to adolescents due to heavy workloads and competing priorities. Family planning and other necessary medical services are not readily available, and these teens are forced to travel long distances for health care. These adolescents are also hindered by the attitude of the health workers, fear of sexual abuse by the service providers, judgmental attitudes of the services providers, and cultural misconceptions that continue to exist around reproduction and women's health (World Health Organization). Fear and judgmental attitudes greatly affect medical health provision in Tanzania.

These challenges escalated further during the upsurge of COVID-19 in Tanzania. Initially, despite recommending precautions, both public and private institutions thought the disease would not strike the public. However, the first patient was screened on 16th March 2020 (Tarimo and Wu). The number of sick patients succumbing to respiratory illness increased drastically in the next three weeks (Citizen Reporter). Patients began to show up in great numbers and we were greatly constrained in both resources and manpower.

Word began to spread among the public that hospitals were a prime source of transmitting COVID-19, and the density of arriving patients was causing a shrinking of personal space that made social distancing rules very difficult to adhere to. A direct consequence of this situation was that patients with other comorbidities and chronic conditions, for example those with diabetes or HIV, were now too scared to attend their routine clinics conducted on a weekly or monthly basis in the hospitals. This was disastrous in two major ways. Firstly, patients getting flare-ups from their existing disease could not access treatment; hence many succumbed to their conditions. Even those who had minor flares made themselves even more susceptible and vulnerable to COVID-19. To make matters worse, the public did not truly understand the full devastating effects of the virus or the rate at which it was spreading.

As a medical doctor working in an intensive care unit in Tanzania, I along with my team quickly realized the rising danger of patients being fearful to get services in the hospital in terror of contracting the virus. Our team generated an idea to help patients in Tanzania overcome this challenge through bringing to them a platform of virtual diagnosis and treatment which is easily accessible, low-cost, privacy-secured, and convenient to both the patients and the doctors. We decided to establish an online chat-bot through a website we designed specifically for this purpose. We formed a team of volunteer doctors encompassing of equal numbers of males and females. We made a Facebook page to spread the word about our initiative and to let people know that the services would be completely free and available 24/7. To organize this effort, we divided ourselves into four groups, each having a six-hour shift every day during which we would answer questions about COVID-19 and offer medical advice to persons seeking it. We also had Zoom calls on alternate days with the team to discuss the rapidly changing World Health Organization protocols and how to incorporate them



Figures 1 & 2: Illustration of Masimo remote home health monitoring

into our telemedicine platform. We even had intensive care medicine residents speak to the newly founded team on the current trends and treatment protocols in their respective hospitals from the Netherlands and Boston (USA). This provided a sense of belonging and strengthened our resolve to fight for a cause, and fight we did! Patients can access the services of a medical doctor through only two clicks of a computer mouse or a simple smart phone touch, and immediately begin a chat through which the doctor would diagnose the patient and provide immediate advice for testing or medications, as well as appropriate information education about the medical condition. The link to our website is www.roverlabs.org

The large number of patient requests required us to plan to scale to provide medical services for all kinds of medical conditions and also to incorporate a "Remote Mobile Health Monitoring System (RMHM) (Zhang et al., 717)," in which a patient wears a portable terminal that is capable of sensing and dealing with one or more physiologic signals like oxygen saturation, heart rate, and blood pressure. This device is integrated with

smart phones, which applies Android operating system through which the data from the portable terminal is received and viewed. Terminal and the smart phone connect via Bluetooth. The patients' data is then transferred to the webserver database through the browser/server system, which is then displayed on a webpage that helps doctors and family members monitor, diagnose, and treat patients. Figures 1 and 2 provide a pictorial illustration of how the RMHM works.

We plan to use the Masimo SafetyNet developed by Masimo; it works as show in Figure 3.

Other initiatives that carry out similar work in Tanzania include the Agakhan Hospital and AAR Healthcare Tanzania. Both of these service providers offer online video conferences between their doctors and their usual patients at the normal fee, while requiring all tests and diagnosis to be done physically at the hospital. They developed these services during the upsurge of COVID-19 in Tanzania when patients were fearful about visiting hospitals.

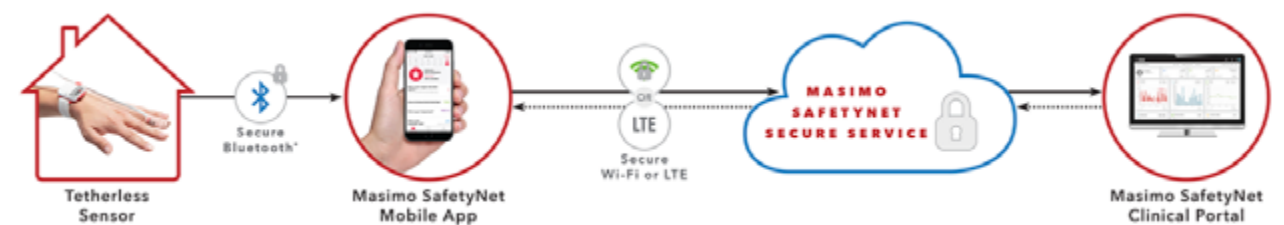


Figure 3: Manner of operation of the Masimo SafetyNet

Roverlabs Tanzania is different from these two other service providers because it is free, it is more user friendly, it is available 24/7, and it provides educational content. Our services are available in the local language Kiswahili for easy understanding of the patients. Moreover, we plan to extend our services, first by providing counseling services to persons with mental health disabilities and second by incorporating the use of remote mobile health monitoring system (RMHM), neither of which are currently being provided in Tanzania. In comparison to the RMHM, there are other similar systems throughout the world such as the MobiHealth project which provides continuous monitoring of patients that are outside the hospital and provide services like disease diagnosis, remote assistance, physical state monitoring and clinical research. This service mainly aims at online data collection while processing and analysis is done offline (Zhang et al, 717).

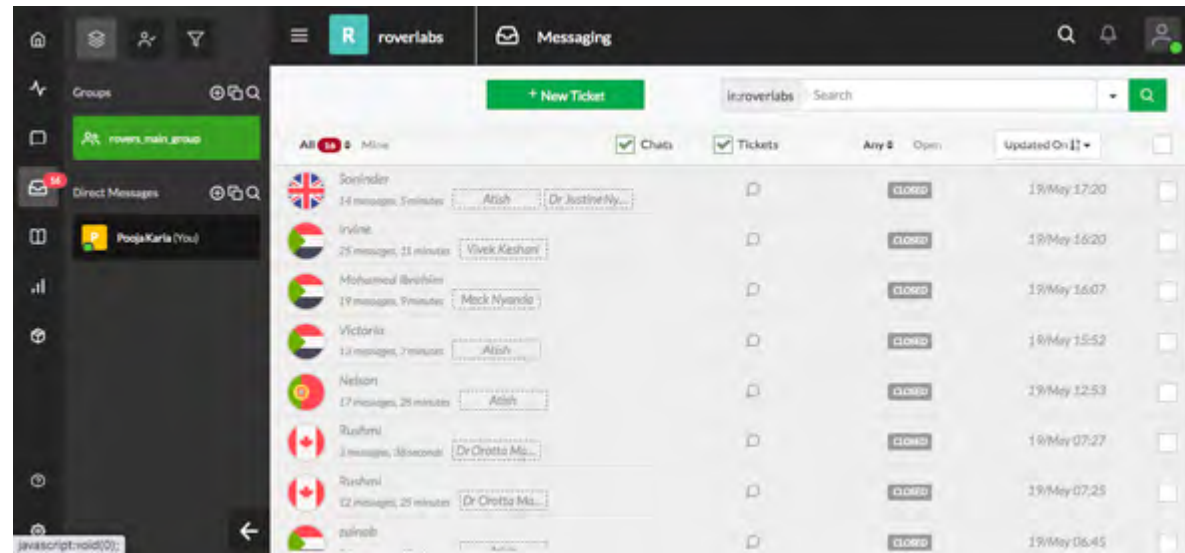


Figure 4: shows the geographic diversity of Roverlabs Zuia Covid -19 initiative

The Masimo SafetyNet was developed by an American manufacturer named Masimo based in California. This product was announced and first used during the upsurge of COVID-19 in America. It has helped not only patients but also frontline health workers remain safe, and it has further helped in managing prevention, early identification, and recovery monitoring (ICU Management and Practice).

Our proposal builds on an already-existing initiative. During the upsurge of COVID-19 in Tanzania, Roverlabs Tanzania created an initiative named “Zuia Covid 19 Youth Initiative,” which included a website through which patients could seek COVID-19 consultations and advice from volunteer doctors 24 hours a day and seven days a week free of charge through a chatbot. We received patient requests not only from Tanzania but also from various geographic locations all over the world including Kenya, America, South Africa, Sudan, Ireland, United Kingdom, and Nigeria as shown in Figures 4 and 5.

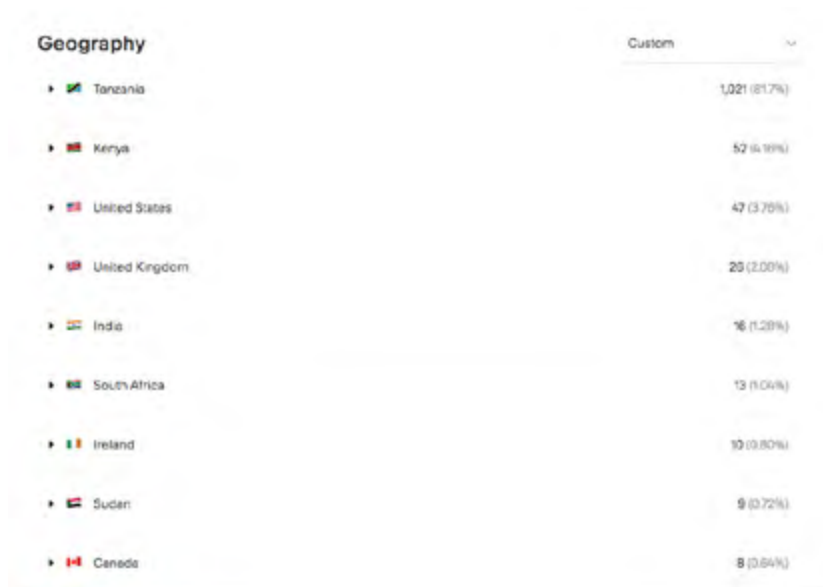


Figure 5: Visits from various geographic locations

We served about 2,000 patients during the upsurge of COVID-19 from March to June 2020, as shown in Figure 6. Our team of doctors dedicated enough of their time to satisfy patients, as shown in Figure 7 through Figure 10.

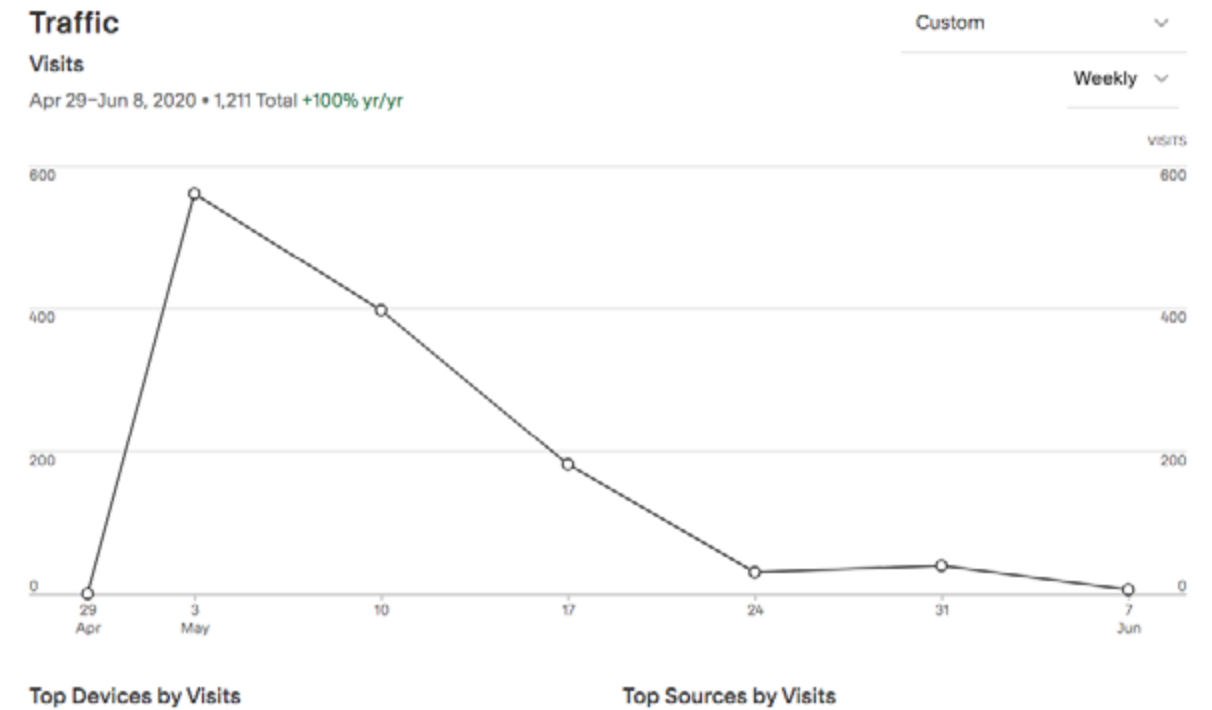


Figure 6: Total number of visits on RoverLabs platform during COVID-19 upsurge in Tanzania

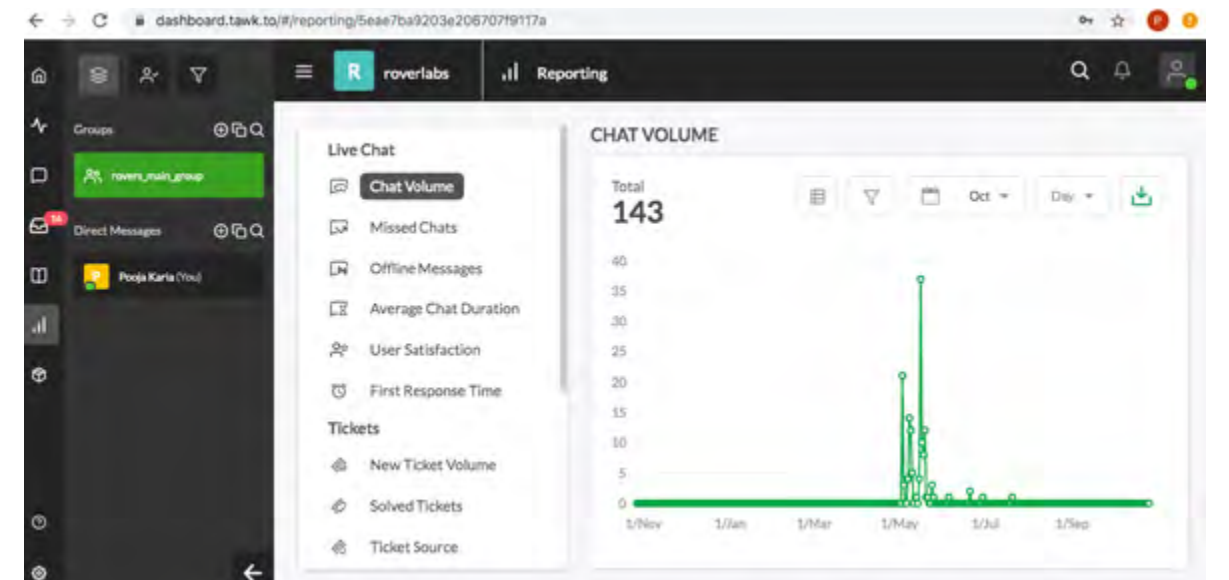


Figure 7: Volume of chats from May to August, 2020, the highest number of chats per day being 143

We want to strengthen and expand on this early platform by incorporating the following three components: first, provide consultation and counseling on mental health and specialist medical consultations. Second, invite doctors from all over the world with similar philanthropic ideals to sign up with us and join our initiative, and third, incorporate the use of Remote Mobile Health Monitoring System called the Masimo SafetyNet.

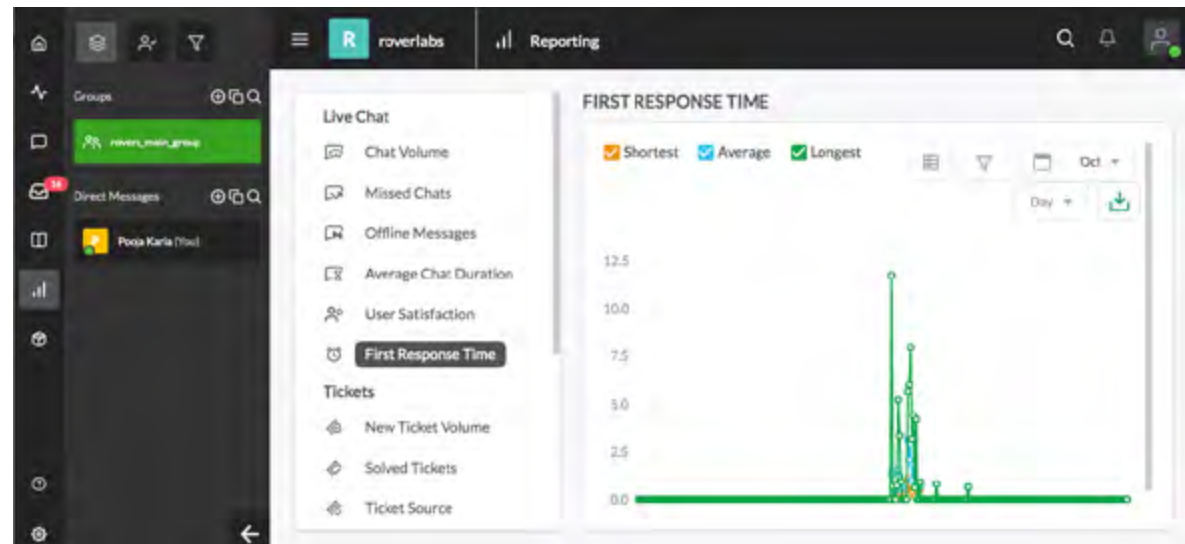


Figure 8: Duration of first-time chats with patients

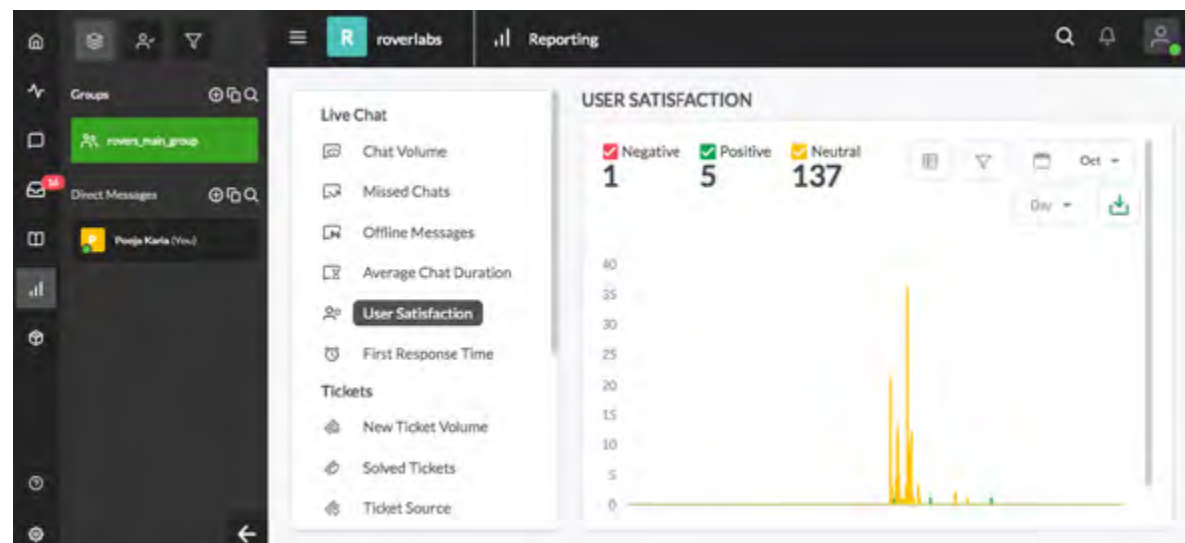


Figure 9: Patient satisfaction

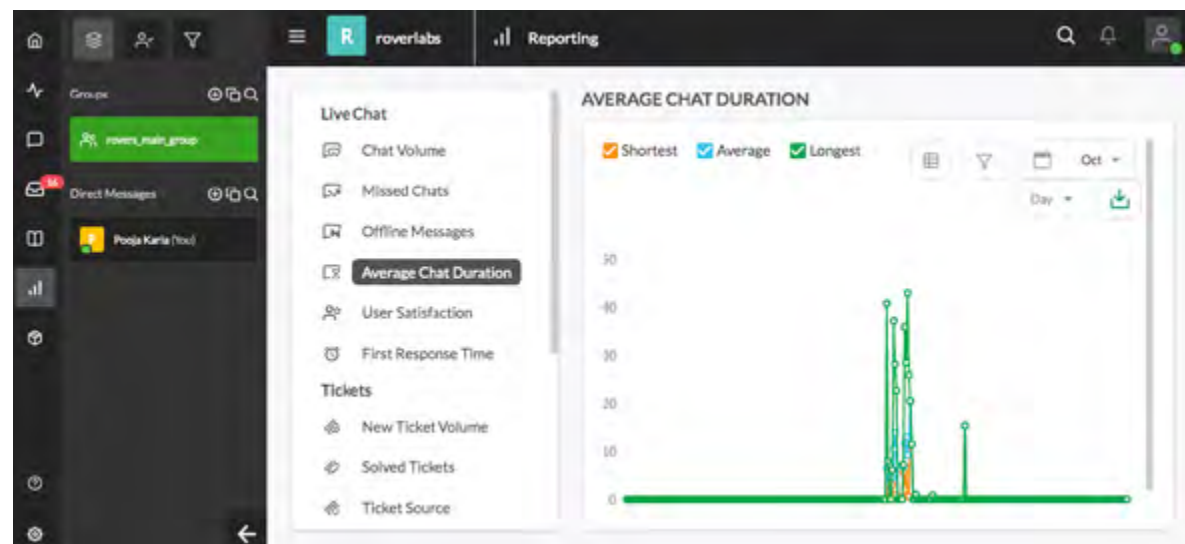


Figure 10: Average chat duration with patients

To expand on our initiative, we will begin with inviting doctors all over the world to sign up and join us. With a vibrant team of doctors established, we will continue providing medical consultations and advice to patients with mental health disabilities and other medical conditions. We will also help fund the initiative through charging minimal fees for specialist doctor consultations and advice, seeking donations and funding, and partnering with relevant institutions and Non-Governmental Organizations that have similar aims. We would use these funds to obtain the Masimo SafetyNet from the Masimo Company, fulfill legal procedures for its use in Tanzania, and begin using the device with a first set of patients, a group of old-age patients with chronic ailments.

To achieve the pathway we have chosen, the team at Roverlabs Tanzania is prepared to commit our maximum time to accomplish the various tasks, engage in various relevant trainings, and engage effective marketing strategies.

We already have a web platform that is operational. We will progress with the platform we have created but develop it to make it more user friendly and wide-reaching. To access patients in rural areas, we plan to seek advice from IT specialists in creating telemedicine software, mobile application, and USSD format. As we develop further with more specialist needs and win grants and donations, we shall obtain the Masimo SafetyNet and make it available at a low margin of profit to our patients; we will use these funds to purchase more devices for the next sets of patients. Our plan of implementation elaborates our strategy below:

Step	Activity
First	Extend our services to mental health consultations and other medical conditions: involves marketing strategies
Second	Delve into development of telemedicine software, special website, mobile app and USSD mechanisms: involves survey and applications for funding
Third	Venture into obtaining, legalizing, and operationalizing the Masimo SafetyNet.
Fourth	Scale to East Africa after covering Tanzania

Legal compliance with various laws in Tanzania and as we extend further may be a challenge. However, we have engaged a legal expert to overcome all the regulatory challenges we may face. COVID-19-related restrictions may obstruct correspondence with the Masimo Company in America. Timely and active communication with the company would be fruitful as we gear up for the use and operationalization of the devices in Tanzania.

We currently have partners and resources, and we will need still more of both for their roles and uses respectively as shown below:

Partner / Resource	Roles / Uses
Funding and development partners	Provide funding opportunities Provide mentorship and training
Legal expert	Provide legal advice and implement compliance with the respective regulatory frameworks
IT Experts	Develop software, website, application, and USSD mechanisms
Team of Doctors	Provide medical consultations and specialist advise.
Partner NGO	Extend our work beyond borders, Help in training and mentorship

We are confident of success, since we have established various mechanisms to achieve our goal. On our web platform, we have created a mechanism for inviting doctors to sign up to join our team. Our specialist service fee charges, which would be reasonable, would be spent in furthering our goals.

The most important dimension of our idea is that it resolves major health issues that the citizenry are facing in Tanzania. It brings a solution to problems in health-care delivery such as poverty, inadequacy of medical staff, and equipment and poor infrastructure. Our idea ensures the provision of timely health services in remote areas, saves thousands of lives, and creates awareness among a large population, all generally increasing life expectancy and livelihoods.

The many negative consequences of inaccessible medical services in Tanzania inspired us to think of the idea to provide free medical services virtually and further provide for remote monitoring system.

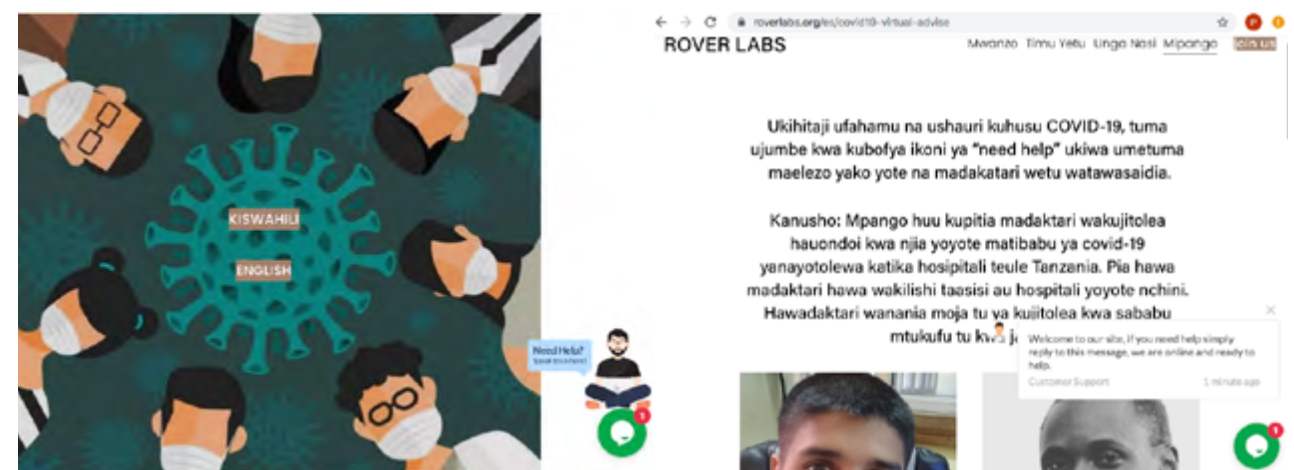
Our project will be successful since we have a good and committed team, our initial initiative has shown a successful traction, digital healthcare is now attracting attention worldwide for its ability to provide help during challenging times, and we have partners that have guaranteed their various commitments to our success.

Our launch has great potential to assist large populations with internet access. We plan to cover populations in Tanzania and further to East and Central Africa. Working virtually, one doctor in our team can assist 30 to 50 patients in day. The patients would get timely interventions in their own home comfort zones. They would save on transport and accommodation costs, and medical consultations would not inconvenience patients who have difficulties with movement and coordination.

Our platform is available in the English and Kiswahili languages, and we plan to extend into the Arabic and French languages, which would cover all populations in Tanzania. Our no-charge and low-charge services will be economically accessible to all classes of populations. We also are developing a USSD code mechanism to serve populations with no Internet access.

Our initiative requires the user to provide his or her identity. All doctors who work with us have to go through a procedure of verification on their eligibility to practice before they sign up. We also provide education on how to operate and use our platform.

Our web platform has tools of analysis that show our geographical diversity, the numbers of patient visits and satisfaction, and the time engagement. We also have a platform through which patients can provide feedback and pages on social media through which we would get feedback.



Figures 11 & 12: Roverlabs Tanzania's platform in Kiswahili

Our idea is first of its kind in Tanzania and the first of its kind to deal with the COVID-19 situation. It's free and available 24/7. It is timely in the world environment of globalization, technological innovation, and artificial intelligence. Our idea solves the major problem of inaccessibility of medical services. It thus enhances healthcare and medical services for saving human life.

With our initiative in place, people will be more aware of digital health and its advantages, and they will engage on a bigger scale. The initiative will also unlock the possibility of using Artificial intelligence in reading X-ray and CT Scan images.

Endnotes

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About the Author

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Atish Shah is a first-year graduate student at the University of Strathclyde, Glasgow, pursuing a masters degree in biomedical engineering. Atish is also a medical doctor in Tanzania and the founder of Roverlabs Tanzania, a platform enabling patients to access free online medical consultations.



For more information about this proposal or author, please email reimaginechallenge2020@schmidtfutures.com

PROPOSAL

SUNRISE:

An online portal
providing social
services to the elderly
Asian immigrant
community in Los
Angeles

Authored by:

Tongqing Zhu

Nationality: Chinese

University of Southern California

Los Angeles, United States

[Listen to Audio Intro](#)



THE ASIAN POPULATION FACES MANY CHALLENGES IN RECEIVING AND ACCESSING MENTAL HEALTH SERVICES IN THE UNITED STATES BECAUSE OF CULTURAL BARRIERS, LOW ENGLISH PROFICIENCY, STIGMA, AND LONG WAITLISTS

Abstract

The COVID-19 pandemic is impairing people’s mental health across the globe. Recent research has shown that mental distress, such as insomnia, depression, anxiety, anger, and delirium, has increased during the pandemic. Yet the Asian population faces many challenges in receiving and accessing mental health services in the United States because of cultural barriers, low English proficiency, stigma, and long waitlists. Asian adults aged 65 and older are more vulnerable than their younger counterparts because they lack social support and community engagement, and are reported as feeling lonely, isolated, and depressed during the pandemic. The Sunrise Project aims to reduce depression, anxiety, loneliness, and social isolation among Asian adults aged 65 and older, and support them to better cope with the grief of losing social support during and after the COVID-19 pandemic in Los Angeles County in California. The Sunrise Program fills the current service gaps adequately. The program encompasses three components: “Mind and Body” individual therapy, “Step by Step” technology workshops, and “Bridges” community engagement services.

Background

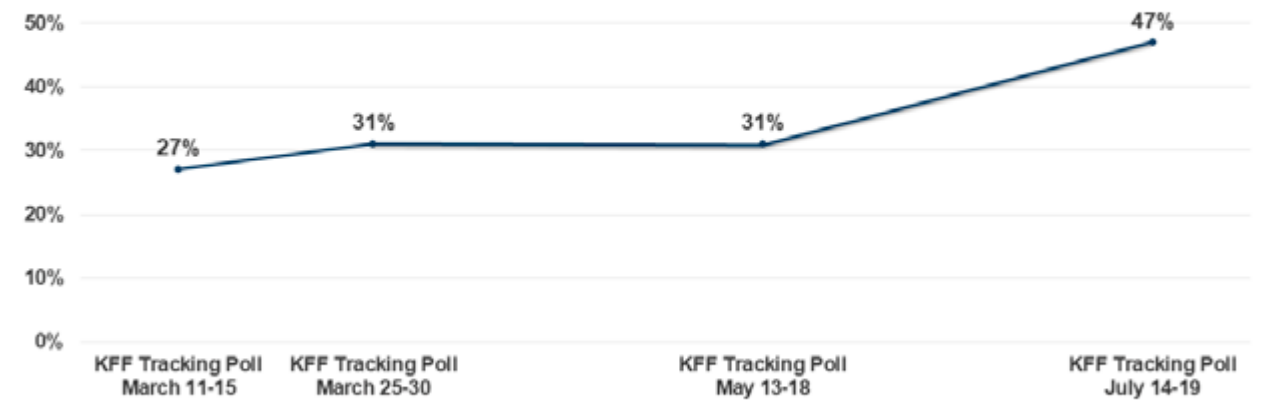
Older Asian adults’ mental health during the pandemic

According to the World Health Organization (2020), COVID-19 has had detrimental effects on people’s men-

tal health all over the world, among all ethnicities. The pandemic has caused severe mental disruption such as insomnia, anxiety, depression, delirium, and agitation. The demand for mental health services has increased by 93%. Yet, with the increasing demand for mental health services, the barriers to accessing mental health services have not decreased but rather increased significantly. WHO (2020) reports that 67% of the population in the world have disruptions to accessing counseling and psychotherapy. WHO (2020) states that “over 60% reported disruptions to mental health service for vulnerable people, including 70% older adults.” Panchal et al. (2020) addressed the fact that older Asian adults are at a higher risk of depression during the COVID-19 pandemic, and those who require health care at home or are hospital patients are more likely to be diagnosed with a major depressive disorder.

There are various challenges that hinder older Asian adults from accessing mental health services. Around 89% of Asian Americans aged 50 and older in Los Angeles County are immigrants (AARP, 2016). The most prevalent barriers are insufficient English proficiency, difficulties adapting to American culture, disengaged social relationships and community networks, financial burdens, racial discrimination and micro-aggressions, and intergenerational differences in acculturation (Chao et al., 2018; Kim et al., 2010; Ladin and Reinhold, 2013). In 2016, 57% of older Asian adults who needed professional mental health services and substance abuse treatments were not receiving any services in Los Angeles County in California (AARP, 2016). Therefore, older Asian adults’ mental health in particular is more vulnerable to being impacted by the COVID-19 pandemic.

Percent of Older Adults (Ages 65 and Up) Who Say Worry or Stress Related to the Coronavirus Has Had a Negative Impact on Their Mental Health



SOURCE: KFF Tracking Poll (conducted March 11-15, March 25-30, May 13-18, and July 14-19, 2020).



Older adults and technology

According to Zickuhr and Madden’s (2012) study, 53% of older adults use the Internet compared with 22% in 2004 (Fox, 2004). “The use of information and communications technology (ICT) for communication purposes may provide greater opportunity for supportive social interaction” (Slegers et al., 2008). Roupa et al. (2010) show that it has been proven that older adults’ use of technology has a positive impact on their quality of life. Additionally, using technology is associated with higher quality of health and psychological well-being among adults aged 65 and older (Fiori, Antonucci, & Cortina, 2006; Pinquart & Sorensen, 2000). More importantly, it is crucial that young people help in familiarizing older people with technology and reducing elders’ anxiety about new technology use. Moreover, health professionals need to understand the hardship elders experience with technology, as it will improve elders’ quality of life when health professionals provide ample information about accessing technology (Gross & McQueen, 1999). As a consequence, the Sunrise Project will present a life skill technology access workshop for Asian older adults to make their lives more convenient and efficient.

Similar existing services

Aging Mastery Program (AMP) was created by Workforce Development Aging & Community Services (WDACS) in the Los Angeles area. The 10-week program encompasses core and elective classes that include evidence-based material, expert speakers, and group discussions (WDACS, 2020). The program is provided in four locations: Jack Crippen Senior Center of El Monte in El Monte, Antelope Valley Senior Center in Lancaster, Willowbrook Senior Center in Los Angeles, and LA LGBT Center Anita May Rosenstein Campus. All activities are delivered in English. Health Insurance Counseling & Advocacy (HICAP) is another program provided by WDACS that provides health insurance counseling and navigation services for older adults in LA County. The service is delivered in English only (WDACS, 2020).

Asian Pacific Counseling and Treatment Centers (APCTC) was established in 1977 as a directly operated program of the Los Angeles County Department of Mental Health. APCTC was the first mental health treatment center that was dedicated to meet Asian Pacific immigrants and refugees’ mental health needs. APCTC has individual counseling services for adults and workshops for participants. APCTC has over 100 therapists

and staff members in seven locations across LA County: two clinics in downtown Los Angeles, one in Alhambra, one in the San Fernando Valley Center, one in Cerritos, one in Riverside, and one in Moreno Valley (APCTC, 2015).

Service gap

Current mental health services provided to older Asian adults lack cultural appropriateness and the treatments are very westernized. Though APCTC provides virtual workshops for clients, the target population is children, youth, and adults younger than 50. Life skills and technology workshops are rarely delivered to older Asian adults who need the most support. Although WDACS organize classes and workshops for older adults, the classes and services are provided in English, so are not accessible for older Asian adults who do not speak English. More importantly, these current services have limited numbers of locations: AMP has only four locations, and APCTC only has seven locations across LA County. Last but not least, a significant flaw of the existing service is that providers deliver services only during weekdays, which can't accommodate all clients' schedules.

Uniqueness of the Sunrise Program

According to the U.S. Census Bureau (2020), 14.1% of the population in Los Angeles County is aged 65 and older. There are around 1,405,474 older adults living in LA county. In 2017, 870,000 Asian adults aged 65 and older resided in California. The current database lacks the number of Asian older adults who are living in LA county. The Sunrise Program aims to reach out to 100,000 Asian older adults in LA county. The uniqueness of the "Mind and Body" therapy program is that it is a culturally adapted service where the treatments coordinate with Asian relaxation skills such as Tai Chi and Zen meditation. Also, all therapists are fluent in one of these Asian languages: Chinese, Korean, Japanese, Vietnamese, Filipino, Thai, or Khmer. The drop-in therapy service does not require referral and does not have a waitlist. Unlike most of the existing therapy services, which have long waiting lists, "Mind and Body" therapy is open on both weekdays and weekends, and better protects clients' confidentiality by not requiring clients to be physically present in the mental health clinic. Unlike the counseling service APCTC provides, which requires clients to make an initial call to enroll in the program, the Sunrise Program reaches out to older adults initially by

sending flyers and brochures with graphical enrollment instructions to them by mail. This approach increases the accessibility of services and decreases older Asian adults' anxiety about talking on the phone and waiting on a long waitlist. Unlike most of the existing programs, which require clients to be covered by insurance and to be legal residents in the US, the Sunrise Program welcomes clients who do not have insurance and may be currently residing in LA County undocumented. Also, the "step by step" weekly technology workshop is more accessible and culturally appropriate than the Aging Mastery Program (AMP) because it is presented in Asian languages. Last but not least, there is no current community engagement service like "Bridges," which targets specifically older Asian adults.

Project Aim

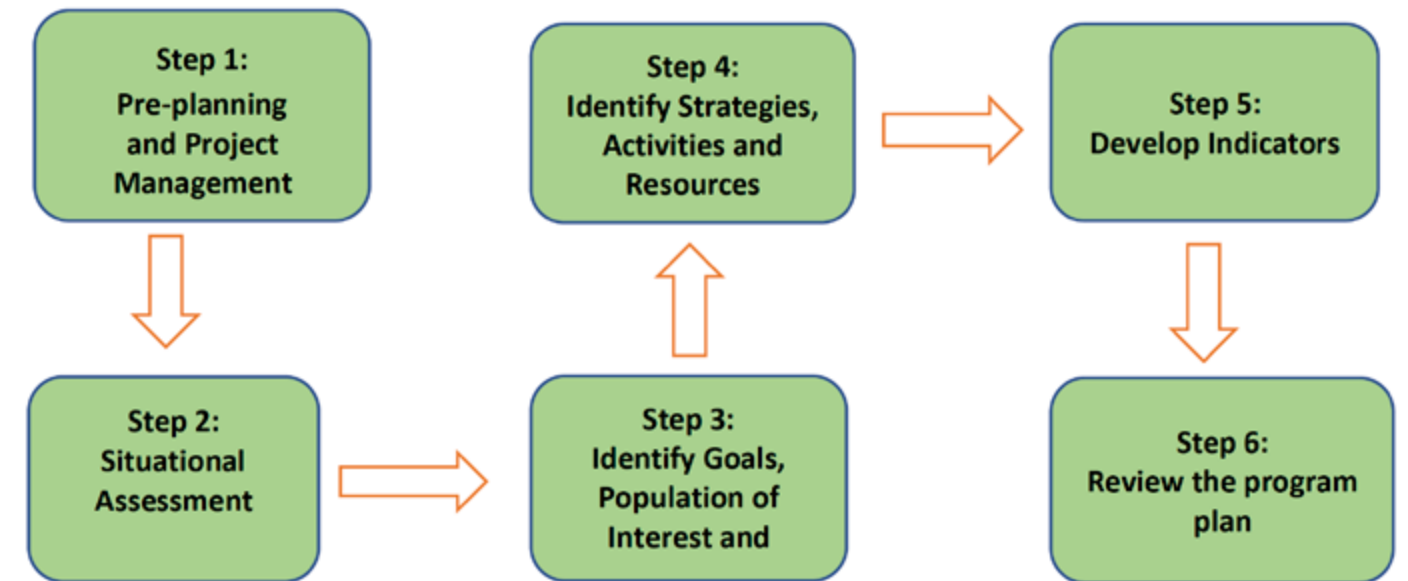
The Sunrise Project aims to decrease older Asian adults' loneliness, social isolation, depression, anxiety, and other mental distress during and after the COVID-19 pandemic in Los Angeles County in California. In addition, the Project intends to provide clients with therapy adapted to Asian culture and to increase their technology skills via delivering weekly workshops and community engagement services. Through doing this, the project contributes to the achievement of three of the 12 social work grand challenges: Close the health gap, Advance long and productive lives, and Eradicate social isolation (University of Nevada, Reno, nd.)

Project Objectives

1. To reduce depression, anxiety, loneliness, social isolation, and grief among older Asian adults aged 65 and above during and after the COVID-19 pandemic.
2. To increase older Asian adults' competence in using technology and to increase their communication via electronic devices in order to create greater convenience in their life.
3. To connect older Asian adults to bilingual health care providers and to help them overcome the language barrier and apply for social benefits.

Strategy and Planning

The Health Communication Unit's planning framework (2001) will be used as the planning framework for the Sunrise Project. Below are the six steps of the framework:



Collaboration and promotion

The Sunrise Program will collaborate with Workforce Development Aging & Community Services (WDACS), National County on Aging (NCOA), Los Angeles City Department of Aging, hospitals, retirement homes, and local senior activity centers and churches in LA County, such as Sakura Gardens at Los Angeles, Arcadia Gardens Retirement Hotels, and San Gabriel Valley Medical Center. The purpose of collaboration is to promote the Sunrise Program and enroll as many older Asian adults as possible, because this population requires a lot of emotional and social support. Housing coordinators and staff in each retirement home will connect with older Asian adults and refer them to the Sunrise Program. Flyers and brochures will be sent by mail individually to older Asian adults and also sent to managers in retirement homes and hospitals to invite more older Asian adults to participate.

Recruit bilingual therapists and social workers

The Sunrise Program will have 20 locations across LA County. Every Sunrise Program office will hire 30 bilingual therapists who must be fluent in English and an Asian language. Additionally, they ought to have one year of clinical psychotherapy experience, with experience working with older adults preferred. Therapists need to commit to working four hours during the weekend, and they can have a day off on a weekday. During the COVID-19 pandemic, interviews will be conducted online. Bilingual social workers will be hired as advocates and case managers for the community engagement program. They must have previous experience working in human services, public welfare, or non-profit organizations, as well as experience of working with ethnic minorities. Qualifications include being familiar with social welfare, public policy, social security benefits, housing systems, immigration policy, and advocacy in LA County. Masters in social work students will also be recruited as interns in the Sunrise Program to provide individual therapy for clients, and must be supervised by a clinical psychologist.

Training for employees

After new staff are hired, they will be required to attend mandatory cultural training for 40 hours across two consecutive weeks. The cultural training is focused on Asian culture. It will inform staff what to expect culturally, emotionally, and mentally in working with older Asian immigrants and refugees. Also, the training will educate staff about Asian taboos and traditions in reduce misconceptions and communication conflicts. Besides the Asian culture training, sexual harassment prevention training, elder abuse prevention training, mental illness assessment and diagnosis training, treatment planning training, data entry training, and Health Insurance Portability and Accountability Act (HIPAA) training are all mandatory, and need to be completed within four weeks of being hired. All training will be provided via an online platform.

Opening hours and work schedule

The business hours of the Sunrise Program are Monday to Friday 9 a.m. to 6 p.m., Saturday and Sunday 9 a.m. to 2 p.m. Therapists and social workers are required to work 40 hours a week with four hours on the weekend; they will have two days off, with one day off on weekdays.

Activities

“Mind and Body” online individual therapy

The “Mind and Body” program is an online drop-in individual therapy service adapted to Asian culture for older Asian adults living in LA County. Clients do not need a referral, and they will wait in line for no more than 20 minutes. Clients will be paired with a therapist who speaks their native language. Unlike most of the current counseling services using westernized techniques, “Mind and Body” therapy coordinates with Asian relaxation techniques, such as mindfulness, Tai Chi, and Zen meditation. Research has shown that Tai Chi is correlated with improvements in mental and emotional health (Wang, 2013). Additionally, practicing Tai Chi enhances physical strength, cardiovascular and respiratory functions, pain reduction, and immune function (Hammond & Freeman, 2006; Yeh et al., 2004). Clients

who meet the requirements for long-term counseling will be assigned to a therapist for a 12-week program to reduce stress, anxiety, and depression. Bilingual therapists will utilize cognitive behavioral therapy, mindfulness, expressive art, couple therapy, and family therapy during the treatment.

“Step by Step” weekly technology workshop

Older adults often find technology overwhelming, and they show strong resistance and fear of using technology; however, technology is becoming more and more important in our daily lives. “Step by Step” is an eight-week technology workshop that helps older Asian adults to resolve difficulties in using technology and teaches them to use technology to assist with online banking, health care, and bill payments. The workshop will be presented in Chinese, Korean, Japanese, Vietnamese, Filipino, Thai, and Khmer. Every week, the workshop facilitator will present different technology topics for one hour. Each workshop will enroll six to eight members. The curriculum is as below:

- Workshops 1 and 2: Using email, text messages, Facetime, Zoom on cell phone and computer
- Workshop 3: Accessing online banking on cell phone and computer, with one guest speaker
- Workshop 4: Renewing California ID, driver's license, and paying for an annual vehicle registration fee on the Department of Motor Vehicle website
- Workshop 5: Paying utility bills online
- Workshops 6 and 7: Explaining the tax system, and filing tax returns online, with one guest speaker for each workshop
- Workshop 8: Things to do when you have a medical emergency, things to do when your partner has a medical emergency, with two guest speakers from the medical field

Participants who successfully complete an eight-week workshop will be granted a \$15 Target gift card. The goal of granting gift cards to older adults is to encourage them to participate in the workshops.

“Bridges” Community engagement service

Social workers will do home visits biweekly to support older Asian adults. According to the U.S. Census Bureau (2012), there are 4,484,000 people aged 65 and older in California, 4,391,000 of whom are covered by some type of health insurance. Before the implementation of the Patient Protection and Affordable Care Act (ACA), older Asian adults were less likely to have health insurance (AARP, 2016). Older Asian adults in the US show less likelihood to engage in health care services due to language barriers (Gee et al., 2007). Therefore, social workers in the “Bridges” community engagement service will connect older Asian adults to a primary care provider who speaks their native language.

Some older Asian adults are not proficient in English; therefore, they will face challenges in applying for medical and social benefits. Though multilingual services are available, there is a long waiting time. Older Asian adults have difficulties in reading English letters and often miss price reduction offers on their utility and internet bills due to language barriers. The bilingual social workers will visit older Asian adults at their residence and interpret those English letters and promotions for them for free. Additionally, the social worker will help older Asian adults to better understand the medications they have been prescribed and explain how to use over-the-counter medications in their native language.

Older adults are more likely to have smaller social networks (McPherson, Smith-Lovin, & Brashears, 2006), and they have a higher tendency to experience loneliness during holiday seasons (Dykstra, Van Tilburg, & Gierveld, 2005). To help older Asian adults feel less lonely and more fulfilled in their retirement homes, social workers will do special home visits during holidays, such as Thanksgiving, Christmas, and New Year. The Bridges community engagement service will prepare special gifts for these older Asian adults to make them feel cared for and supported.

Evaluation

Mental health evaluation

The evaluation of clients' progress and program effectiveness will be monitored by a self-report survey and clinical measurement instrument. Clients who enroll in the 12-week therapy program will be assessed on biological, psychological, social, and cultural aspects. A treatment plan will be provided after the therapist analyzes the outcome of assessment. Clients' depression level will be measured by PHQ-9, a 12-week therapy program aimed to reduce clients' depression symptoms by 40% at the end of the treatment. Clients' anxiety levels will be monitored by Generalized Anxiety Disorder Assessment (GAD-7). The treatment goal will decrease clients' anxiety symptoms by 40% at the end of the treatment. Both measurement tools will be utilized in the first session, in the sixth session, and in the last session.

Technology use evaluation

Older Asian adults' technology proficiency will be measured by pre-test and post-test questionnaires. The questionnaires include 20 questions about technology. In the first workshop, participants are required to complete the pre-test questionnaire. In the last workshop, participants' technology proficiency will be assessed by a post-test questionnaire. The goal is to improve the correct rates by 50%.

Community engagement evaluation

Community engagement effectiveness will be measured by clients' level of social support and feeling of loneliness. The following scales will be used for measurement: Social Support Questionnaire (SSQ6), Lubben Social Network Scale and De Jong Gierveld Loneliness Scale. Clients' social isolation level and loneliness will be assessed once in three months, the goal is to reduce clients' social isolation and loneliness by 50% in a six-month service.

Annual report

The Sunrise Program will publish an annual service report at the end of every year. The annual report will be shared with stakeholders, partners, government, and the general public. The annual report should include client progress, community outreach results, collaboration efficiency, distribution of funding, goals for next year, and planned improvement of the program.

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Appendix 1 - Project Timeline

Activities	0-3 months	3-6 months	6-9 months	9-12 months	12-15 months	15-18months
Purchase of equipment						
Rent offices						
Collaborate with partners						
Recruit and train social workers and therapist						
Engage with key stakeholders						
Reach out to clients						
Conduct online therapy						
Conduct online weekly workshops						
Social workers do home visits						
Report and presentation to partners and stakeholders						
Monitoring and evaluation						

About the Author

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Tongqing Zhu is a graduate student at the University of Southern California in the Master of Social Work program. Tongqing was born and raised in China and immigrated to the United States. She plans to become a licensed clinical social worker to provide mental health treatment to children, adolescents, young adults and their families, her long-term career goal is to establish child protective services in China.



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PROPOSAL

WE CAN:

Harnessing the power of social networks to create focused energy behind global movements

Authored by:

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[Listen to Audio Intro](#)



THESE ISSUES—CLIMATE CHANGE, SYSTEMIC RACISM, UNEQUAL ACCESS TO HEALTHCARE AND EDUCATION, POLITICAL POLARIZATION, ETC.—ARE NATIONAL AND GLOBAL IN SCALE, AND WILL NOT BE SOLVED WITHOUT MASS MOVEMENTS OF CONCERTED ACTION AND COOPERATIVE EFFORT

Abstract

We are currently facing a plethora of complex global issues that must be addressed to eliminate gaping disparities in quality of life and secure the continued growth and prosperity of human society. These issues—climate change, systemic racism, unequal access to healthcare and education, political polarization, etc.—are national and global in scale, and will not be solved without mass movements of concerted action and cooperative effort leading to tangible changes in our political, social, and economic systems. Additionally, because these challenges are interconnected and all of great importance, we need to tackle them simultaneously and consider their intersectionality as we work to redesign societal structures. This can feel like a daunting task, especially for people wondering how they, as individuals, can contribute to making the world a better place; for this reason, we need a platform that is specifically designed to empower and unite individual people in concerted action.

To address this need, I propose WeCan, a virtual platform that will strengthen the movements dedicated to solving the most complex national and global issues by providing a space for building connections at three levels: connecting individuals with existing movements pushing for change, connecting individuals with each other to hold one another accountable for taking action to support the causes they care about, and connecting leaders both within and between movements to discuss their shared values and promote cooperation to achieve both their collective and unique goals. WeCan will help us lobby for solutions to the most pressing

global problems by providing a space for organizations and individuals to connect with each other, prioritize key action steps, and push for tangible progress at local, national, and global levels.

WeCan: The Idea

The goal of WeCan is to facilitate the organization of social and political movements so that we can better unite the energy of individuals behind movements pushing for tangible progress against the most complex issues nationally and globally. WeCan will be a central information hub for social movements and will be designed to help build connections within and between movements at multiple levels. WeCan will be available as an app for Android and iOS, and will also have a website with the functionalities of the app so that as many people as possible can connect with the platform. The description below provides an initial concept for the platform, which will be further clarified in the planning phase, as outlined in the timeline.

WeCan will serve both individuals looking to be actively involved with social movements and the leaders of these movements by allowing for the creation of two distinct account types designed to meet the specific needs of these two groups. Movement leaders who make accounts with WeCan will be able to curate pages on the platform, which should play the same role that their websites currently play: on these pages, they will be able to include information describing their movement and their demands, videos, news updates, connections to APIs which make it easy for people to do

nate to their movements, find resources for supporters, etc.

When individuals create accounts, they will be asked to provide basic demographic information including name, email, and zip code. Individuals will be able to search for the pages of the movements they want to join or learn more about. The app will also use algorithms to provide individuals with suggested lists of organizations to join, in this way helping to garner more support for the movements who register with WeCan. On the movements' pages, individuals will be able to click a join button that will provide the movement with the individual's name, email, and zip code, thus serving the functionality of the sign up boxes that currently exist on movements' websites. Once an individual joins an organization, posts and updates from this organization will show up in the individual's main feed: this feed will be the first screen that the app goes to when an individual user opens the app. The user will be able to filter their feed to display only messages and updates from certain movements or from all movements they have joined within a particular category of concern, such as climate change. This feature of the app will be valuable for both individuals and movement leaders as it will provide a unified location for an individual to find all the latest updates from the movements they are involved with, preventing this information from getting lost in a cluttered inbox.

WeCan will go beyond this basic level of connection in two ways: at a broader level and at a more personal level. At a more personal level, the app will allow for the creation of small communities of individual users who regularly check in with each other and hold each other accountable for taking specific actions to support the causes they are passionate about. The app will have functionality for group messaging; within group messages, there will be a tab users can open to check off action steps and see what action steps others have taken. It is not necessary that all the members of these communities have the same list of causes they are most passionate about; instead, the goal is to encourage sustained engagement by individuals with the movements they are most passionate about by developing communities of users who support each other in pursuit of changing the world for the better.

The broadest level of connection that will be promoted by WeCan is perhaps the most important. The

WeCan team will work with the organizations that register on the app to connect leaders of organizations within and across causes in conversation. These dialogues will address intersectionality between movements as well as how organizations can work with each other to help each other achieve key end goals. For example, within the realm of climate change, there exists a wide variety of groups with different proposed strategies, ranging from those who advocate market based approaches to those who want to pass the Green New Deal. There is also important intersectionality between climate, public health, and anti-racism embodied in the issue of environmental racism. WeCan will facilitate discussion between organizations both within and across areas to discuss common values and specific objectives of each organization. Together, organizations will identify the tangible action steps that most urgently need to happen to achieve their collective end goals. The results of these discussions will then be synthesized and published in the app for individual supporters of these movements and organizations to read, which will help them understand the most urgent action steps they should support, thus concentrating energy towards key action items.

Landscape Review

There are two main types of platforms that are similar to WeCan and already available for use: those that exist specifically to connect individual people with organizations looking for volunteers, members, or financial support, and those that were designed more generally as social platforms, but that have been utilized by the organizers of social movements to connect with supporters and spread their messages and objectives. This section will provide an overview of apps in each of these two areas, and then demonstrate how WeCan will combine the strengths of pre-existing platforms in a new way to better facilitate organized social change.

Among platforms designed to act as a bridge between individuals and organizations, the most prominent is VolunteerMatch, a nonprofit whose mission is to connect good people with good causes. VolunteerMatch provides a virtual infrastructure where people looking to make a difference and tax-exempt organizations can connect with each other (VolunteerMatch 2020, "About Us"). Individuals can make accounts on VolunteerMatch for free; once registered, they can se-

lect the causes they care most about and the skills they believe they can bring to a volunteer position. Organizations who make accounts with VolunteerMatch can choose between the Basic service plan, which is free of charge, and the Community Leader service plan, which offers additional volunteer recruiting benefits (VolunteerMatch 2020, “FAQ”). VolunteerMatch also helps corporations achieve their corporate responsibility initiatives by offering an API for company employees to search for opportunities and track their volunteering (VolunteerMatch 2020, “VolunteerMatch Solutions”). By the numbers, VolunteerMatch has been quite successful in achieving its mission; since their launch in 1998, they claim to have made more than 16 million connections between volunteers and organizations (VolunteerMatch 2020, “VolunteerMatch Live Map”), and they currently host over 120,000 organizations on their platform (VerifiedVolunteers 2019). Additionally, in 2016 the total social value of the VolunteerMatch Network was estimated to be 1.6 billion dollars (VolunteerMatch 2016, “2016 Impact Report”). These statistics demonstrate the power of utilizing a virtual platform to bring organizations and individuals together in a centralized network, a key feature that WeCan will also employ.

WeCan will be similar to VolunteerMatch in that it will have separate account types, and therefore somewhat different user interfaces, for individuals and movement leaders, and it should add value in a similar manner to VolunteerMatch by facilitating connection between individuals and the leaders of good causes through the creation of a single, unified location where individuals can find all of the updates from the movements they care about. However, there are important differences between WeCan and VolunteerMatch as well. Whereas VolunteerMatch is oriented more towards connecting individuals with volunteer opportunities, WeCan is focused on strengthening political and social movements and thus has its own unique niche. Additionally, WeCan has the added feature of connecting individuals on the platform to each other in communities designed to encourage sustained, meaningful involvement with organized causes and movements, which is something not found on VolunteerMatch and which should further strengthen the app’s effectiveness in encouraging users to engage with making the world a better place.

Another important group of platforms that are currently being used to organize social movements are the general social networking platforms: Instagram, Face-

book, and Twitter. Unlike VolunteerMatch, these platforms were not specifically designed to connect people with causes, but have been widely used by leaders of countless social movements to amplify their messages and unite communities of people passionate about advancing social change in particular areas. One of the most effective strategies employed by movements on these platforms is the use of hashtags to organize supporters. A key example of this is the Black Lives Matter movement, which began as a hashtag in response to the acquittal of George Zimmerman in the shooting death of Trayvon Martin (Anti-Defamation League 2020). Since then, the hashtag #BlackLivesMatter has been used millions of times in posts demonstrating solidarity, providing information about organized protests, and documenting incidents of police brutality (Anderson 2019). The leaders of the movement also use hashtags to promote specific campaigns within the movement; recently, the Black Lives Matter movement promoted #WhatMatters2020 to encourage their supporters and allies to vote in the 2020 United States elections (Black Lives Matter 2020). Given the importance of hashtags, WeCan will be designed to use hashtags to organize information within a user’s feed, from the level of broad topics such as #climatechange down to movement specific levels such as #BlackLivesMatter and #WhatMatters2020 through a hierarchical structure. This design piece will be more precisely defined during the planning stage of the project, as outlined in the timeline.

While social media has been key in the growth of Black Lives Matter and other movements, there are several drawbacks associated with using these platforms to organize social change. Research by Zeynep Tufekci at the University of North Carolina Chapel Hill has found that although social media has been key in the explosive growth of social movements organized on these platforms, the rapid expansion of such movements can also make them more fragile compared to grassroots movements: because social media allows movements to scale up so quickly, the leaders of these movements no longer need to spend years building the infrastructure of the movement and crafting a cohesive message in order to gain wide-spread traction, which can be a problem if divisions within the movement weaken its overall strength (Tsukayama 2019). Other issues arise due to the fact that social media sites were not specifically designed with social movements in mind. For example, on June 2nd of 2020, millions of social media

users began posting black squares on their profiles in solidarity with the Black Lives Matter movement in what was known as blackout Tuesday. While these posts may have been well-intentioned, users who posted black squares using #BlackLivesMatter saturated the hashtag and drowned out the voices of organizers who for years had used the hashtag to gather essential information. Blackout Tuesday was also criticized as a mass demonstration of “slacktivism,” a synonym of the terms “performative allyship” and “virtue signaling” that is used to refer to superficial demonstrations of support for a movement that do not meaningfully contribute to the cause (Ho 2020).

WeCan is designed to address these problems while drawing on the power of social networks to connect millions of people behind a movement. The facilitation of discussions between leaders of social movements, one of the three key levels of connection that WeCan will foster, should help with the issue of movement fragility noted in Tufekci’s research by giving leaders across movements a space to come together to discuss shared goals and values and develop strategies to achieve their unique and collective visions. Because WeCan is specifically designed to serve movements for social and political change, it will be built so as to prevent losses of information such as what occurred with Blackout Tuesday: one potential solution to address this issue is to give movement leaders special priority within hashtags used to organize information, or to completely separate contributions from individuals and from leaders in subsections of hashtags. The app will also encourage meaningful activism, as users who generate checklists of actions they plan to take to support the movements they support within group messages will be held accountable to their commitments by the other users in their message community.

Further landscape review will be a key step in the initial phases of platform planning and design in order to gain even deeper insight into how WeCan can best be structured so as to achieve its purpose and benefit the diverse movements and communities who will use the app to organize and effect positive change in the world.

The Plan: Project Description and Outline

Implementation of the project will be divided into four stages. The key objectives to be accomplished in each stage are outlined below (Existek 2020).

Planning

1. Build a team: I will need to secure financial support for this idea to be realized. Although the total cost of the app will depend on the complexity of features that are chosen to incorporate at launch, initial price estimates indicate that creation of WeCan will cost around \$100,000 to build given the complexity of social networking sites (Chew 2019). I will need a team of software developers and UX/UI experts to build the platform as well as a broader team of people to assist in refining the idea for the app taking into consideration social implications as well as business development. In this first step, I will also work on developing a more refined budget as well as a more detailed timeline in consultation with the team members I bring on to support the project.
2. Conduct in-depth landscape review and user research: To ensure that WeCan is optimally designed to serve the growth of social and political movements, I will conduct a deeper analysis of how social movements are currently organized by virtual means. I will talk to leaders of movements such as the Black Lives Matter movement and the Sunrise Movement to discuss the functionality they would like to see in the app. I will synthesize the results of this research in a written review and will go over the findings with my team.
3. Initial feature decision: After completion of the previous step, we will be in a good position to make a well thought out decision about which key features will be available on WeCan at its launch. Any features that do not make the initial cut will be compiled into a list and implemented in future platform updates.

App Design

1. User experience design: A significant amount of the user research will already have been conducted in the planning phase; focus will now shift to information architecture, wireframing, prototyping, and user testing. Working with UX experts, I will produce a visual layout of the functionality of the app that has been designed with usability in mind.
2. User interface design: I will work with a UI expert to choose the stylistic elements of the app: colors, fonts, etc.

App Development

1. Back-end development: The back-end architecture of the app, including the server and app database, will need to be built with help from those experienced in the field.
2. Front end development: Following initial setup of the back-end architecture, coding of the app interface can occur in parallel. This process will bring to life the prototype built in the UX and UI design process and will require many iterations of editing and fine-tuning.
3. Testing: Most of the testing will occur within the final weeks of active development of the app. Any bugs that the testers find will be resolved before launch of the app.
4. Finalization and launch: The app will be submitted for approval to the App Store and Google Play, and any changes that need to be made in order to secure approval will be made.
5. Post-launch support: For the first two weeks after launch, the app development team will need to monitor the performance of the app and be available to implement any key fixes as needed.

Ongoing

1. App maintenance and development of new features: We will continue to seek feedback from users of the app after it has launched to make sure that it is being properly maintained and to update it with new functionalities that will allow it to better serve its purpose.

2. Facilitation of dialogue between leaders of movements: After launching the app, the WeCan team will play a key role in setting up conversations between the leaders of movements who use the platform, as described in previous sections.

Narrative

My idea for WeCan is important now more than ever because we are collectively facing many significant global challenges—including climate change and systemic inequities—which we urgently need to address and which cannot be solved simply through technological innovations, but which need to be solved through policy changes and fundamental restructuring of societal systems. I believe that such change will be achieved only when millions of us come together and insist that we build a better world; this will be done in acknowledgement of the fact that the current status quo in how we live our lives cannot be sustainably maintained and privileges a select few over many others within humankind. Technology has allowed us to connect with each other in unprecedented ways, so I was inspired to think about how technology might be able to be thoughtfully used to facilitate making progress against the issues I feel so strongly that we need to address. Specifically within the United States, the rhetoric of polarization currently underlying national political and social discourse complicates our ability to tackle these problems, which is why I also felt it was important to include in my idea the role that WeCan will serve in connecting the leaders of different movements to discuss how they can support each other in making the world a better place for current and future generations.

In building the WeCan platform and community, I will consistently look to movement leaders and the diverse communities whose voices they uplift to ensure that their wants and needs are being served by the app. I have included in the timeline for app development a planning phase where I will work directly with movement leaders to further refine my idea, and once the platform has been created, will continue to meet with movement leaders to check in and see what is going well and what is not going well with the platform in order to identify changes that need to be made so that WeCan effectively furthers movements for change. All movements that register with WeCan will be consulted

WE CAN WILL USE THE POWER OF TECHNOLOGY TO THOUGHTFULLY BUILD CONNECTIONS WITHIN AND BETWEEN THE INDIVIDUALS WHO LEAD AND SUPPORT SOCIAL AND POLITICAL MOVEMENTS, THEREBY HELPING TO MOBILIZE MILLIONS OF PEOPLE IN CONCERTED EFFORTS TO TACKLE THE MOST IMPORTANT GLOBAL PROBLEMS.

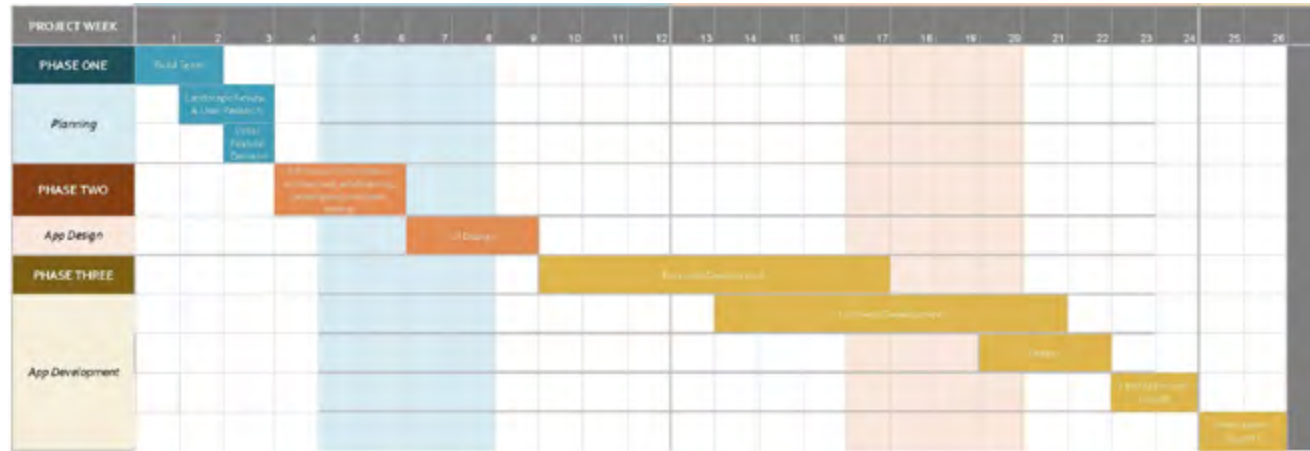
with prior to account creation to ensure that their aims truly align with making the world a better place for all people. This vetting process and the regular meetings I will have with movement leaders will help ensure that the idea for WeCan is carried out in an ethical way.

Effectiveness will be measured across levels of connection. At the most personal level, the app will be able to track data from the small communities of users regarding whether individuals are consistently taking the action steps they have committed to take in support of the movements they are passionate about. At the level of connecting individuals with organizations, effectiveness will be measured by determining whether organizations are able to increase engagement in the ways that they aim to do so: whether by increasing their number of supporters, bringing in more donations, or some other metric. The key test will be at the broadest level. The app will have succeeded if organizations registered with the app are able to achieve their end goals towards making the world a better place: if legislation gets passed to change the world for the better, and social and political systems get reorganized to better serve diverse communities. It is at this level of impact that my idea will be most important. As just one example, if WeCan allows us to more rapidly implement the policy changes needed to prevent the worst case warming scenarios of climate change, then WeCan could be capable of helping not only all people currently living, but all future generations too by guaranteeing them a livable planet where they are able to find safety and happiness. I hope to build a team of people to transform my vision for WeCan into a platform that can help social and political movements achieve their objectives towards making the world a better place - I am committed to achieving this goal and know I will succeed working with a group of people who are equally driven in pursuit of helping others.

Conclusion

WeCan will use the power of technology to thoughtfully build connections within and between the individuals who lead and support social and political movements, thereby helping to mobilize millions of people in concerted efforts to tackle the most important global problems. The effectiveness of virtual platforms in building networks of people looking to change the world for the better has already been demonstrated through the success of VolunteerMatch and the use of social media for political organizing; however, because WeCan will be created specifically with social movements in mind, it will be best suited for this purpose. In carrying out this project, I will look to movement leaders and the diverse communities they represent to ensure that WeCan will amplify their voices and enable them to effect the social and political change they wish to see in the world. I am excited to continue to refine my idea for WeCan and to see how this platform will promote sustained engagement of millions of individuals with movements they are passionate about, making it easier for individuals to make the world a better place.

WeCan Project Timeline - Initial Draft



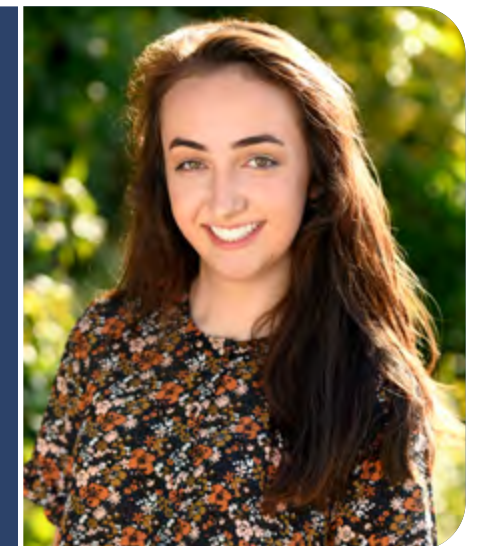
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Christine Cannon is a sophomore at Pomona College in Claremont, California, currently majoring in molecular biology. She is passionate about creating a positive impact in medicine, tech, and climate policy.



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PROPOSAL

GIVING STREETS:

A QR solution
to spontaneous
donations

Authored by:

Neha Halebeed

Nationality: American

University of Southern California

Los Angeles, United States

[Listen to Audio Intro](#)



WITH PEOPLE TRAVELING ON ROADS LESS FREQUENTLY OR NOT AT ALL, PEOPLE EXPERIENCING HOMELESSNESS HAVE BEEN LEFT UNSEEN BY THOSE WHO ARE WELL OFF AND ABLE TO GIVE, INCLUDING MYSELF

Stop Sign: Looking at Two Pandemics at Once

The COVID-19 pandemic has had a devastating impact on those already teetering on the edge of misfortune, including those without and those soon to be without a house. With people traveling on roads less frequently or not at all, people experiencing homelessness have been left unseen by those who are well off and able to give, including myself.

So, when I started driving on Atlanta highways again and saw people asking for money, I wanted to give them cash, but didn't have any on me. In fact, I never had cash on me. You and most people you know most likely don't carry cash around with you; we live in an increasingly cashless society due to technology and lowered cash circulation. Due to the Coronavirus pandemic prioritizing touchless transactions, cash holds no value in many establishments. So, even if I had the physical currency to give, it might not enable the recipient to buy food, water, toiletries, and other items essential for daily life.

The houseless crisis (see Figure 1) coupled with the pending eviction crisis will most likely result in an uptick in the houseless population. And this is happening as more people reach billionaire status, widening the gap between themselves and those who don't have or no longer have shelter during a global health pandemic. We are at a crossroads. We either use our cashless society as an excuse to withhold help from others, or we innovate to help people currently experiencing homelessness and keep others from having to experience homelessness.

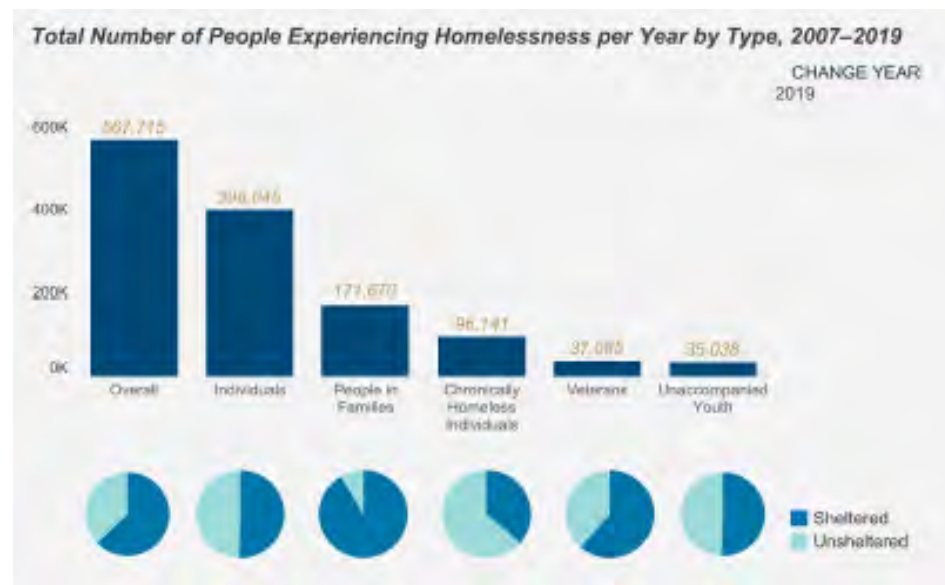


Figure 1 (National Alliance to End Homelessness, 2020b)

Crossroads: A QR Solution to Spontaneous Giving

I came up with an idea about where a QR code could be utilized. The receiver could hold a piece of paper with a QR code, and a passerby who wants to donate could scan the QR code and "load" the card with a certain amount of money. Then, at partner stores, the beneficiary could spend the money on whatever items they need. I thought this idea would alleviate the issue of people not having cash to give and people not wanting their money to be used to buy drugs or illegal substances, while also taking into account that the receiver may not have a phone. This idea still relies on people being willing to spontaneously give money to someone in need and provide a "first-aid" response to their current situation.

I wrote out product specs on my notes app and was confident until I started learning about PCI compliance, the cost of building an app, etc. But in spite of these challenges, I was still eager to get this project going. My dad told me to see if anyone was already doing this, so I looked, and no one in the US was. However, I found Giving Streets, an organization based in Greece that is doing almost exactly what I had in mind, so I reached out to one of the founders on LinkedIn. We started having conversations and decided we could work to bring Giving Streets to America.

Taking the Wheel: What Has Driven Me to Help

This isn't the first time I've thought about my privilege in comparison to people experiencing homelessness. Last year, pre-COVID, my friends and I were in Los Angeles's Arts District, walking to a restaurant. As we got closer, the stores disappeared and the crowds dispersed, opening up an empty street until we turned a corner. We began walking down a street lined with tents and a few people sprinkled around, clearly disengaged with reality due to either mental illnesses or conditions that have led to drug use, or simply to men-

tally separate themselves from their situation. We had wandered onto Skid Row without knowing it. Is it wrong to say I felt uncomfortable and slightly unsafe? I don't know. I know there has been a history of violence in Skid Row, but isn't it wrong to stereotype an area for its low points rather than exploring and understanding the cause of those low points?

A fire truck that was driving past us stopped to pick us up. I later questioned myself about why they would stop to help us but not the people living on those streets. The answer was clear: we looked like targets because of our apparent privilege. We were given a better hand in life, and they were willing to help us not lose any of our cards.

Street Corners: The Homelessness Pandemic in the United States

My work with Giving Streets has come from recognizing my privilege, the shifting currency medium, and the implications of COVID-19 for vulnerable populations, and from wanting to initiate change. As of January 2019, the United States Department of Housing and Urban Development's Annual Point in Time Count indicated 567,715 people experiencing homelessness in the United States; since then, this number has likely increased (National Alliance to End Homelessness, 2020b). Additionally, COVID-19 has had a devastating impact on the homeless population (see Figure 2). According to the CDC, "Because many people who are homeless are older adults or have underlying medical conditions they may also be at increased risk for severe illness than the general population" (2020a). People who are homeless tend to deal with physical conditions similar to those who are 15 to 20 years older than they are. This is significant because people 65 or older are particularly vulnerable to COVID, according to the Centers for Disease Control and Prevention (2020b). So, this would mean people experiencing homelessness who are 50 or older would be particularly vulnerable; there are an estimated 206,623 people over the age of 50 experiencing homelessness on a single day. The CDC also identified people with preexisting health conditions as a risk group (2020c). A recent study "sampled unsheltered individuals from

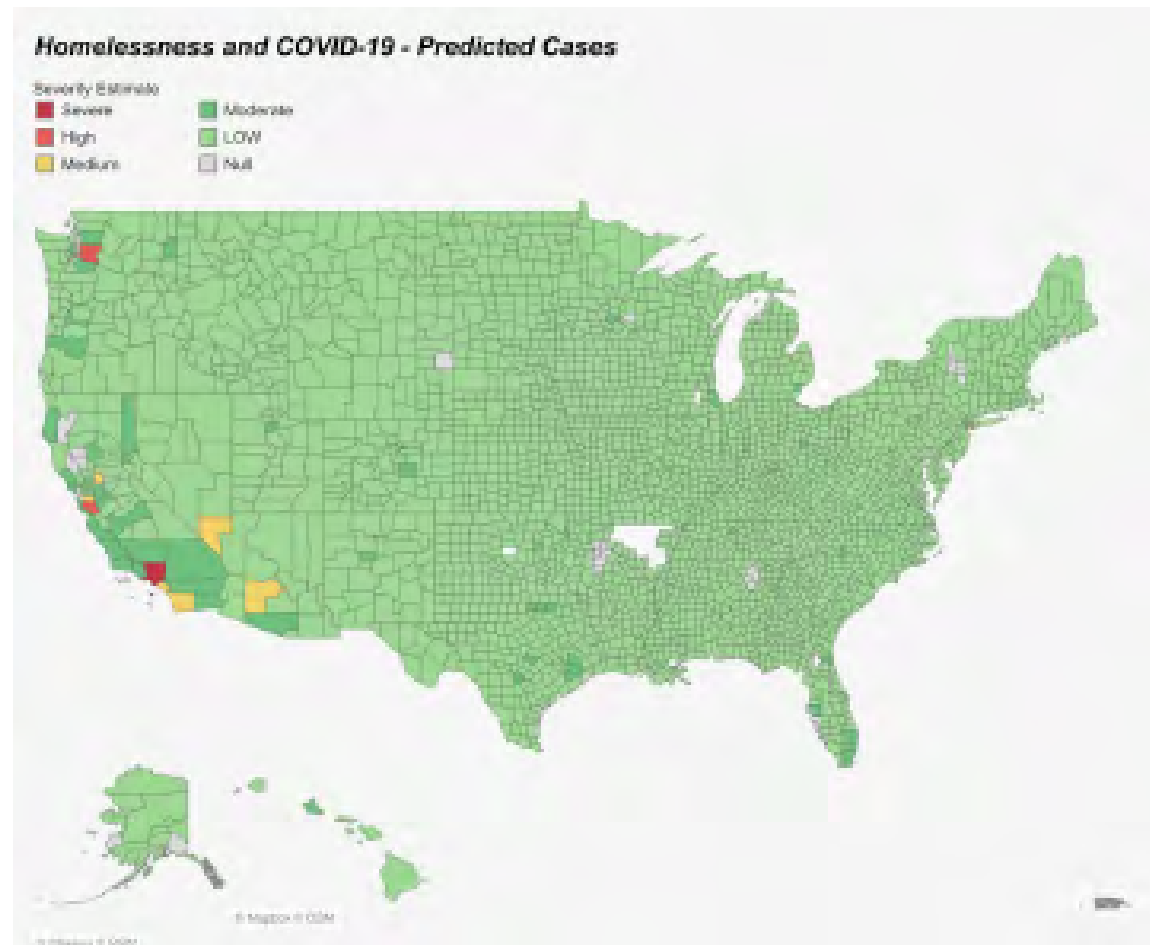


Figure 2 (National Alliance to End Homelessness, 2020b)

across the country, finding 84 percent self-reporting existing physical health conditions.” In comparison, “only 19 percent of people in shelters said the same” (National Alliance to End Homelessness, 2020b).

Many unsheltered, and even sheltered, houseless people do not have access to daily needs, much less access to masks and healthcare. Also, social distancing ordinances are hard to follow when someone does not have a house to quarantine in. These conditions put the homeless population in a situation where contracting COVID-19 is much more likely, which only exacerbates their already vulnerable health.

The homelessness pandemic is not just a result of the coronavirus. While there has been a long term 12% reduction in homelessness since 2007, in the last three years we have experienced an increase in homelessness, which the coronavirus will most likely accelerate. The social services agencies that support homeless

populations aren’t equipped to handle people needing to isolate. Schools and offices were able to transition their physical space online, but you can’t transition shelter online. This has understandably caused strain on the homeless services system: infected individuals can’t be helped as they had been in the past since that help has historically relied on physical rather than virtual assistance.

Making a U-Turn: Why We Are Where We Are and How We Can Turn It Around

Many people have a misconception about what it takes to become homeless. It’s a lot easier to lose your

house than many people believe. Losing one job or being late on one payment can leave you unsheltered. It often isn’t a consequence of deliberate wrongdoing but rather a byproduct of our capitalist system, a system that refuses to remedy the growing socio-economic wealth gap. Therefore, we can attribute homelessness to many societal factors. In a report updated in 2015, the National Law Center on Homelessness & Poverty outlined the top causes for homelessness in individuals and families as lack of affordable housing, unemployment, poverty, lack of mental illnesses services, lack of substance abuse services, and low wages. All of these structural societal issues contribute to the growing socio-economic wealth gap.

The National Alliance to End Homelessness compiled data on people at risk of becoming homeless (see Figure 3). Around 11.8% of the US population lives in poverty; this is around 38.1 million people. Additionally, “in 2018, 6.5 million Americans experienced severe housing cost burden, which means they spent more than 50 percent of their income on housing.” While the percentage of Americans in this group has decreased for four years, the number is still 13% higher than it was in 2007 (National Alliance to End Homelessness, 2020b). This illustrates the need for structural change that prevents homelessness.

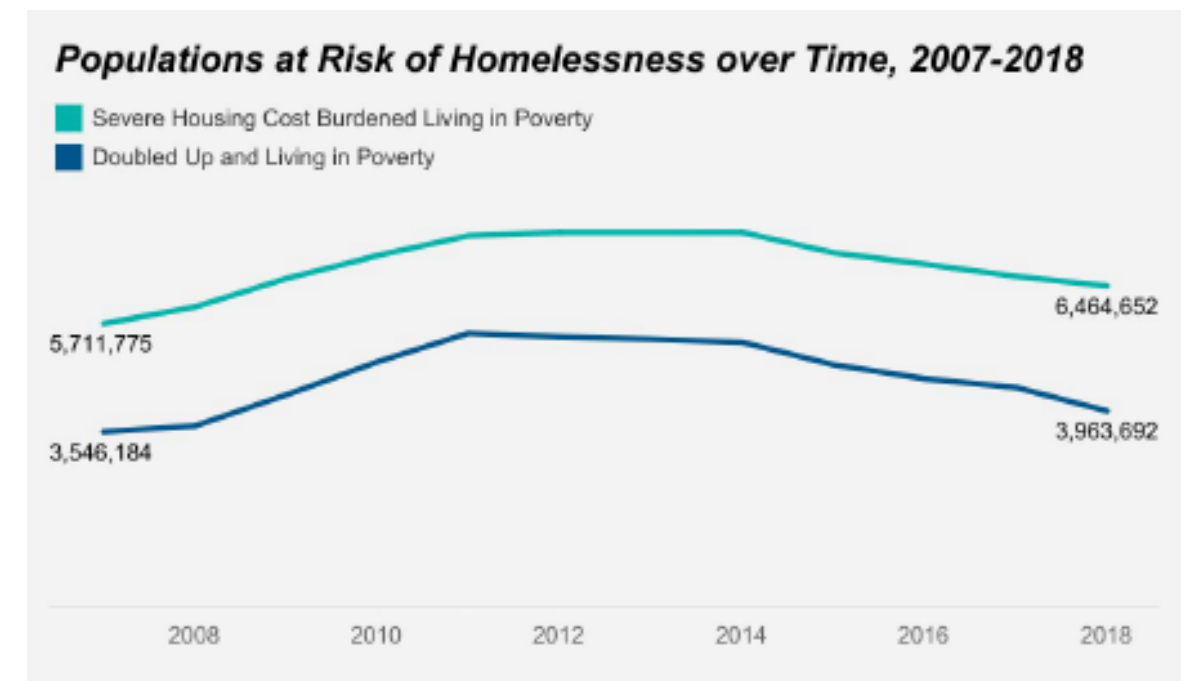


Figure 3 (National Alliance to End Homelessness, 2020b)

Therefore, my aim with Giving Streets in America is to not only be a first aid response to an individual’s needs but also to target donations to organizations that work at the community level and can help prevent people from becoming homeless. These organizations would help make lasting structural changes by emphasizing community-based redistribution. Giving Streets could also serve as education to donors since many people, including myself until recently, are unaware of sustainable alternatives to traditional donation avenues.

Yellow Light: Sometimes Slowing Down to Think is Necessary

What I’ve learned is that having an idea is the easy part. The challenge involved in actually executing an idea is the

reason many great ideas never come to life. Not only are there roadblocks to creating and executing an idea, but there is also a need for careful analysis to ensure your actions lead to your intended results rather than negative unintended consequences.

Through conversations with a co-founder of Giving Streets, I have learned about complications they have run into over one year, mainly in ensuring everything is executed legally. I also have been having discussions with a former teacher of mine. She has connected me with her design justice and mutual aid groups to discuss ethical and effective ways of bringing Giving Streets to America. These conversations have made me realize there will be two rounds of implementation: donations to established organizations and then donations to individuals. The reason for this structure is not only to buy more time for analyzing the ethical implications of donations to individuals through technology, but also to address legal risks.

Stage 1: Donations to Established Organizations and Communities

The first stage would be focused on creating easier avenues for donating to organizations and communities. This can be accomplished through QR codes placed in everyday locations and on everyday purchases to encourage spontaneous giving when making a personal purchase. Think about going to a coffee shop, scanning a QR code on your cup, and donating the cost of your coffee to help someone keep their shelter or place food on the table. Giving Streets would be facilitating donations to organizations such as local Mutual Aid funds.

Stage 2: Donations to Individuals Experiencing Homelessness

The second stage is not something I believe will be implemented immediately. There will need to be conversations with people experiencing homelessness or people who have experienced homelessness, focusing on the design principles I outline in the next section. There will also need to be careful consideration of the ethics surrounding the potential marginalization of certain groups of people experiencing homelessness, such as undocumented workers, as well as consideration of personal data security.

Road Work Ahead: Focusing on Design Principles

The actual giving side of this application seems not to pose negative ethical consequences. However, there are ethical questions, such as how much information about the beneficiary should be collected. These questions have been discussed and will need to continue to be discussed on the application side. The job of the creators behind Giving Streets is to design this application for justice rather than for ourselves. To expand on that, I want to introduce Sasha Costanza-Chock's work on Design Justice, which rethinks the design process to center people who are often marginalized by design. I learned about her work from my teacher's Design Justice group, which is a Los Angeles node of a larger community. I attended a call where they allowed me to present and discuss my idea. This is when I started to learn the design justice principles. And, I've centered my thinking around three of the ten principles.

Principle 3: "We prioritize design's impact on the community over the intentions of the designer" (Design Justice, 2018).

I think this goes hand in hand with centering the voices of those who are affected during the design process. This one to me is the hardest because it means even if you think this is great, the people you are trying to help may say, essentially, "this sucks, get rid of it." And, if you are truly trying to serve this community, you need to listen and scrap the idea. You can try to rework it with community members, but sometimes it's okay for an idea to fail.

Principle 6: "We believe that everyone is an expert based on their own lived experience, and that we all have unique and brilliant contributions to bring to a design process" (Design Justice, 2018).

While I assume this principle applies to creators recognizing and valuing the contributions made by community members, I also have applied this princi-

ple to myself. Although I am younger than the people I work with, I am an expert of my own lived experience and have seen, although not experienced, the homelessness situation in the United States and understand the culture better than someone who has not lived in American cities with large homeless populations. There is still a lot for me to learn, which is why I want to center design around the voices of those who have experienced or are experiencing homelessness

Principle 10: "Before seeking new design solutions, we look for what is already working at the community level. We honor and uplift traditional, indigenous, and local knowledge and practices" (Design Justice, 2018).

My aim with Giving Streets in America, particularly for Stage 1, is to use existing solutions that are already working at the community level. One of these community-centered organizations is Mutual Aid, which is essentially people in a community helping other people in that community. This approach is effective considering that the people helping can see and know what the people who they are trying to help need.

While integrating my work with the people I am trying to serve may take time, this application's Stage 1 can begin since it does not face the same ethical questions nor the legal hurdles that Stage 2 does.

Green Light: Beginning Implementation in the United States

We have started finding the necessary resources to begin implementation of Stage 1 in the United States. However, making the connections for receiving and giving is only one part of the puzzle. While many social initiatives can be community based, in this case money laundering is a huge potential concern, so registering the company is necessary. I'll start with explaining the pathways to implementation and then touch on the legal protocols that are being worked through.

I want to begin implementation with the two places I call home, California and Georgia. National Alliance to End Homelessness analyzed homelessness data by state and found that California and Georgia are currently among of the top 10 states for their houseless population (see Figure 4) with California at number one (2020b).

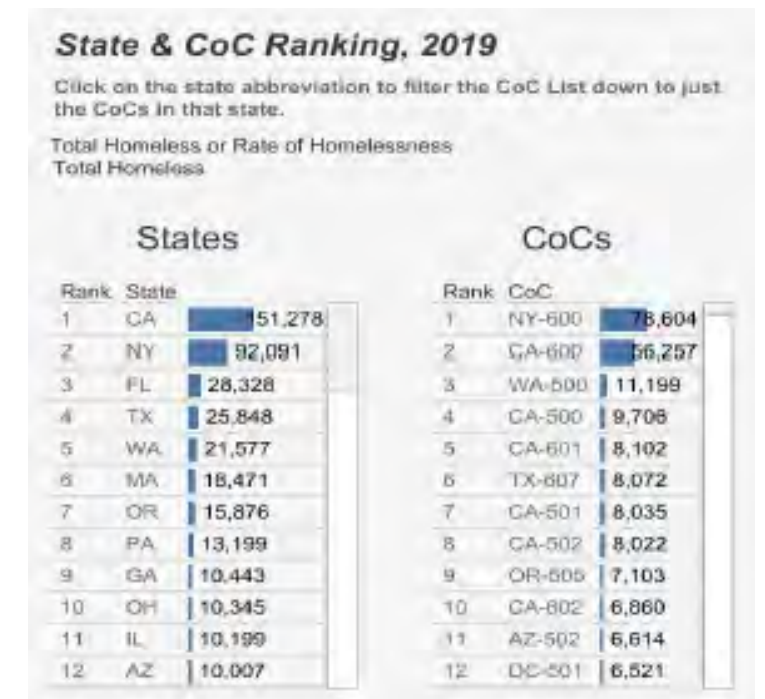


Figure 4 (National Alliance to End Homelessness, 2020b)

The data gets more concerning when we look specifically at California, since the state's nice weather has resulted in a lack of urgency for homeless service to offer shelter to people experiencing homelessness (see Figure 5). Each county has different homeless population densities; when I am in California, I stay in Los Angeles County, which has one of the higher rates of homelessness with 53.4 people out of 1,000 experiencing homelessness (2020a).

We would start local movements in both California and Georgia and then expand by starting grassroots movements in other states with high homeless populations such as New York and Washington.

To begin the implementation process, I have been figuring out how to legally execute it. This may mean creating a subsidiary or a new company completely. The type of company this will be still needs to be determined: the choice will depend mainly on ease of implementation and associated costs.

Stop Signs: Sometimes We Have to Stop and Evaluate Before Continuing

The goals of Giving Streets are to provide first aid to people experiencing homelessness, to create easy access to donation opportunities for long-lasting community driven solutions, and eventually to cease to exist through eliminating the need for what it offers.

We could measure success through Key Performance Indicators (KPIs), which will be different for each stage. Some KPIs are shared across the stages, such as number of app downloads, number of active donors, amount of donations made, and number of collaborating businesses. Stage 2-specific KPIs include the number of individuals with QR codes and the number of partner businesses that allow items to be purchased through money loaded on these QR codes. We could also see how many states this would serve inside the United States, looking specifically at what cities benefit. We could also see if people in countries other than Greece, the UK, and the US would like to implement their version of Giving Streets. There really is no one-size-fits-all solution, so each country, each state, each city, and even each community will have to analyze and decide what will best serve people experiencing homelessness in their area.

Freeway Exit: Getting on the Fast Track for Scaling Innovation

There aren't currently any applications in the US market that would help enable spontaneous donations through a mobile device. The donations to mutual aid funds and other organizations focused on community-centered aid could also have a secondary effect of helping educate people about types of sustainable systems that can help people experiencing homelessness and also prevent people from losing their houses. Technology will help us reach scale because a mobile app is easy to distribute via the App Store. But it is also important for technology not to be exclusive. This is why Giving Streets is designing a system that does not require technology on the beneficiary's side, particularly for Stage 2. This means the person experiencing homelessness can have the QR code on a card that is distributed to them but does not need a phone or technology for the donation to occur or for them to spend the money.

Additionally, Giving Street's partnership with JP Morgan and Stripe allows for the blockchain technology to be scaled. Luckily, we do not have to create our own version of Stripe market-place transaction technology or run into legal banking issues if we comply with the regulations JP Morgan has laid out, particularly on preventing money laundering.

The technology and partners Giving Streets use are beneficial and critical for sustainability, but we also need to rely on other factors to help us reach scale. We hope that placing QR codes in places that people frequent and on items frequently purchased will help increase the number of donations. Distributing donations to organized community pods could increasingly help create sustainable change in the lives of people experiencing homelessness while also preventing people from losing their homes. These efforts are especially important due to the health and economic implications the Covid-19 pandemic has had on communities with people struggling to keep their homes and those without homes.

Street Shops: Everyday Interactions That Change Could Solve

I am finishing up this essay at a local coffee shop on November 12th. And a man just walked up to us and asked if we had any change we could spare. My friends and I didn't have any cash on us, but we did have our phones. If he had a QR code, we could have scanned it and donated just with our phones. If the local coffee shop was a partner store, he could have gone in, scanned his QR code and bought food or a drink with the money on the card. If the shop wasn't a partner store, he could have gone to a shop that was. These small interactions help me realize the crossroads we are at and motivate me to implement Giving Streets in America.

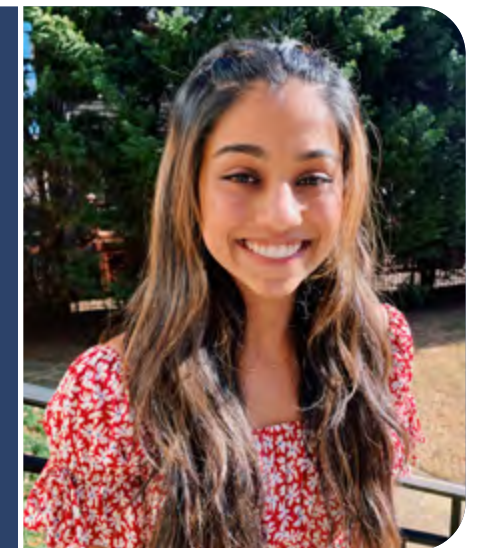
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Neha is a sophomore communications major at the Annenberg School for Communication at the University of Southern California. Neha plans to use her skillset to find ways to ethically utilize technology to solve social problems that arise from our increasingly tech-based world.



For more information about this proposal or author, please email reimaginechallenge2020@schmidtfutures.com

PROPOSAL

SUSTAINABLE ORGANIC FARMING:

A gardening
system for informal
settlements

Authored by:

Rowyn Naidoo

Nationality: South African

University of Cape Town

Cape Town, South Africa

[Listen to Audio Intro](#)



THIS PROJECT AIMS TO GIVE THE RESIDENTS THEMSELVES THE ABILITY TO CHEAPLY GROW THEIR OWN FOOD IN AN ENVIRONMENT WHERE TYPICAL CULTIVATION METHODS ARE NOT POSSIBLE

Abstract

When South Africa was hit with the COVID-19 pandemic, the country went into lockdown, and many already vulnerable people from informal settlements faced exacerbated difficulties. This brought to the forefront their issue of food security and the various factors that come into play in their context. The approach taken in this project was to leverage these contextual factors and develop a low-cost method for residents to generate their own food as well as an income using what resources they do have available. This led to an innovation on the existing method of vertical farming using 2-litre plastic bottles, which now incorporates a drip irrigation system, all made from waste plastic bottles and packets. The innovation together with a contextual plan for implementation was the runner up in the By Africa COVID-19 Afro-Solution Competition (Sustainable Engineering Category) and is beginning implementation at The Water Hub, a water and food security research site with strong links to an informal settlement where residents will begin training.

1. Landscape Review

The vulnerabilities in particular that this project takes into account are food in-security, lack of water, lack of employment, and lack of resources. Residents living in informal settlements (slums) face poverty and high unemployment; they typically get food from projects and initiatives that provide them with meals, or those who are employed purchase food with their earnings.

Under lockdown restrictions, while other people can accommodate working from home, that isn't an option for many people from these areas, who therefore find themselves with no work or income for food. While waiting for a donated meal at a nursery school, an elderly woman who lives in the informal settlement of Khayelitsha was quoted as saying, "I'm hungry. No food at home. No money" (BBC News, 2020). The insight I had about our communities in the informal settlements is just how vulnerable they are in terms of food security and unable to do much about it due to their living circumstances. Residents don't have space to grow their own food and also face water shortages due to lack of access and/or drought, which presents further challenges. One way in which people from these areas make a living is from recovering recyclable materials from waste, but recently were unable to do so due to the pandemic and lockdown (Krige & Panchia, 2020). Informal settlements also have problems with waste disposal and pollution.

Current efforts to address the problem of food insecurity are in the form of feeding schemes, which take place in some settlements, or in job creation efforts by governments, which is a very slow process. This project aims to give the residents themselves the ability to cheaply grow their own food in an environment where typical cultivation methods are not possible. It also allows them to generate some income by either selling the produce from the gardens or by creating the gardens and selling them to other customers.

Similar ideas of vertical farming using 2lt plastic bottles have been around for a while; however, they have



(a) Langrug Settlement

Figure 1: Example of settlement and pollution



(b) Pollution in Settlement

mostly been used in a few small individual gardens. This project would be introducing this method of farming in this setting for the first time and on a much larger scale, where the residents would be doing their own farming. In addition, this idea has been innovated upon with a drip irrigation system created from common 500ml water/cold drink plastic bottles to make operation much easier and prolong the life of the plants in hot and dry environments.

2. Project Description

The core problem identified is the lack of food, either due to residents not being able to cultivate themselves because of a lack of gardening space, water, and resources or due to residents being unable to gain an income to purchase food due to lack of work.

2.1 Garden Design

In looking at how to tackle this problem, the following circumstances were taken into account and leveraged into a solution:

- (a) Residents don't have food
- (b) There is no space for conventional farming

- (c) There is water scarcity due to lack of access or drought
- (d) There is excessive pollution where plastic bottles are abundant
- (e) Many residents of the community are waste pickers
- (f) There are community organizations and initiatives who work in some capacity in these areas for various reasons

The sustainable solution identified to this problem of hunger is organic farming performed by residents of informal settlements where they conservatively use grey water for irrigation and organic waste as compost. This solution uses the methodology of vertical farming and an innovative drip irrigation method. Drip irrigation of grey water was identified as a way to conservatively and sustainably irrigate crops. Irrigation by pouring water over the plants wastes water when it falls on their leaves, the surrounding area, and the top soil, which dries out. This irrigation method provides water to the roots in a controlled manner while also minimizing the labor of irrigating crops, as only the water bottle needs to be refilled once empty.

The design (from Mangla Gardens, 2015) was modified such that the bottle was cut into three pieces as shown in Figure 2.

Figure 2: Development of Drip Irrigation System



(a) 500ml Bottle



(b) Drip Irrigation Conguration

The top piece was inverted and snapped into place to fit into the middle section using the grooves of the bottle. The bottom of the bottle was used as the lid for the top, preventing water loss from evaporation. The drip rate of the bottle can easily be controlled by loosening or tightening the cap as the plant grows and requires more water. This configuration also makes the bottle a feasible size for the unit. The cylinder in the center, on which the top is held, provides the stability for the bottle to remain upright and also functions as a holder and easy spot for compost to be deposited, upcycling nutrients as shown in Figure 3.

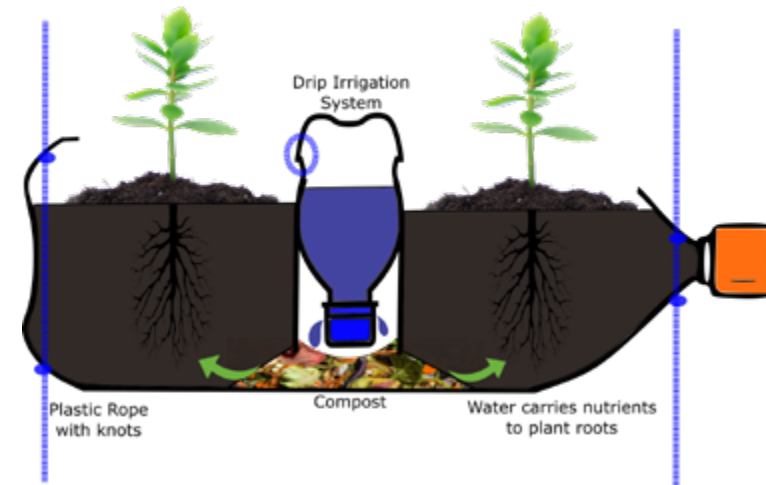


Figure 3: Garden Unit

As water drips into the compost, it promotes decomposition. The “juice” that flows out contains water and nutrients taken to the roots of the plant to promote growth.

The plastic rope used to connect and hold the bottles (Figure 4) is created using used plastic packets that have been wound into a very strong rope (WhyKnot, 2015). The rope can easily be made even stronger, if necessary, by using more plastic threads.



Figure 4: Plastic Rope made from Shopping Bags

The actual holder for the soil is created by cutting a 2lt plastic bottle as shown in Figure 5.



Figure 5: Unit Built from Reused Materials

All the unit above required was part of a plastic bag, one 2lt bottle, and one smaller bottle (a common water bottle or 500ml cold drink bottle). The only tools needed were a knife and scissors. Each garden to be installed or sold will consist of five-bottle gardens hung one below the other as shown in Figure 6.

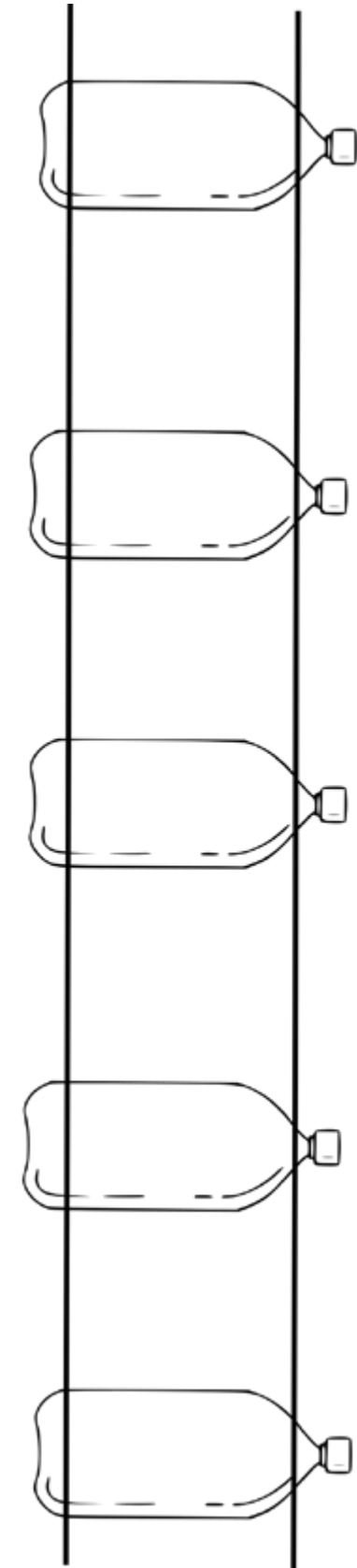


Figure 6: Garden with 5 units

2.2 Gardening

Some of the crops that can be grown are:

- Green Beans
- Okra
- Herbs like basil, parsley, sage, thyme, oregano
- Rosemary peas
- Strawberries
- Spinach
- Spring onions
- Radishes
- Kale
- Garlic

The gardens can also be hung indoors for more shade-loving plants.

Maintenance simply requires:

1. To irrigate, the lid needs to be opened and grey water poured in. Loosen or tighten the cap to control the drip rate if needed.
2. To add compost, the bottle is picked up and compost deposited below

2.3 Implementation Plan

Below is a generalized pathway of implementation for any informal settlement (Figure 7).



Figure 7: General Model for Implementation

To start this project in any settlement, it will take proactive members to engage with the organizations involved to partner and set up training sessions. Different settlements have different organizations, so the process will need to be adapted accordingly; however, the structure would be fairly similar across different types of organization. The reason existing organizations will be engaged with is that they already have the trust of the community, established networks within them, and know how to engage with them. What makes this pathway plausible is that it leverages existing structures and garners support for implementation.

At its core, the implementation of this gardening system requires only training of individuals from informal settlements on how to create the structure, how to use it and its benefits, to get community buy in. Should there not be an existing community organization to work with, training of members can still happen by engaging directly with the community via their leaders. This presents an alternative path to implementation which can be seen as practical by virtue of its simplicity.

Being able to demonstrate the use and success of the project in at least one settlement, as will be described below, will give the external stakeholders trust in the project and make the pathway more plausible for implementation in future settlements.

This initiative is being launched at The Water Hub (link in references), which is a research site looking at waste water treatment and food security, with members in the Langrug settlement shown in Figures 1 and 8.

Beyond setting up the system at The Water Hub, I can also use my networks and affiliated organizations to begin implementation of the project. As a member of Enactus, an international organization that functions as an incubator for social entrepreneurship, this project would be taken up and implemented using their resources and networks like Erf 81 (SA Venues, 2020) which uses urban farming, and their connections to the settlement of Khayelitsha. This avenue would get other society members at my university involved and also allow for other branches of the organization to begin in settlements near their locations. It could also help scale the initiative across the country and possibly beyond, as Enactus is an international organization. In scaling internationally, as a Peace Ambassador for Humanitarian



Figure 8: Map of Water Hub and Langrug Settlement

Affairs Asia (link in references), I am part of an international network of proactive individuals who could begin this initiative in their countries as well, since it is applicable to slums across the globe.

The plan for implementation is to demonstrate the gardens' utility at The Water Hub and get community buy-in at the connected Langrug Settlement. From there, the most convenient and strategic settlement to begin wider implementation of the project is Khayelitsha, which is the largest informal settlement in South Africa with a population of approximately 400,000 (BBC News, 2020). This settlement is also the nearest to me and affiliated partners. One NGO identified for collaboration in Khayelitsha is the Nonceba Family Counselling Centre (The Circle, 2020), which prevents violence through education and runs a shelter. By demonstrating the successful implementation of the project at the largest informal settlement in South Africa, we could open more doors for implementation in other settlements in the country and beyond.

2.4 Outline of Business Model

Below is an outline of the business model that would be employed in this project.

Material Acquisition	Sale of Gardens	Sale of Produce
<ul style="list-style-type: none"> • There is minimal to no material cost for the bottles and plastic bags. • If they are purchased from collectors, it assists them with generating income. 	<ul style="list-style-type: none"> • Once manufactured, they can be sold to community members in informal settlements as well as upper to middle-class communities • They can also be sold to hardware stores and other shops generating an income 	<ul style="list-style-type: none"> • Community members growing crops in these gardens generate money by selling their produce or saving money by consuming it.

Figure 9: Sustainable Development Goals impacted

THIS IDEA IS IMPORTANT AS IT PROVIDES RESIDENTS WITH A WAY TO GENERATE THEIR OWN ORGANIC CROPS FOR CONSUMPTION OR SALE IN A SPACE WHERE MEMBERS FACE HUNGER WITHOUT MUCH OTHER OPTION TO GET FOOD

Projection of Yield

The average shack size is between 6 and 20m² in the Joe Slovo settlement (SAM-SET, 2014). By taking the height to be 2m and the shack area to be 20m² = 5m x 4m, the dimensions of the walls are approximated to be two 4m x 2m and two 5m x 2m walls. Excluding one face to account for the door and any windows, we have the following:

Each row of the gardens to be sold as shown in Figure 6 will be 1.5m high (consisting of 5 bottles 30cm apart, one below the other) and 35cm wide.

One 4m wall will have space for $\frac{4m}{35cm} \approx 11$ gardens hanging side by side.

Each of the 5m walls can accommodate $\frac{5m}{35cm} \approx 14$ gardens hanging side by side. This gives $11 + (2 \times 14) = 39$ garden units containing a total of $39 \times 5 = 195$ bottle gardens.

Each bottle can accommodate two plants, so this gives $195 \times 2 = 390$ plants which can be grown if the bigger shacks cover their three available walls with these gardens.

3. Narrative

This idea is important as it provides residents with a way to generate their own organic crops for consumption or sale in a space where members face hunger without much other option to get food. It is particularly important now as the COVID-19 pandemic has only increased unemployment or restricted people's ability to generate an income, so they are faced without any way

to sustain themselves. In addition, these are persistent problems in these communities that have only become exacerbated due to the pandemic.

3.1 Background on Development

The insight on developing the drip irrigation method came from looking at the existing method of using a bottle upside down, and looking at the bottles we have that are of appropriate size to be incorporated in the garden. By playing with the shape of the bottle and through some experimenting, I found that by cutting them along their ridges and fitting them like a puzzle as shown in Figure 2, the different parts snap into place to form a sturdy configuration that performs the required function while being of an appropriate size.

It is believed that this project will be successful as the gardens are very simple and cheap to create and use. The garden and plan for implementation were developed from looking at the circumstances in these communities and its contextual factors and leveraging those rather than imposing an idealistic initiative. Research has also been conducted with community members. In an interview I conducted with a resident of Philippi settlement, Mr Sia Maqhutyana (Author, 2020), he confirmed that people have become reliant on food initiatives for their sustenance. When presented with this idea of vertical farming, he mentioned that the proposed farming method is simple and something that older people in particular would actively participate in. The design and plan for implementation were also assessed by external assessors in South Africa from the University of Cape Town and experts in the field, where it was the runner up in the By Africa Network COVID-19 Engineering Afro-Solution Competition (Sustainable Engineering Category).

This project has the potential to help most people living in informal settlements as well as any homeless individuals who act as waste pickers. Given the large numbers of residents in these settlements, such as the 400,000 in Khayelitsha, even if just a fraction is impacted the numbers can still be in the thousands. Apart from impacting residents in informal settlements in South Africa, residents in communities in slums across the world face similar conditions and can benefit from this. This initiative can have an impact in diverse communities as individuals from middle and upper class backgrounds who purchase these gardens can also benefit from consuming more organic and sustainable crops.

3.2 Secondary Effects

Both the direct effects of the project and some of the secondary effects help in working towards the following Sustainable Development Goals:



Figure 10: Sustainable Development Goals impacted

Getting people to eat more organic vegetables improves their diet by providing safer, more sufficient, and nutritious food. Having these gardens so close to the home and personally using them exposes children and other residents to organic gardening and teaches them sustainable practices. This and the training helps people acquire some knowledge and skills needed to promote sustainable development through education for sustainable development and sustainable lifestyles, which is particularly difficult to achieve in this environment. The project can improve water quality and reduce marine pollution in surrounding rivers from land-based activities such as in Figure 1b, by reducing pollution and increasing safe reuse of plastic. The use of grey water for irrigation also reduces the proportion of untreated wastewater and nutrient pollution released in rivers. Employing a model that brings together various stakeholders enhances partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources, to support the achievement of the sustainable development in our developing country.

Shacks such as the ones in Figure 1a are often made using sheets of metal which become very hot and difficult to live in. Covering the outer walls with these gardens would cause a cooling effect by reducing the amount of direct sunlight hitting the metal walls.

3.3 Measurability

There are two paths identified for implementation: to work with community organizations to train individuals or provide training through direct engagement with residents. When organizations provide the training, some of them would have a designated space and people who would be trained to manufacture these: an example is the shelter in Khayelitsha where residents of the shelter could manufacture the gardens. This allows the number of manufactured gardens to be tracked.

Should the organization not have oversight of the manufacturing or there is no organization involved the number of gardens manufactured and sold can be determined by keeping in contact with the individual residents from training to find out how much they have manufactured and sold. To see how residents are actually using the gardens would involve going into the communities and speaking with residents.

In a project such as this where the power is put in the hands of the people to make and sell a product or to grow their own crops of their own accord, more accurate measuring than this becomes extremely difficult to impossible, especially when the number of individuals impacted can range from hundreds to thousands in an environment like an informal settlement. However, the methods above could provide sufficient information to determine if the project is working or not.

4. Conclusion

This solution is very simple and cheap to create, use, and implement, which is why I believe it will be successful. It was created from looking at the problem and the context in which it exists, and leveraging them to a solution which has received positive feedback from residents of the community as well as external assessors in South Africa, being the runner up in the By Africa Network COVID-19 Engineering Afro-Solution Competition (Sustainable Engineering Category). The idea is already set for implementation at The Water Hub, with a pathway that is easy to follow and one that is often used in this setting.

The problem and contextual factors the project takes into account are faced by millions of people in South Africa as well as in slums across the globe. It

therefore has the potential to impact to millions of people across the world.

The design itself works towards sustainable development goals with economic, environmental, social and educational impacts on various stakeholders. As we develop new solutions to our problems, we need to think about sustainability and how we can enhance our surroundings. Introducing sustainable practices in informal settlements has always been very challenging, but is necessary in moving towards a more sustainable and greener future. This project presents a way to help in solving the problem of hunger while also use the current situation as an opportunity to introduce and implement sustainable methods in communities that don't have access to other resources or reasons to do so.

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Additional Links:

The Water Hub: <https://www.thewaterhub.org.za/>

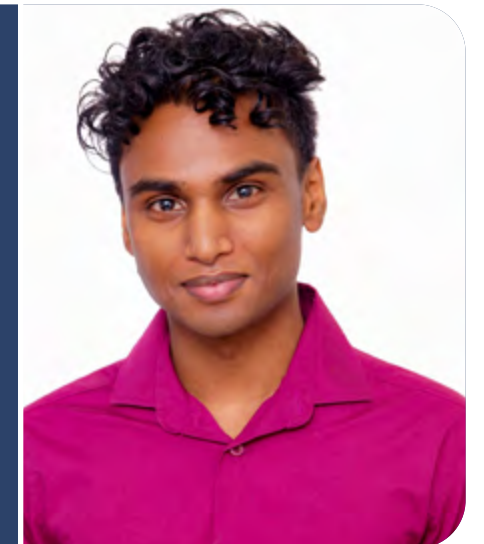
By Africa Network: https://byafricanetwork.com/?page_id=621

Humanitarian Affairs Asia: <https://humanitarianaffairs.org/>

About the Author

Rowyn Naidoo

Rowyn Naidoo is an undergraduate student at the University of Cape Town pursuing a Bachelor of Science in Electrical Engineering. He is committed to creating long-lasting global change by developing new solutions to complex problems using nature as a source of inspiration.



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PROPOSAL

MISSION 2 MILLION:

Extending Myna HER
to provide access
to products and
women's health
education

Authored by:

Suhani Jalota

Nationality: Indian

Stanford University

Stanford, United States

[Listen to Audio Intro](#)



WITH MORE THAN 320 MILLION WOMEN IN INDIA WITHOUT ACCESS TO BASIC MENSTRUAL NEEDS, COMPELLING THEM TO DROP OUT OF SCHOOL AND THE LABOR FORCE, MYNA MAHILA IS ON A MISSION TO EMPOWER WOMEN TO TAKE CHARGE OF THEIR BODIES AND PRIORITIZE THEIR HEALTH

Who are we and what is our idea?

“Do you know what it means to have a sanitary pad?” he said. I didn’t know what he meant, so I looked at him perplexed. He said, ‘Freedom.’ Maybe there was something in his poignant eyes—I believed him. I didn’t know why then. It took me a few years to really understand why Dr. Jockin Arputham, a man who had spent his entire lifetime trying to uplift the poor from poverty, thought that pads meant freedom. But when as a 15 year-old, I saw women in Mumbai’s slums every day walking long distances to go to a public toilet because they did not have any at home, and when I saw women being harassed on the way, and when I knew women who were married as children brutally beaten up by their husbands, I realized how pads and toilets were symbols of achieving individual freedom. Women could feel that if they had pads at home, they could have more control over their lives. I talk about these women and pads now, because in 2015 it is with these women that we started an organization, Myna Mahila Foundation, for the purpose of helping women feel confident and stand on their own two feet.”

- **Suhani Jalota, CEO & Founder**

With more than 320 million women in India without access to basic menstrual needs, compelling them to drop out of school and the labor force, Myna Mahila is on a mission to empower women to take charge of their bodies and prioritize their health so they can be confident, independent and healthy. Suhani and three

slum community leaders, founders of Myna Mahila, met first in 2011 while visiting public toilets around the Dharavi slums to understand the challenges women experienced to maintain basic hygiene and dignity. After witnessing horrifying cases of women not being able to stand up for themselves and dismissing their health and agency, Suhani, Meena, Parvin, and Malti decided it was high time to work closely with the women to help them stand up for themselves.

Myna is a grassroots based organization, run and managed by its beneficiaries in slums, and has three operational units: Myna Health, Myna Employ and Myna Research (Myna for HER). Since it was founded in 2015, Myna Health has been providing women with health education and access to affordable sanitary pads at their doorstep. With its core beliefs around providing women with financial independence to truly empower them to make decisions, Myna Employ also generates employment opportunities and employability skills for girls and women in urban slums. Myna Research focuses on Myna’s data-driven approach, which helps us make strategic decisions based on data interpretation.

Myna’s Impact Since 2015

Women that would shudder at the word “period” earlier are now proud to be making sanitary pads themselves and spreading the message in their communities. We hire women to be changemakers and take ownership of their work. Our women are the most important assets, so we invest in their personal and professional development by providing them life skills and basic communication skills to foster their confidence.

Our products are manufactured in Govandi slums by the women and for women in the community. Production staff has been trained to distribute the product further, creating employment opportunities and building a trusted network in the area we cater to. We have manufactured 10,00,000+ pads since 2015, and have more than a 90% return rate because of the personalized attention each woman receives.

Our flagship educational initiative, Sponsor a Girl, was kick-started in 2018 to equip underprivileged girls with proper menstrual products and to impart knowledge through training on menstrual hygiene management. Through this project, we have supported 4000+ girls, along with 500,000+ women at the doorstep. Another education initiative run by Myna is Teach Menses India. We have reached out to 8500+ boys and girls in schools and colleges in and around Mumbai.

Overall, we have converted more than 5,000 women (who are now our loyal beneficiary base) across 15 urban slum communities of Mumbai (India) who used cloth and did not have access to hot water to wash them with, to using sanitary pads. These women belong to families living in very close proximity, often in spaces smaller than 25x15sqft - without access to water to maintain basic hygiene.

Overall, Myna creates behavior and mindset change among community women around age-old taboos and provides financial stability. We employ women, we empower women, and we build women’s networks.

In response to the COVID-19 pandemic, we have developed an eight-point plan of response. They are: 1) sanitary napkins and ration/food relief (to over 15,000 families), 2) women’s helpline (for domestic violence and sexual assault cases and period/fertility complications), 3) facemask manufacturing and provision (we have repurposed our sewing machines to make masks for residents in Govandi slums (and policemen/women and health providers and front line workers), 4) disease surveillance, 5) COVID sensitization, 6) Myna webseries, 7) COVID research, 8) Myna Mahila Mobile Health Application.

As a part of one of the points on the plan, we conducted tele-sensitization through phone surveys with more than 30 research fellows to see the impact of COVID-19 on the livelihoods of people residing in the ur-

ban slums of Mumbai.

Through these phone surveys, we reached out to over 1,800 beneficiaries between 17 and 70 years of age in the urban slums of Mumbai. Eighty-four percent of the beneficiaries surveyed were females. The results showed us that 73% of the beneficiaries claimed that their household income is much lower as compared to last year. This was due to the temporary layoffs or suspension of work without any pay for 70% of the beneficiaries and permanent layoffs for 11% of the beneficiaries due to the strict lockdown in India. Fifty-two percent of the beneficiaries have six or more members in their household and also claimed that the male member in the household had lost their job. When women were asked if they would work from home through smartphone jobs, over 50% of the respondents were willing to download the Myna Health Application and work through their smartphones.

With unemployment rates and COVID-19 cases rising exponentially, the urban poor are grappling with multiple problems. After analyzing the results of our phone survey, we are leveraging technology and our well established on-ground networks to connect our beneficiaries digitally in some of the most vulnerable groups in Mumbai’s slums. During COVID-19, the need to create more virtual outlets for women to provide jobs and support women privately with their complex challenges has become greater than ever. Through our experiences, we have learnt that women are constantly looking for support systems, especially when their own homes do not provide them, and are willing to go to any extent to support their families emotionally and financially. Our goal is to provide women with a means to engage with a trusted network of women, obtain accurate information about their health, and help them get jobs, especially when and where it is needed the most. We want to do this in a systematic and data-centric way, where we are equipped with evidence to make intelligible decisions to support women and their families better. Myna’s mission is to improve doorstep access to women’s health and hygiene products and services and shift health behavior for two million women in India over the next five years.

As part of our eight-point plan of response to COVID-19, we launched Myna Mahila’s [Mobile Health Application](#) on the iOS and the Play store. We aim to move our flagship educational initiative, Sponsor A Girl,

to the mobile health application, an IVRS (Interactive Voice Recording System), and SMS's. This would help reach out to any woman or girl anywhere across India with a basic phone or a smartphone to provide education on health and nutrition, gender attitudes, menstrual health and domestic violence. We will be measuring impact at each stage through pre and post surveys.

Additionally, the mobile health application will be a one-stop access point for women for health products. We propose to scale our programs by leveraging technology and contact-less distribution through an ABCD Model of Access linked to the mobile health application or IVRS system. Our beneficiaries will be able to find the closest sanitary pad ATM (Dispenser), Myna's Bus which will carry women's health products, Myna's Centers, chemist shops, and the facility to order sanitary pads through the app with home delivery.

Health ATMs so women can easily access health products without shame, Myna Bus to learn about her body while on the move and break taboos publicly, Myna Center's where she builds community of other women and uses tele-health services, chemist shops close to her where she can purchase Myna's products and doorstep access where she receives products and services at her doorstep. Each of these features will be available through the app, so the shift in behaviors can start at home.

The ATMs and chemist shops will serve as access points, awareness sessions will be provided through the app for women with smartphones and through IVRS for women with basic phones, and in-person sessions will be held at the centers, through the Bus and at the doorstep for those women without phones. Just as women in the Govandi and Bandra slum communities can easily go to the Myna Center, we aim to develop this model where we will be able to reach women in remote areas of urban and rural slums. Data will be collected at each step of the app to identify the most needy women and girls based on an algorithm and responses through focus group discussions.

Scalability of the basic and smartphone applications would empower tens of thousands of more women by using a data-driven and culturally appropriate approach.

Through the Myna Health Application and IVRS

system, we aim to reach out to 50,000 women in one year (25,000 women through IVRS and 25,000 women through the App) and ultimately 2 million women in 5 years.

Our key performance indicators entail:

1. Improvement in access: increased access to health products and services among women.
2. Awareness generation: adoption of hygienic methods of menstrual protection among women.
3. Demand and supply: assessing frequency of manufacturing each product to judge which product needs to be restocked the most. This can lead to downstream effects, such as educating the community on the use of each product. For instance, if the consumption of disposable bags is low, it might indicate low awareness level on safe disposal of sanitary napkins. Similarly, higher consumption of sanitary pads might mean there is higher adoption of this product.
4. Feedback: Randomizing feedback form evaluations by approaching beneficiaries at regular intervals to gauge a truly representative feedback based on careful sampling methods.

We identify these women by going door-to-door to understand their needs and to educate them about using sanitary napkins, taking care of themselves and making their own choices. To instill a sense of financial freedom, we start with training women on producing these sanitary napkins and selling them in their own communities. Once they disassociate with the taboo, they are able to speak their mind and demand things that they are entitled to. Young women themselves are trying to break the cycle of taboo that is preventing their daughters and future generations from realizing that menstrual hygiene management (MHM) is not only a sanitation matter but also an important step towards safeguarding the dignity and overall life opportunities of women and girls.

Phases of the App:

Phase 0 is the current pilot phase of the app that allows women to track their period cycles, watch basic

educational videos curated by Myna, talk to healthcare professionals, and purchase sanitary pads.

In Phase I of this project, our app will prioritize awareness about local services and resources for assistance regarding COVID-19, MHM, and overall women's health and hygiene. We will also implement artificial currencies to understand the needs of girls (girls will be given a token budget and asked to spend it on various options with prices). We are developing our Sponsor A Girl program online through four educational modules: gender attitudes, health and nutrition, menstrual health, and domestic violence.

Phase II of the project will address livelihood concerns among the community by creating tech-based job opportunities (gig economy jobs on smartphones for women). With such employment, women could earn more than double than what they could earn otherwise.

Phase III of our project will entail using the mobile application to track all access points to health services and products (for instance, to track the location of our mobile sensitization vehicle [bus/van] travelling across 15 locations and Myna hygiene product dispensers). The product dispenser will allow users to access sanitary pads, disposable bags, hand soap, and face masks within the comfort of their locality.

Improvement in access will be measured through the number of girls that consult doctors through the app or IVRS.

Awareness generation for 50K women in one year will be measured through the pre and post surveys we will have on the App and IVRS for each educational module the girl completes.

Demand and supply will be measured through the number of pads ordered on the app/ IVRS and the consultations with doctors through the app/ IVRS.

Feedback will be gathered through a feedback section in each feature of the app to track the challenges faced by the girls.

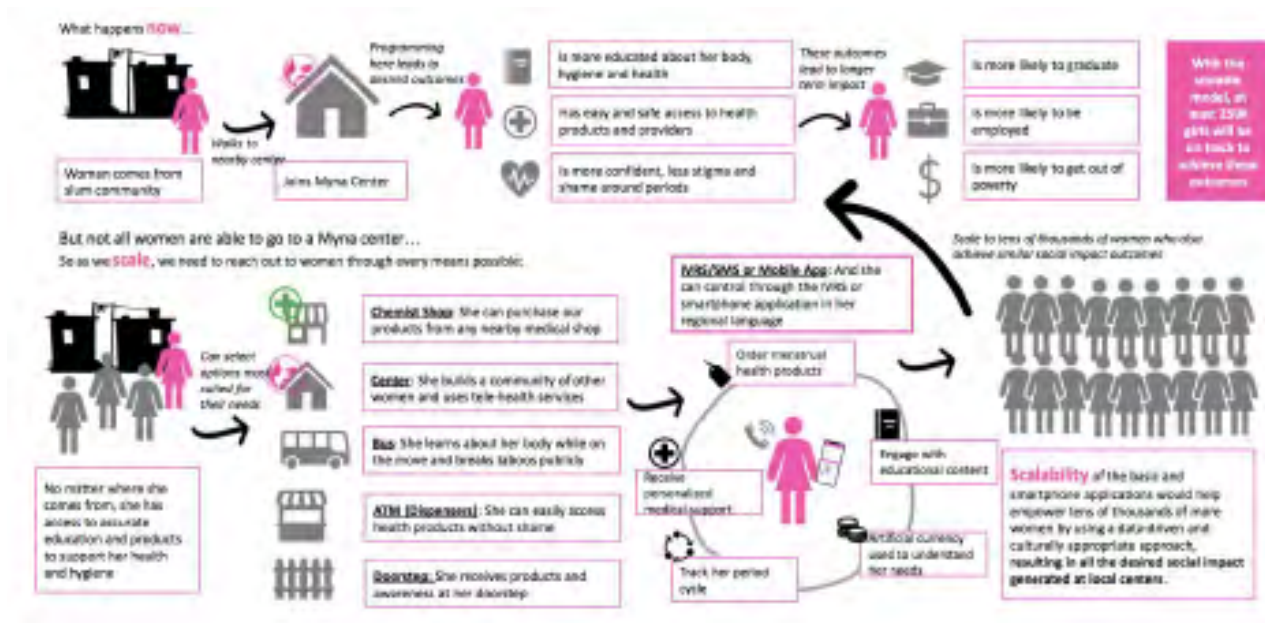
Budget:



Mobile Health Application and IVRS Features:

	Features	Description
Scalability	Combination of IVRS and Apps	IVRS system which are call based features which do not require a smart phone help us reach even the remote locations where smart phones are still not very common.
	App sign-ups, referrals	Use feature such as share app feedback, connect with social media account, sign-up for newsletter to unlock reward etc.
	Pledge new enrollment/ gift	Level system- at last level graduation a girl can support a new enrollment
	No language barrier	App would be built in a way that it supports multiple languages and that's help to cater population who prefer languages other than Hindi or English
Revenue Generation	Doctor consultations	This will be a free service for the needy but we would charge fees for this from who can afford
	Online orders/ e- boutique	Revenue on limited edition boutique and menstrual products; inculcing and training as independent Myna Sales Women
	Events and activities	Collaborate with external agencies, artists & individuals to host activities based on donor pass or rewards
	Courses listing	Collaborations with ed-tech to list skill development courses
	Job listing	Charges from organization and companies to placehost job webinar
	Advertisements	As Myna app reaches a specific population it is good platform for social marketing and female products

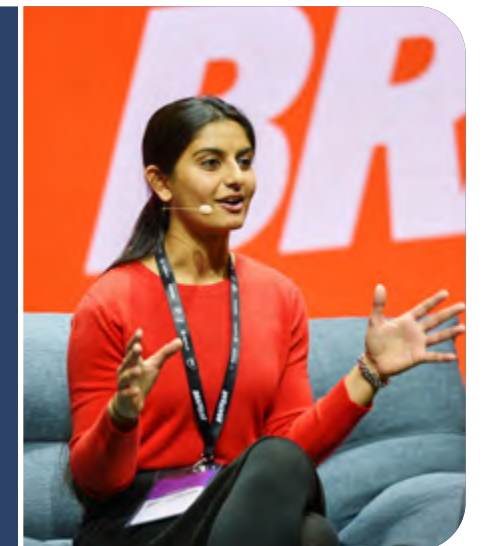
Myna's ABCD Model of Access:



About the Author

Suhani Jalota

Suhani Jalota is a graduate student at Stanford University pursuing both a Master of Business Administration and a PhD in Health Policy and Economics. In 2015, Suhani founded the Myna Mahila Foundation, an organization to educate, enable, enhance, and empower women in the slums of India by improving their health and standard of living.



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P R O P O S A L

TELEHEALTH PHILIPPINES:

Primary care through
telehealth

Authored by:

Lia Bote

Nationality: Filipino

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[Listen to Audio Intro](#)



THE PHILIPPINES DOES NOT HAVE AN ESTABLISHED PRIMARY CARE SYSTEM, AND THE REPERCUSSIONS OF THIS HAVE BEEN BOTH HIGHLIGHTED AND AGGRAVATED BY THE PANDEMIC

Abstract

Primary care acts as a patient's first point of contact with the healthcare system and is essential for health maintenance, disease prevention, and health education. As such, it is key to Coronavirus disease 2019 (COVID-19) response, ensuring that pre-existing conditions are well managed, treatment is administered before cases become critical, and patients are knowledgeable about proper hygiene measures. However, in the Philippines and in many low- and middle-income countries (LMICs), primary care is largely neglected. The public health system is not equipped to provide quality treatment for the large population, and most people do not have the financial luxury to avail of private healthcare. Especially during the pandemic, this means that most patients do not seek medical attention until their condition is critical. Many high-income countries have addressed this challenge through telemedicine and online mobile applications, allowing healthcare professionals to conduct remote consultations and making health information more easily accessible to mobile application users. However, this model is less effective in LMICs with limited internet connection and inefficient central information systems. The proposed solution draws on community-level engagement and constitutes two parts: a website for physicians and volunteer researchers to enlist their services, and a phone hotline service that connects patients with the healthcare system without the need for online mobile applications. It is designed primarily for the Philippines but uses a framework that can be optimized for implementation in other LMICs, which share similar demographic and socio-economic considerations. The aim is to deliver a

solution that makes primary care and health information more accessible, promoting quality healthcare for communities in need both during the COVID-19 pandemic and beyond.

Introduction

Background

Growing up in the Philippines, living in Malaysia, and studying in England, I have found defining the "community" to which I belong and hope to meaningfully contribute to be challenging. In many ways, the pandemic has had devastating impacts across these three places I have learned to call home, as it has for the rest of the world, with England's highly established National Health Service (NHS) being quickly overwhelmed during the first wave, or Malaysia entering its third wave of cases over just the past few weeks. However, it is the Philippines, where I grew up and where most of my family still live, that I feel most connected to and, in light of how it has handled the pandemic, most concerned for.

Despite having one of the world's longest and strictest lockdowns, both cases and mortality rates continue to rise in the Philippines. With over 410,000 cases at the time of writing, Philippine COVID-19 cases are the second highest in Southeast Asia, only after Indonesia which has over twice the population size (Hallare, 2020). The lack of mass testing and contact tracing in the Philippines means it is impossible to control the spread of the disease, and many cases are detected in a late, criti-

cal stage, contributing to the high fatalities. In part, this is due to the fact that most Filipino patients go directly into tertiary care, or that provided by a specialist, often in confinement at a health center.

The Philippines does not have an established primary care system, and the repercussions of this have been both highlighted and aggravated by the pandemic. Primary care, which encompasses early diagnosis, direct management of both acute and chronic conditions, disease prevention, and health education, serves as the patient's first point of contact to the healthcare system (Filoteo, Dela Cruz & Guarino, 2019). Apart from underlying health conditions going undetected, the neglect of primary care also means that many Filipinos have lower health literacy and a lower quality of life, even before the pandemic. Building a more resilient and accessible primary care system is thus important for improving public health both during the pandemic and beyond.

Like many low-and-middle-income countries (LMICs), the Philippines has implemented COVID-19 response measures adapted from those in high-income nations (Bradshaw, 2020). In these countries, online technologies and telemedicine have been used to supplement in-person primary care and provide COVID-19 information. In England, the NHS Track and Trace mobile application notifies users if they've come in contact with a COVID-19 patient, gives updates on regulations and risk levels, and allows for the reporting of symptoms and booking of tests. Strict national lockdown measures, while necessary for curbing transmission within the population, have also had devastating effects on the economy even in high income countries. These effects are especially pronounced in LMICs like the Philippines, particularly for the large proportion of the population living below the poverty line.

Given this landscape, the most surprising insight I have had about my communities during the pandemic is that they are simultaneously inextricably connected yet unique. While addressing the lack of primary care in the Philippines can be informed by methods and solutions implemented internationally, a greater emphasis should be placed on the use of technologies commensurate to the local level of access and literacy. This proposal introduces a project that draws from existing mobile and telemedicine solutions across the globe, but optimizes them for the Philippines in order to make primary care and information about the pandemic more

widely accessible. This has implications both for present pandemic management and beyond. The platform is driven by community-level engagement, requires little to no need for internet access for users, and thus is compatible with the needs and limitations in other LMICs.

Primary Care and Improved Health Outcomes

Primary care is key to health maintenance, disease prevention, and health education. It is a vital part of ensuring the health and well-being of a population: a study in England found that areas with a greater density of general practitioners (GPs) had significantly better quality of healthcare (Vallejo-Torres & Morris, 2018). Globally, countries with higher quality and accessibility of primary care also demonstrate better health outcomes, with reference to factors such as infant mortality and life expectancy, even across different levels of national income (Filoteo, Dela Cruz & Guarino, 2019).

With COVID-19, accessible primary care is more crucial than ever. The World Health Organization stresses the role of primary care in both early diagnosis of COVID-19 and management of pre-existing conditions (2020). The latter is essential, as comorbidities are found to double or even triple the risk of COVID-19 fatalities. Primary care providers (PCPs) can also help with differentiating COVID-19 from other respiratory symptoms to reduce hospitalization burden, and with making sure that people are informed about the virus and proper hygiene measures.

Despite this important role, primary care is often overlooked and deprioritized, both routinely and during the pandemic. In the UK, GPs provide 90% of patient contact but only receive 10% of the NHS budget. Most global policies for COVID-19 management are focused on secondary care for patients who have developed severe symptoms, often asking GPs to delay routine visits to increase available hospital capacity for COVID-19 cases. This neglect occurs especially in LMICs, where public healthcare is unable to meet the needs of the large population, and citizens do not have the financial capacity to avail of private health services (Jahan & Rahman 2020).

In the Philippines, these socioeconomic disparities are evident in both health access and outcomes. With

only 6 physicians per 10,000 people, those in lower-income or geographically isolated regions find it particularly challenging to access health services. 80 percent of children in the urban National Capital Region have complete vaccination records, in contrast to only 30 percent in more remote areas of the Autonomous Region of Muslim Mindanao. Infant mortality rates are twice as high, and heart attacks in adults are 40 percent more common, in the poorest quintile than in the richest. Life expectancy is also found to be below the national target in a survey of geographically isolated and disadvantaged areas with moderate primary care access (University of the Philippines - Manila, 2018).

Given this, the need to address the supply, quality, and accessibility of primary care is of clear importance for improving the quality of life in the Philippines. Access to PCPs will also help keep citizens more informed about proper hygiene and safety measures regarding COVID-19, and what to do if they suspect they have contracted the virus.

Telehealth and Telemedicine

In many countries, this challenge has been addressed through telehealth and telemedicine services. Telehealth is generally used to refer to the delivery of all health-related services and information through telecommunications, while telemedicine focusses more specifically on preventive and curative treatments (Pritchard, 2020). Remote consultations are more accessible for those that are unable to travel in person, and reduces the burden on health care systems with shorter wait times and easier scheduling. During the pandemic, telemedicine has also been useful in reducing the use of scarce personal protection equipment, and limiting physical interaction between patients, their physicians, and hospital settings.

Generally, it is higher-income countries that have adapted telehealth solutions during the pandemic, as telecommunications infrastructure is more widely established and integrated. However, it is arguably even more useful in LMICs, with larger populations of vulnerable groups in remote regions, although structural hindrances are more prevalent. While telehealth has its limitations, as the lack of in person physical examinations may make it difficult to make accurate diagnoses, it is generally valuable for determining whether a patient has to visit a hospital in person, for pre-procedural

assessment, collecting information before a visit, promoting health literacy, and ensuring that patients receive necessary maintenance examinations.

Mobile applications like England's NHS Track and Trace or Malaysia's My Sejahtera also help facilitate the accessibility of telehealth solutions. Applications like these notify users if they've come in contact with a COVID-19 patient, give updates on regulations and risk levels, and allow for reporting symptoms and booking tests. However, with the 103rd slowest internet speed among 139 surveyed countries, and about 30% of the population with no access to the internet at all, the Philippine digital divide limits the success of online telehealth services such as these.

There is a range of online telehealth applications available in the Philippines, such as StaySafe, WeTrace, ENDCoV, and CLEAR (Gonzales, 2020). A government platform, COVID-KAYA, has been faced with much mistrust and hesitation after an independent study by the University of Toronto's Citizen Lab found a flaw that could have resulted in the release of thousands of users' personal information (Lyngaas, 2020). StaySafe is another established platform, managed by the government's Department of Science and Technology. It was introduced in April, but still has only two million registered users, and no reports on impact, efficacy, or compatibility with other available applications (CNN Philippines Staff, 2020). The lack of internet connection is likely the strongest determinant of this limited success.

Project Description

Telemedicine is a promising solution for the delivery of essential primary care services, but is limited in the Philippines due to the lack of internet infrastructure. Government corruption and mismanagement also hampers the success of centralized, nationwide initiatives. In the Philippines, as in most LMICs, grassroots initiatives are often the immediate points of contact for emergency response and management. The proposed project draws on voluntary, community-level engagement to deliver a remote primary care platform, which uses phone calls and short message service (SMS) instead of online technologies. It aims to address the three main primary care functions that are essential for health management both during COVID-19 and beyond: accessible healthcare information, diagnosis, and

disease management.

The framework for the implementation of this platform is adapted from Hoffer-Hawlik et. al. (2020), and is outlined in Figure 1. To summarize, it begins with getting government approval to ensure that regulatory considerations are met and appropriate measures are in place to guarantee data security. Medical practitioners who will provide consulting services over the phone must then be identified. These can be either clinical physicians who are willing to take phone appointments, or clinicians dedicated to telemedicine practice, like what the Haladoc mobile application service did in Indonesia (Jahan & Rahman, 2020). Community volunteers must then be recruited and vetted to run programs and perform research for the platform. These volunteers and PCPs are trained for facility with the platform, and users are attracted through marketing. The details of this process are further discussed below.

Framework for the Platform

The platform constitutes two parts: a volunteer-run website and a phone hotline service.

Website

Through the website, both physicians and community volunteers can register their services. With the immense geographic, linguistic, and cultural diversity across archipelagic Philippines, the platform is dedicated to providing region-specific guidance and services to users. PCPs enlist to answer queries and perform consultations over the phone for users in their area. Volunteers can sign up to research and collect information about the pandemic, including the most recent guidelines, news and updates in their area, and general health and safety measures. With eight major Philippine languages, volunteers can also enlist as translators. As Executive Director for Initiatives of a youth-led Philippine healthcare and education organization, I've worked with students who volunteer as writers and researchers and have produced quality output regarding the pandemic. This network of Filipino youths is one potential demographic that would be passionate about and well-equipped to contribute to this work.

Ensuring the quality of essential healthcare information is crucial for this platform. Registering physicians must up-

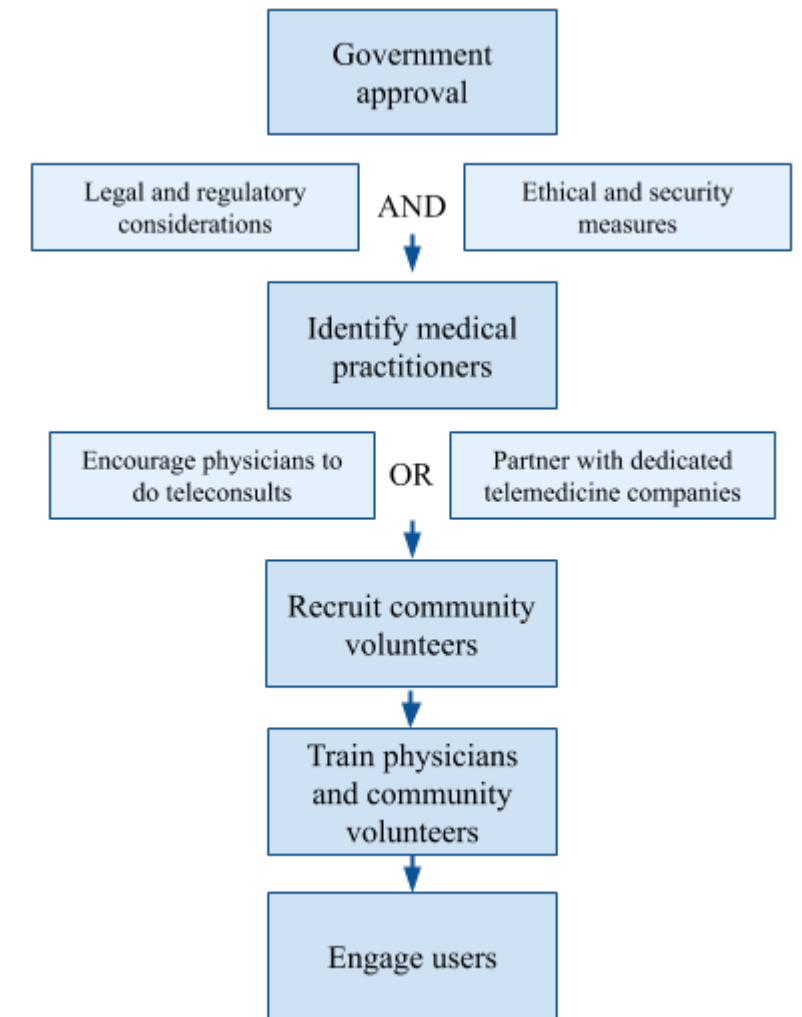


Figure 1. Framework for implementation of telehealth platform.

load documentation that proves their qualifications, which will then be verified by a team of volunteers, in accordance with government regulation regarding data privacy. Information collated by volunteers must also be verified before use on the hotline service. During my internship at Wellcome Open Research, I learned about their open access publication platform, and how articles can be published without extensive peer review, but are updated in real time to reflect comments and corrections by other scientists. A similar method can be used to verify the collected information and their translations, where volunteers will upload their work on a collaborative document sharing service, and the information will not be used until at least three other volunteers have verified it. This will help ensure the veracity of information delivered, while still being quicker than undergoing an extensive peer-review.

Hotline Service

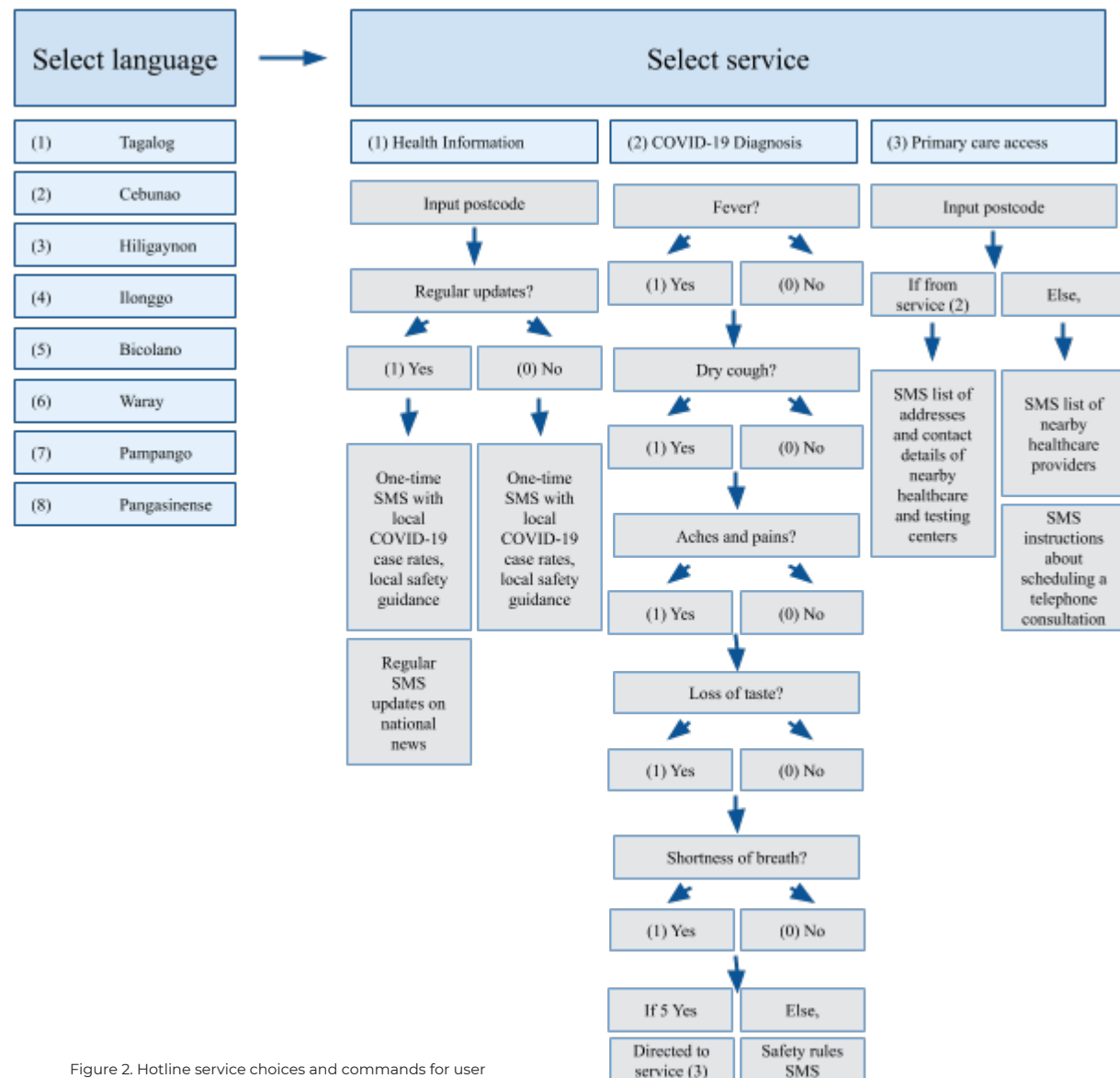


Figure 2. Hotline service choices and commands for user

The hotline service is accessed through phone call, and information can be disseminated through SMS, without the need for online registration. The user process is outlined in Figure 2 above.

First, users select a number from 1 to 8 to indicate which Philippine language they would like the information and instructions to be given in. Next, they will select a number from 1 to 3 to indicate which service they would like to avail of. The services correspond to (1) health information, (2) COVID-19 diagnostics, and (3) accessible healthcare, the three important primary care services identified with particular focus.

Selecting option 1 will prompt users to input their city's postcode, and, through SMS, they will receive information about COVID-19 case prevalence in their area and updates on health and safety regulations from the local government. If they so choose, users will also receive regular SMS updates on national COVID-19 news such as changes in lockdown rules and guidance.

Traditionally, some of this information would have been received through television news services. However, ABS-CBN, the country's largest media network, was shut down earlier in the year. The National Telecommunications Commission argued that this was because of various forms of non-compliance, such as foreign ownership and issuance of depository receipts to foreigners, although these claims have been contested by the network's owners. The issue is also linked to President Rodrigo Duterte's attacks on press freedom. During the typhoons that have affected the country in recent weeks, residents in the northern region of Cagayan, who used to access news largely through ABS-CBN, did not receive online evacuation advisory and suffered great loss of life and property (Marquez, 2020). This is testament not only to the government's limitations in delivering crucial information, but also to the urgent need for community-driven projects such as this proposal that bridge the information gap across the digital divide.

Moreover, selecting option 2 will result in a list of COVID-19 symptoms being listed. This pathway addresses the need for early detection and timely COVID-19 diagnoses. Many people may still not know what symptoms to look for, and automating the selection process relieves the time burden for PCPs as patients do not have to speak with a person directly unless they find that they do need to visit a hospital. With each symptom, the user must input either 0 to indicate that they don't exhibit the symptom, or 1 to indicate that they do. Common symptoms are listed in Figure 2, namely fever, dry cough, aches and pains, loss of taste, and shortness of breath. If the user indicates that they exhibit all of

these symptoms, an automated message will be delivered, advising the user to get a COVID-19 test. They will then be redirected to the third pathway. The exact symptoms and selection process for identifying patients with need for testing is subject to change given further advice from a medical professional.

Being directed from option 2 to 3 prompts the user to input their postcode. They will then be sent a list of the addresses and contact details of nearby healthcare and testing facilities through SMS. Users will also be advised on how to inform their most recent contacts if they have tested positive, aiding with the contact tracing process.

Digital contact tracing methods with mobile applications through Bluetooth will not be as effective in the Philippines, as evidenced by the lack of research on success of the existing mobile applications. In fact, there is no definitive evidence supporting whether or not these contact tracing applications are effective at all. Reportedly, unless 95 percent of the population is enlisted on compatible contact tracing applications, the reproduction rate, R, will not significantly decrease. Unfortunately, download rates for these applications globally are low, at an average of about 20%. This means users only have a 4% chance of coming in contact with another user (Bradshaw, 2020). As such, a combination of digital and manual contact tracing is still seen as the most effective. Guidance on how to self-isolate and inform contacts after testing positive is scarce and unclear in the Philippines, and pairing this accessible hotline solution with advisory on manual contact tracing may be an important advantage of this platform.

Selecting option 3 from the onset will prompt the user to input their postcode. Information about nearby healthcare providers in their area, who have registered to provide telephone consultations, will then be sent to the user through SMS. They will then be given instructions on how to arrange for a consultation with their PCP, which can occur over the phone. While this may not be as accurate or in depth as an in person or even a video consultation, it will still provide the user with some access to a PCP, which they would not have otherwise had.

PRIMARY CARE IS ESSENTIAL IN MAINTAINING A HEALTHY POPULATION BOTH DURING THE COVID-19 PANDEMIC AND IN THE LONG-TERM

Engaging Volunteers and Users

The success of these services relies on a wide enough usage of both the website, so physicians are present in most regions in need, and the hotline service. Different marketing methods will be in place to advertise each of these channels, as they are aimed at different actors in the platform.

Volunteer and PCP registration through the website will still require internet connection. While this may be a limiting factor, online data collection remains the most efficient. PCPs and those in middle or upper classes who are most likely to provide these voluntary services would more likely have internet access than those in lower-income or remote areas. Extending the volunteer registration and research collection platform beyond the website may be too confounding or difficult to manage especially at initial stages.

Hospitals, universities, and other professional networks will be tapped to encourage PCPs to register their services through the website. Local community workers, educators, and students will be encouraged to volunteer as researchers and translators through partnering with similar professional networks and with grassroots civil organizations. Online advertising strategies will also be employed, such as through social media campaigns and news press releases.

Partnering with both television news networks and local service providers will be crucial to releasing widespread messaging about the platform, especially the hotline service, beyond online information channels. Aggressive and far-reaching marketing strategies were not employed for the existing mobile applications, and will ultimately serve to benefit this project.

Financial limitations may also reduce the effectiveness and reach of marketing and advertising strategies to engage users and volunteers, which is why local community engagement with various civil organizations and professional networks is a key strategy for the platform's success.

Ethics and Regulation

Much of the controversy surrounding mobile applications like NHS Track and Trace has to do with mistrust and hesitation about information privacy. While those concerns will not be as pronounced for this hotline service, as users' information cannot be stored through an application or online database, information will still be collected especially for volunteers through the website. As such, compliance with data privacy regulations is crucial.

Unfortunately, there is no extensive framework for telehealth practices in the Philippines, as this service is relatively new and not commonly used. However, a joint memorandum circular, entitled Telemedicine Practice Guidelines, was produced by the Department of Health in July 2020 in response to the pandemic. This memorandum outlines best practice for professionalism and quality of remote consultations, which will be strictly enforced upon all PCPs enlisted on the platform to ensure quality, ethical care. The memorandum also gives guidelines on receiving consent to collect patient information, including ensuring that the patient is made fully aware of what their data will be used for, privacy measures for recorded documentation, and clearly communicating the nature of telemedicine consultations in general (Department of Health, 2020).

Adherence to the established Data Privacy Act (R.A. 10173) will also be strictly enforced for PCPs and vol-

unteers who register through the website, and for patients who are connected with a physician through the hotline service (National Privacy Commission, 2020). This involves securing consent to record and process information, informing patients and volunteers of the process of this data collection, developing clear and transparent guidelines for the use of this data, adopting safeguards to ensure network security of the collected data, and registering with all appropriate national governing bodies such as the National Privacy Commission.

Apart from security, financial compensation is also an important ethical consideration. Especially at its early stages, the platform can be run only through volunteer engagement. However, PCPs may require financial compensation for their time and services. This may be obtained by applying for government funding, or securing arrangements with telemedicine and PCP networks. This is important as those in low-income or remote areas may not have access to online banking methods to make remote payments. Lower rates may also be arranged if PCPs are willing, to reduce some of the financial barriers that limit patients from accessing healthcare. However, if PCPs are unwilling to provide voluntary or reduced-fee services, this provides a significant barrier to the project. Fundraising campaigns can be launched initially to address this.

Measuring success

Monitoring the extent of usage and evaluating the quality of services received is important in ensuring that the platform is making a meaningful impact. Recording how many volunteers have registered through the website and how many users have called the hotline per region would be the first step in evaluating the platform's success, and will inform retargeting advertising methods appropriately. Sending out simple surveys through SMS will also allow users to provide feedback on their experience, allowing for constant quality control and re-evaluation. This is particularly crucial given the lack of robust research outlining the success of current mobile telehealth services in the Philippines. It has been suggested that at least three-quarters of the population has to register for mobile telehealth and contact tracing services before significant reductions in transmission are made. This will be the benchmark goal of the platform and, while ambitious, will lead to significant contributions in reducing the spread of the virus, and educating and empowering a healthier Filipi-

no people, even post-pandemic.

Extensions: Beyond the Pandemic and the Philippines

While the pathways and framework provided refer specifically to the COVID-19 pandemic, the applications of an accessible hotline service that connects users to the primary care system has clear benefits in the long term. A similar framework may be implemented, with research collected regarding general health and hygiene measures instead. The second pathway for COVID-19 diagnosis will no longer be required, so only the health information and primary care access pathways will be available. This will support the sustainable delivery of primary care and healthcare information, reducing the burden for PCPs and the barrier to access for patients.

The proposed model may be adapted for use in other LMICs, where similar limitations in telecommunications and information access are prevalent. Drawing on the talent of capable volunteers with a passion for service creates a local, sustainable response to the lack of primary care access, and thus builds genuine, long-term resilience at the community level.

Conclusion

Primary care is essential in maintaining a healthy population both during the COVID-19 pandemic and in the long-term. However, it has become more inaccessible and underprioritized during the pandemic, especially in LMICs. This project considers the telemedicine model that has been put in place in many countries to address this problem and optimizes it for the Philippines, and in turn for other LMICs, as the platform can be easily accessed by users even without an internet connection. This proposed solution empowers, connects, and strengthens the community response to COVID-19, making both health information and healthcare services more accessible, and helping address the gaps in primary care even beyond the COVID-19 pandemic. Ultimately, the ability to maintain a healthy lifestyle is a right, not a privilege, and my proposed project aims to help make this right a reality for all.

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About the Author

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Lia Bote is a second-year biological sciences student at the University College, specializing in cell biology. She is passionate about solving problems at the intersection between science and society, and in particular about improving access to quality healthcare in low- to middle-income countries.



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PROPOSAL

US- TOGETHER:

Allowing users to invest in categories of smbs in a given geographical area

Authored by:

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Nationality: American

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[Listen to Audio Intro](#)



BEING A SMALL BUSINESS OWNER HAS NEVER BEEN EASY IN AMERICA. EVEN BEFORE COVID-19, 95% OF SMALL BUSINESSES CLOSED WITHIN THEIR FIRST FIVE YEARS. ONLY 48% HAVE THEIR FINANCING NEEDS MET

Abstract

Mark Twain once said: "I didn't have time to write you a short letter, so I wrote you a long one." This proposal takes inspiration from the great American author in writing a short proposal.

The Insight & My Personal Motivation

Imagine a world where your only restaurant options are McDonalds and Chipotle. Only coffee option is Starbucks. Only salon is Great Clips. No neighborhood café where the barista knows you by name. No go-to dumpling joint run by a family where the father mashes the filling, the mother folds dumplings at lightning speed, and the kids run the cash register. Sound dystopian? Depressing?

When my favorite family-run taco joint permanently closed because of COVID-19, I realized how much I had taken my community for granted. I'm not alone. As a result of the pandemic, 72% of millennials have decided to support small businesses more. Having just sold my edtech startup, Realism, I felt a familiar entrepreneurial fire burn the more I thought about this problem.

Idea Summary

How does an average American support a small, local business? My own wallet is burdened by student loans—sparing \$10,000 isn't possible. Without cash, small businesses face closure. The stock market solved that problem for big business. So why not a stock market for small businesses?

This proposal seeks to lay out the unaddressed needs of multiple parties and describe the product that can address these pain points. I will then explore the competitive landscape and outline our game plan while focusing on how our product has learned from the success and failure of those before us. I will conclude with how I envision our product revolutionizing the future of financing and the concept of how money can be used for social good.

The Problems

I've identified three problems I want to solve. Below, I show that each problem is 1) extremely painful and 2) historically difficult to address.

The "Mom-and-Pop" Shop Struggle to Survive

Being a small business owner has never been easy in America. Even before COVID-19, 95% of small businesses closed within their first five years. Only 48% have their financing needs met. Juxtapose this with the fact that SMBs represent 99.9% of all firms and circulate three times more money back into the local economy than blue-chip corporations. Why does this happen?

Short answer is that there are two problems: 1) SMBs traditionally only look to bank loans for capital 2) Under the current financial system, those banks lack incentive to support SMBs. Let's look into each problem.

The first problem is related to record low interest rates and a long-held belief that debt is the cheapest form of financing for SMBs. However, in the modern era, as SMB success begins to rely more on community

connection, equity financing provides community buy-in that is much more difficult to quantify. Community buy-in will only become more important as millennials, who will become the future bulk of investors, statistically care much more about supporting their local communities.

The second issue is that for banks, SMB loans don't have attractive returns compared to other financial products. This is reflected in an extremely annoying and notoriously difficult loan application process. The average loan application takes two to three months to process and at the end, 80% of SMB loan applications are denied. Liquidity for SMBs is extremely important, as shown through the failure of the recent CARES Act to provide cash quickly enough to struggling businesses.

The Modern Struggle to Survive and Do Good

Today, community members care more about supporting local businesses and are willing to pay more to do so. However, the "how" and "who" have always been difficult to answer.

On "how," there is first the issue that most average Americans do not have \$10,000 lying around and the risk appetite to invest in one small business. Even if they did, there is the issue of transparency and repeatability. What exactly happens to my \$10,000 dollars? It's an unknown that results in a lack of buy-in by community members which in turn results in a lack of motivation to repeat the transaction...to say nothing of the long investing time horizon as well. Transparency and repeatability measure even worse for donations.

On "who," there is no clear answer which SMBs to invest in. Which ones need help? Which ones would use the investment ethically and help grow the community? In short, while there is a desire to invest in local communities, there is no simple, easy way to do so.

Impending Equity Capital Markets Evolution?

Equity capital markets have evolved more in recent years than in decades prior—think direct listings and SPACs. The trend represents an increasing demand for easier access to public markets. Furthermore, the record levels of dry powder from debt to equity strategies means that investors are desperate to deploy capital

into new investments.

2016 JOBS Act

This is where the 2016 JOBS Act comes in. Obama-era though it might be, most SMBs are unaware of the frontier of equity financing the legislation opened. It opened SMB financing to unaccredited investors (previous legislation was a legacy of the Great Depression, where it was thought that only the rich had enough knowledge to invest and sought to protect the poor from their own "stupidity"). The JOBS Act lowered the legal hoops SMBs have to jump through in order to remain private and issue a public security. This created an unprecedented opportunity for SMBs—now they too could access the benefits of equity financing that traditionally only large public corporations could enjoy. Amendments to Regulation A further layered on accessibility for SMBs by lowering the barriers to an initial public offering to sell shares.

In short, there is a huge, unaccessed opportunity for SMBs to find liquid capital and for investors to access previously inaccessible investments.

The Core Problem = Solve Information Asymmetry Market Failure

The pain points of the various stakeholders outlined above can essentially be boiled down to information asymmetries. UsTogether seeks to address these market failures through a digital platform, while keeping in mind the real human beings who are suffering and whom I seek to help.

Product Description

The App that Rethinks Money's Purpose—"Finance" for Social Good

UsTogether will be a platform that allows a user to invest in categories of SMBs in a given geographical area. UsTogether would create funds that track categories of local small businesses through buying, owning, and bundling together shares of SMBs I have verified and conducted due diligence. Anyone on the UsTogether platform would be able to invest in these funds.

Here's an example: Bob is a Detroit native who now works in Silicon Valley. He grew up on the conchas in CorkTown and the pierogies in Hamtramck. Detroit is where the entire family gathers during the holidays, and no matter where Bob is, Detroit will always be home. Bob is also a big coffee lover. After earning his first paycheck, he looks at his investment options.

There's the Fidelity mutual fund composed of a bunch of companies that Bob has no relationship to or cares about. Then there is UsTogether's Detroit Coffee Fund.

The Detroit Coffee Fund is composed of 10 of Detroit's established and upcoming coffee shops. Investing in the fund allows Bob to 1) support his hometown community, 2) achieve equity return rates, and 3) spur a cause he's passionate about. Meanwhile, coffee shops in Detroit 1) get liquidity and 2) increase community buy-in.

How UsTogether Solves Information Asymmetry

UsTogether solves the information asymmetry market failures that are the root of the pains felt by SMBs and community members/investors through building a digital investment platform.

1. SMBs are unaware of the new investment crowdfunding opportunities because the average American (the potential investor) is equally unaware. It's a chicken and egg problem. The traditional agents who facilitate the movements and transactions of capital (aka the big banks) have no incentive to disseminate this information given the high transaction costs associated with SMB loaning. By providing a digital platform compounded with social networking, low onboarding costs and "sticky" transactions (the nature of public security transactions), UsTogether provides ease of access and replaces the incumbent middle man that both buyers and sellers find troublesome.
2. For the average investor who wishes to invest in their local communities, there is the "how" and "who" question. Donations are usually one-time capital losses traded for social goodwill. Websites like Kiva and GoFundMe focus on one

company. All of this represents search costs that UsTogether solves by being the one to due diligence and negotiate with SMBs.

3. The lack of information on investment crowdfunding can also be contributed to the slow-moving institution known as the US government. Although investment crowdfunding has been possible since 2008, the SBA has not yet bridged the gap between legislation and implementation, making no mention of investment crowdfunding on its online course, "Financing Options for Small Businesses."
4. There is no easy-to-access communication channel between small businesses and their communities. The closest I get is social media with Instagram and Facebook. However, both provide only a narrow scope (that is, company-by-company basis) of communication, and often, that communication is diluted by information overload from other sources. UsTogether will provide a direct digital communication channel between investors and SMBs—in short, I envision investing as a conduit through which investors can also choose to become active members of their communities. After establishing the core investing platform, UsTogether will continue to pursue its ultimate goal of social good through finance by building out social community platforms in which SMBs can easily communicate needs with each other and the larger community.
5. The average millennial not only cares about sustainability and community, but seeks to make it part of their social brand and inspire others to care as well. 2020 was a pivot year in which it became commonplace to urge voting, donations, petitioning through Instagram stories, Snapchat, and Facebook at an unprecedented level of engagement. UsTogether seeks to build on that momentum by providing tradeable digital tokens and "woke" social media badges.

Technology is Key

Robinhood's success proved that millennials prefer to have more control over their investments compared to generations prior and are quite financially savvy.

As a result, investing has been successfully gamified through technology. Today, I also often lament that technology (and in particular, social media) has made our modern lives ones lived over the internet. UsTogether seeks to challenge both concepts.

Why can't technology be used as a tool to enhance our sense of belonging in communities? Why can't money be more meaningful than the currency of a game and represent an investment in our communities? In this day and age, I don't expect people to be born, live and die in the same place—the average person switches jobs every 4.6 years. Technology (in particular, mobile) is crucial to creating a platform that can keep us in touch with meaningful communities even when I may physically be thousands of miles away.

Benefit diverse communities

Through the selection process for index firms, I will hold us to a diversity standard and ensure the funds are reflective of US Census and SBA data. Full, and perhaps, radical transparency is important to us. Each business will have a public page on which they can list if they are black-owned, fair-trade and etc.

Our main goal is to connect people with their communities and help those communities grow, so I will constantly invite feedback (to the degree of being annoying) from our stakeholders to make sure strategic decisions are well-informed and never lose touch with our stakeholders. Starting a business is hard. Having a minority background makes that even harder. However, diversity is what strengthens and grows communities - that's a mission I are dedicated to contributing towards.

Market Size

As of 2019, the Small Business Administration estimates that 99.9% of US businesses count as small businesses...which translates to 33.7M individual businesses. Even a sliver of that market size would be significant.

Business Model

I will form as a Benefit Corporation, and ensure that social good is a part of the business mandate by making us legally liable to our shareholders and partners in the advancement of our social mission. Our customers

are both investors (average Americans) and small businesses. As a digital marketplace, I benefit from lack of pressure from suppliers but must ensure the security and design of the platform ourselves. As a platform, I will focus our pricing strategies on charging the more inelastic of our customers. The following are some brewing ideas:

Possible Monetization Strategies

1. Management fee on funds
 - a. I'd utilize the age-old proven model of using minimal management fees as our main starting revenue source.
2. Premium subscription tier for platform
 - a. Provides potential investors benefits of increased investment credit lines, early access to new funds UsTogether is setting up within their regions of interest, and access to investment advisors.
3. Secondary Share Marketplace
 - a. For investors in our funds that want to sell, UsTogether would facilitate the initiation of liquidity by helping match shareholders with other community member investors interested in those shares through a secondary marketplace lb portal. UsTogether would then take a small transaction fee from a successful match.

Why now?

There are several coinciding trends that makes now the best timing to launch UsTogether:

1. Desire by the average American to reinvest in local communities has never been stronger
 - a. COVID caused SMBs to close en-masse
 - i. Trend will continue as life is not expected to return to normal until 2022
 - b. "Healing" as a nation after 2020 elections
2. CARES Act misexecution
 - a. Fraud
 - b. Delayed cash infusions

- c. Lack of established infrastructure within big banks charged with disbursements and conflicts of interest with existing clientele
- 3. Investing crowdfunding concept gaining traction in Washington D.C.
 - a. Earlier this month, the SEC further lifted equity capital-raising restrictions, allowing any US company to raise up to \$5MM/12 months through any security

Competitive Landscape

In the study of the competitive landscape, I'm led by two core questions:

1. How do small businesses fund their businesses?
2. What are funding solutions available to small businesses?

The discrepancy I ultimately discovered between these two questions led us to conclude that there is a massive information problem rooted in search costs.

On the first question, although there is no data that breaks down small business financing in the US, a quick Google Search of "most popular small business financing" reveals a page composed 90% of bank loans. Considering that the most accessible financing search resources available to small businesses are Google and traditional banks, I can conclude that loans are a popular form of financing. However, this popularity would not be obvious in the face of increasingly creative financing solutions available. Below, I break down these solutions into four categories. For each category, I pinpoint innate structural pain points to small businesses as well as existing companies:

Loans

Loans are the most traditional and well known method of small business funding. Typical funding sources are banks, but new more tech enabled platforms like peer2peer lending platforms are providing additional methods to secure loans.

Key Painpoints

1. Difficulty of securing loan to start or fund development: ~80% of loan applications are denied
2. Traditional loans have a lengthy application and notice timeline: average loan cycle takes two to three months
3. Loan terms are inherently disadvantageous: loans are from parties with little vested interest on grantee other than monetary gain from interest payments

Existing Entities in This Market

Peer to Peer lending sites (Lending Club, Funding Circle), Online Lenders (Kabbage, Lendio and PayPal), Large Banks (Bank of America). Credit Unions, Small Business Administration, U.S. Department of Agriculture loans for rural businesses

Charity

Traditionally much harder to come by, charity donations as a method of funding typically only happen on occurrence of a negative event that garners enough sympathy to warrant free monetary donations. These events are very hard to come by and almost never happen, except in the case of COVID recently where an explosion of goFundMe style charity raises were effective.

Pains

1. Infusion of capital is temporary and most likely only to happen once for each given donor
2. Donations are an unreliable method of raising money - very difficult to gauge actual demand and how many donors there will be given any fundraiser.
3. Even on the occurrence of a severely negative event that is likely to garner high amounts of sympathy that contribute to making donations, the marketing and branding of a charity fundraiser can be difficult.

Existing Entities in This Market

Gofundme, Direct donations, Government support funds, Kiva

Equity

Equity's traditionally existed in only colloquial start-up funding for high tech companies and limited to venture capitalists and high-net-worth angel investors well connected in the tech world. However, some companies recently are working to democratize access to startup funding for individual investors through public share sales as an alternative funding method for early stage startups. Some companies have also applied the equity model successfully in other markets, notably Cadre in real estate by providing equity stakes in real estate properties to individual investors. However, the equity model has yet to be successfully adapted for small businesses, the core focus of UsTogether.

Pains

1. Equity funding is mainly limited to startups in high-tech or high-growth trajectory companies (i.e., venture capital investors shoot for "100x" returns)
2. Access to allocating capital via equity as a vehicle is limited in access and primarily for high-net-worth individuals/accredited investors

Existing Entities in This Market

Cadre, WeFunder, Republic, Angellist, Angel Syndicates

Crowdfunding

Crowdfunding has risen in the past decade as an alternative funding source for new products. UsTogether shares parallels in crowdfunding from the perspective of community buy in: crowdfunding investors choose to invest based on personal interest and belief in the product, justifying their decision to pay it forward before the actual product is even built. However, crowdfunding as a funding source historically works with new innovative products or tangibles (i.e., events) and is non-applicable to the majority of small business funding needs.

Pains

1. Effective range of crowdfunding campaigns is usually limited to new, innovative product releases or eye catching events
2. Crowdfunding creates only a temporal buy-in with company—it doesn't provide a way to stay involved financially with a company long term

Existing Entities in This Market

Kickstarter, Indiegogo, Drop

What Makes Us Different?

UsTogether is combining the best of each type of funding source: the social commitment of charitable donations, the capital size of loans, and the community driven social buy-in of crowdfunding. UsTogether is innovating on the traditional financial models and creating a completely unprecedented form of small business investing, one that's built on the shoulders of success in traditional funding sources.

The Roadmap... A Series of Pivots

The current concept of UsTogether is the result of pivoting three times. TakeoutCOVID was the initial attempt at helping connect the community with mom-and-pop shops. Working with my team at Coast, I helped build and launch an interactive restaurant information platform.

Then the community was rocked with #BlackLivesMatter. Data from the National Bureau of Economic Research showed that between February and April, African-American business owners plummeted from 1.1M to 640K. TakeoutCOVID expanded to become a platform that connected African-American mom-and-pop shops with hungry communities: Shop Black Owned.

Since March, TakeoutCOVID has been used by hundreds of thousands of users in cities across the US to support 20K+ local businesses. But, the evolution didn't stop there. By engaging with our SMBs, I witnessed

how COVID-19 disproportionately affected the under-represented, underfunded underdogs of American society. How it widened the wealth gap. Access to capital was crucial.

The roots of UsTogether came from the initial ideation process of a digital loan platform that would allow users to search for loans by social cause to invest in. However, in the customer discovery process, I realized the “one-time” transaction effect of loans that prevented other lending platforms from growing and ultimately failing to serve SMBs.

So, Where are we now?

By gathering insights from previous pivots as well as taking advantage of the existing TakeoutCOVID platform I've helped build, I conceived UsTogether.

Go-To Market Strategy & Critical Resources

Since I expect further pivots as I continue building out the product, I view our go-to market strategy concurrently with conceiving the product. This requires a high level of dynamism and flexibility from our go-to market strategy, which is why I focus our strategy outlined below on proof of value. In short, I have yet to gain the insights necessary to decide questions such as which side of the platform to “seed” first. Which users provide more value to each other? Are there negative network effects?

To answer these questions with a degree of confidence that would justify a full-fledged go-to-market strategy, I separate our strategy into four phases:

1. Market Research (operates continuously through product lifecycle)
2. Minimum Viable Product
3. Pilot
4. Scaling

For the MVPs I also outline the predictable required resources for the software creation and logistical setup. Additional expenditure areas revolve around financial regulation (i.e., FINRA certification), hiring employees, sales/marketing, and other traditional startup expendi-

tures. To finance growth, a startup path can be pursued by raising money only when required from an Angel/Pre-seed round to a Series A round of financing from accredited investors and venture capitalists.

Market Research

Market research will lay the foundation for which I iterate and test different assumptions and hypothesis about the market, existing market failures, customer behavior, among other factors that not only build intuition but provide hard data for further analysis. There are four different constituent groups that I hope to interview during market research: small business owners, community members, bankrupt and successful startups, and JOBS Act public policy and legal experts. The first two groups will generate insight into the direct users of the product, while the second two will help better understand the regulatory landscape and different types of successful funding strategies that are primarily equity based. Community members can also be further segmented into current locals, “expats” that have moved away from their hometown but still want to support SMB's, and different demographics like age (GenX vs. GenZ), income bracket, race, and gender.

Key questions will center on determining if SMB's are willing to sell shares in company based on the JOBS Act. This can help generate insights into initial demand. Some sample questions are as follows: How much are SMB's willing to sell? Why would SMB's want to liquidate? Would SMB's rather take out a loan? How much do SMB's value buy-in from community?

MVP

Post market research, our MVP's will solidify different hypothesis regarding the UsTogether product. I want to test our different hypothesis as easily as possible, and given the complex multi-tiered product nature of UsTogether, I've divided the MVP into two phases. The first is a Simplified Revenue Share Agreement which emulates equity buy-in without nearly as much regulatory overhead as actual equity. The second is actually testing the equity buy-in through selling actual shares—once I've confirmed that there's a need for the core nature of the product it'll be necessary to test the core of the full product.

MVP 0: Simplified Revenue Share Agreement

Going through the process of working with companies to buy/sell shares and setting up an actual fund requires a substantial amount of work—I can pseudo-test the core benefits of UsTogether through a short term revenue share agreement. I plan on spending a lot of time on this stage as I can prove out the core value propositions of UsTogether without deploying capital. Our target is structuring 40-50 such revenue share agreement deals and seeing them through to completion. Based on the success of these deals, I'll have enough proof of concept to approach raising a pre-seed round of financing to cover MVP 1 costs.

1. Benefits of this MVP approach:
 - a. Completely bootstrappable
 - b. Requires little investment other than time
2. Goal:
 - a. Validate traditional small business owner interest in a “community buy in” style funding source as an alternative to loans
 - b. Validate community member interest in supporting local small businesses
3. Logistics: A community member agrees to give a small business \$10,000 for 5% revenue share for the next 12 months. The \$10,000 will be allocated to buying (for example) new equipment
 - a. Community member will feel invested in the success of the company through the revenue share agreement
 - b. Small business will get the capital they need while not being laden longterm with something like a loan
 - i. Even SBA loans (loans with industry lowest interest rates, best terms, etc.) have ⅓ fail rate
4. Required Resources
 - a. Overview: Essentially zero costs, completely bootstrappable. Primary work is manual labor on our side of setting up the revenue share agreements and matching local small businesses and community members interested in supporting them.

- b. I plan on spending a lot of time in this stage to iterate our hypothesis and thoroughly prove product demand

MVP 1: Manual Matching

In this phase, I'll actually test the equity model and its efficacy with real small business owners and community members. To keep overhead as lightweight as possible, I'll conduct the matching for community member equity investment into small businesses completely manually. This way I can test UsTogether without deploying capital into time and resource intensive activities i.e. writing code.

1. Benefits of this MVP approach:
 - a. Completely bootstrappable
 - b. Requires little investment other than time
2. Goal:
 - a. Validate efficacy of equity as a method for connecting small business owners with funding and community members with small businesses, or the hypothesis proven in MVP 0.
3. Logistics:
 - a. SMBs Action
 - i. Manually buy up shares in five companies in a certain category in mid-tier city (e.g., five ramen shops in Detroit)
 1. Mid-tier city rationale:
 - a. Less small businesses in a given category, so you don't have to invest in a ton of small businesses in MVP to make fund accurately track market
 - b. Enough size to have a large group of easy to discover people that want to reinvest in their home communities
- b. Community Member Investors Action
 - i. Try and sell manually created single category fund in person to friends and family

- ii. Provide biweekly/monthly excel spreadsheet or simple updates on performance of fund and their returns

4. Required Resources

- a. Overview: Basic legal setup costs at this stage. Just need to cover the bare minimum in order to test our second MVP. This will involve getting setup with all governmental regulations.
- b. \$35k-\$50k: Registration as RIA (registered investment advisor)

Pilot

The pilot essentially crystalizes everything I do in both MVP 0 and 1 into an actual intractable product where I'm no longer manually handling the middle work. Below I outline what the different stages of a pilot may look like and projections on the required resources involved in bringing them to life.

Alpha: Simple Webpage + Automated Form

The initial technology interactable version of UsTogether product. Will consist of a single html webpage that makes fund info created in MVP 0 and 1 available publicly.

1. Key Features

- a. Showcases all relevant "public" metrics like basic company info, company financials, and fund performance
- b. Manually managed initially to ensure safety, no fraud, etc. and primarily only circulated among friends/trusted community members
- c. Automated form for community members to:
 - i. Place a stock purchase order -> manually executed in the backend
 - ii. Show their interest
 - iii. Request for information

Communication channel between SBs and community members via third party tool, e.g., Google Hangouts

Beta: Minimal App

Alpha fully crystalized into "bare-bones" app that's deployable to customers. Final stage before full completion of app and provides extra buffer time to further refine UsTogether.

1. Key Features:

- a. Account creation: prevents legal issues with sharing financial information
- b. Automated security/fraud prevention: built in third party tools to protect both businesses and buyers
- c. Additional fund categories within starting mid-tier city (i.e. Ramen shops in Detroit)

Scaling

Given success with the pilot stages of UsTogether, as defined by key metrics like growing number of investments made and number of registered small business and community members, bringing UsTogether to new demographics and localities will be the key focus. This will enable UsTogether to truly grow into a mature platform, provide considerable impact in communities, and reach venture scale. Below I've listed a couple scaling methodologies UsTogether could use in the future.

1. Nationwide Expansion

- a. Replicate UsTogether model proven in Pilot phase in strategically targeted cities
- b. Post MVP:
 - i. Finish expanding initial MVP city to 10-20 fund categories. Once demonstrated traction and returns are proven in that city, look to replicate the model in additional mid-tier cities with same MVP process.
- c. Future:
 - i. Scale into adjacent markets (both large and small cities) by replicating model
 - 1. Launch in mid-sized cities first where index funds are easier to create given lower number of companies need to track
 - 2. Launch in large cities next

- 3. Tackle remaining cities that have enough companies to create viable indexes

2. Partnerships

- a. Build on the ground influence and word of mouth marketing through key partnerships with related stakeholders involved in supporting small businesses.
- b. Local Government: Local Chambers of Commerce
- c. Federal Government: Small Business Administration
- d. Small Business Associations
 - i. Small Business Administration Community Groups
 - ii. SCORE
 - 1. Overview: Completely free country-wide network of business mentors
 - 2. Logistics: Provide mentorship to small businesses

3. Mission Driven PR

- a. Leverage mission driven ethos of platform to help communities in time of extreme need to brand PR
- b. Utilize the emotional connection of solving problems everybody is experiencing in their communities induced by recent events like COVID
- c. Conference appearances/sponsorships ex. Small Business Summit

4. Social Network: Build out social communities to increase product value to small businesses

- a. For example, Alinea Invest (women community + education + robo-investing)
- b. Education:
 - i. "UsTogether Learn"
 - 1. Overview: A community for investors on UsTogether around educating new investors about small business financing and investment basics. Includes wiki like documents, newsletters, something similar to Robinhood Snacks
 - 2. Why?: Many investors will be millennials/genz a couple years into their new job and are just getting started with managing their personal finances
 - 3. Goal: education new investors on most efficiently allocating their capital
 - ii. "UsTogether Mentor"
 - 1. Overview: A mentorship network for local small businesses similar to SCORE where I'd have a dedicated team of advisors
 - 2. Why?: 1/6 of small business loans fail...business owners aren't effectively allocating their capital
 - 3. Goal: help Small Business Owners efficiently allocate the capital from community member investors
- c. Investor Exclusivity: benefits only investors get! Increases buy in
 - i. Investor days/events held at companies in funds they've invested in
 - ii. Ahead-of-time info on new products, plans, etc.
- d. Events
 - i. Host virtual/local events connecting small business owners and community

Multiple Ways to Get to Critical Mass

Other scaling techniques include more product focused ones I've outlined below: these offerings would be adjacent to the core product and would act as an added incentive or gateway into the UsTogether platform. These can also be expanded in the future as UsTogether grows to build a finance ecosystem beyond UsTogether's core value proposition for customers.

1. Small Business Credit Card
 - a. Essentially create an index of small business debt
 - b. Make the "debt" a "mutual" fund that community members can invest in -> essentially syndicating small business debt
2. Savings/Checking accounts for Small Businesses
 - a. Instead of having small businesses go to regular banks which have ridiculously low interest rates, UsTogether would setup a Cash Management Account, which functions like a regular bank but provides higher interest rates due to cutting out extra fees like physical bank locations and passing on savings to customers
 - b. 0.4% APY for cash management accounts vs 0.01%APY at traditional banks

Challenges and Mitigants

1. Regulation: I'm currently continuing to deepen our understanding of the JOBS Act. Achieving recognition from the SEC would become a massive competitive advantage, but in the process I will be constantly pivoting and thinking of new financing structures that can help our local communities solve their financing challenges.
2. The Ethical Dilemma: The balance between social good and profits is difficult to balance. However, as a benefit corporation, I will make ourselves legally liable to delivering on our social mission. Supporting local communities will be further woven in the fabric of our firm when it comes to incentive structure as well. Furthermore, by constantly encouraging feedback from our stakeholders, I hope never to be blindsided by a lack of perspective or diversity.

Conclusion

Success Metrics

I will look at a few key metrics globally to determine success:

1. Decrease in rate of small businesses closing doors
2. Small business ownership makeup reflective of regional demographic data
3. Increase in local investments as part of average American investment portfolio
4. Increase in local business engagement (e.g., transaction number and size)

The ultimate goal of UsTogether is to become the go-to global microfinance and social good institution. by first capturing markets in selected US cities where I have a strong, existing TakeoutCOVID infrastructure.

Final Thoughts

The world's undergone earth shattering changes in the past twelve months more than any period in memory. These fleeting moments taught us as a community the true value of small businesses we'd taken for granted in the past as we went about our daily lives. Everywhere around us, from the local bodega down the street run by a family of Italian immigrants that came over by ship in the 1800's or the new hip Asian Fusion restaurant breathed to life by two second generation Malaysian sisters, small businesses are the fabric of our community. Today, when I grab my morning coffee takeout from a local coffee shop, I don't just see my steaming cup of delectable caffeine: I see the face behind that cup. And I'm deeply thankful for their work to support my habit - and hundreds of others in our community even throughout COVID.

Small businesses haven't just had it hard during COVID—they struggle historically. COVID only amplified existing conditions to the tipping point. My dream is that no small business will ever have to face existential challenges again for the wrong reasons. I believe that small businesses are necessary to not only building community, belonging and identity, but creativity. Thus, I hope to provide these cornerstones of our communities with a fighting chance - a chance realized by the ultimate goal of UsTogether becoming the go-to global microfinance and social good institution. I may be starting small, but we're building something much greater. UsTogether will be the platform that rewrites how we, all 7.8 billion human beings on earth, interact with the very businesses that define the precious time we share with those around us.

Supplemental Materials

UI Sample



Appendix

My Entrepreneurship Experiences

1. Realism (<https://www.realism.io>)
2. Apple (Engineering Project Manager)
3. Dorm Room Fund Partner (<https://www.dormroomfund.com>)
4. TakeoutCOVID (<https://coastapp.com/takeoutcovid/>)
5. Shop Black Owned (<https://coastapp.com/shopblackowned/>)
6. Product Manager Intern under Mayor Mike Duggan (<https://detroitmi.gov>)
7. Personal Page (<https://steven.fyi>)

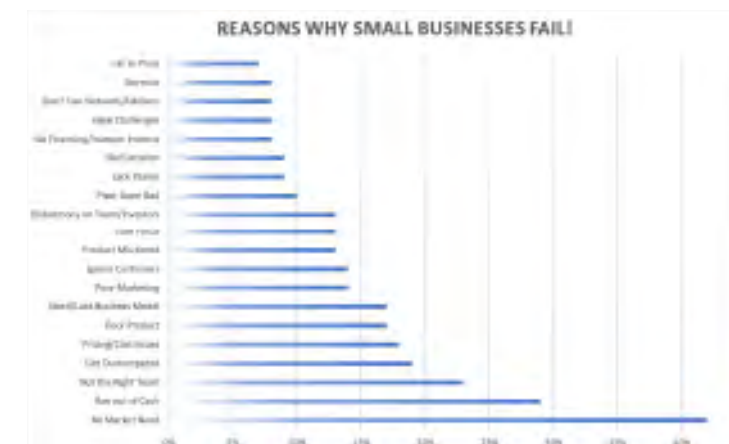
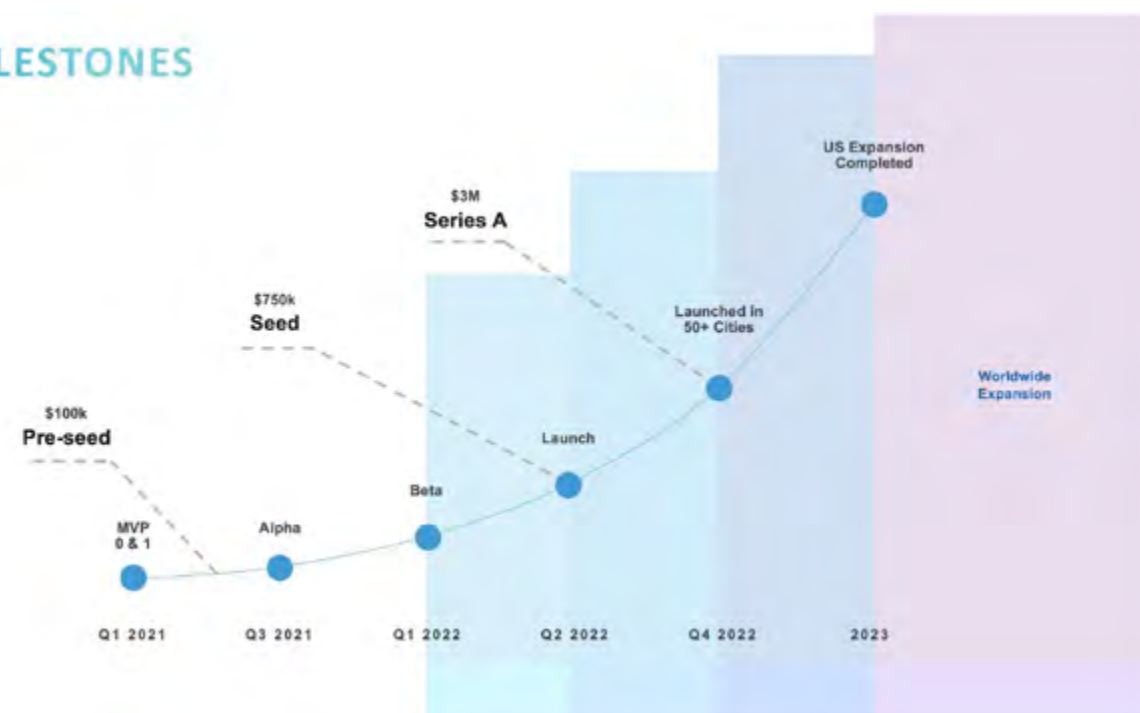


Small businesses account for 98% of business in the US

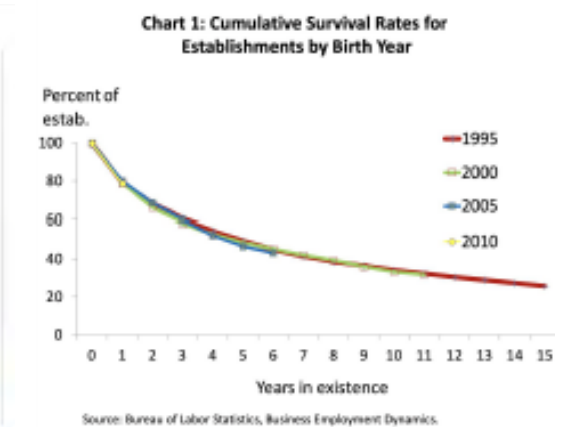


70% of the US population is employed by Small Business

MILESTONES



53% of Reasons why small businesses fail are associated with funding/monetary issues (Source: CB Insights)



Survival Rates are dismal (Source: SBA)



Minorities are 28% less likely to get financing approved (Source: Sbc's Minority Owned Report)

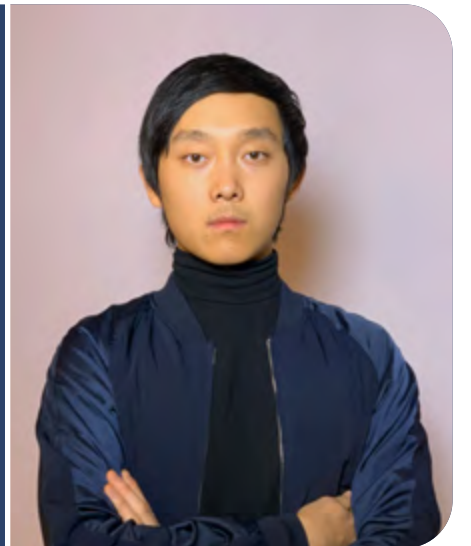
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PROPOSAL

DZIDZA FM:

An FM radio-based
education system

Authored by:

Simbarashe Mambiri

Nationality: Zimbabwean

McNeese State University

Lake Charles, United States

[Listen to Audio Intro](#)



THE COVID-19 PANDEMIC HAS CLAIMED THE LIVES OF MILLIONS ACROSS THE WORLD IN 2020. REGULAR FUNCTIONING OF GLOBAL ECONOMIES AND LIFE ROUTINES HAVE ALL BEEN DISRUPTED. THIS DISRUPTION IS EVEN SO EVIDENT IN THE DELIVERY OF EDUCATION

Summary

In the first round of this Reimagine Challenge of 2020, I introduced the idea of “Dzidza FM,” a radio broadcasting education delivery system. In my native language of Shona, “Dzidza” means “To Learn,” and this name is appropriate for the idea being presented. This final proposal is intended to elaborate how the platform will bridge the learning gap and provide a path to continued education during and after COVID-19.

The COVID-19 pandemic has claimed the lives of millions across the world in 2020. Regular functioning of global economies and life routines have all been disrupted. This disruption is even so evident in the delivery of education. Due to the rapid spread of the virus, the resulting social distancing and lockdown measures have meant that in-person classroom instruction has been replaced by virtual instruction and online coursework.

Despite the availability of virtual and online education resources, the quality of instruction has deteriorated in 2020. This is true for most students aged 6 years to 18 years according to Emma and Garcia [1], 2020, who studied performance outcomes of students of school going age during COVID-19.

More alarming is a report by Olaitan et al 2020 [2], in which UNESCO reported that 89 % of students (pre-primary to tertiary level) in Sub-Saharan Africa do not have

the appropriate access to home computers and that 82% of the same students do not have access to the internet. Millions of school-aged children and adolescents in this region and particularly in Zimbabwe have basically gone without an education for most of 2020!

Dzidza FM arrives in this picture as a cheap and effective platform that will allow the inclusion of all students who cannot afford online-based learning. It will be implemented by integrating the existing radio infrastructure and the education curriculum in the country of implementation. Focused initial trials of the platform will be conducted in Mazowe District, Zimbabwe.



Figure 1. Map of Zimbabwe illustrating Mazowe District Location.

Landscape Review

Similar concepts to this idea were already in place in countries such as South Africa, which has already incorporated TV broadcasted lessons for the past decades. Adjusting their Matriculation Syllabus to remote learning was much easier. With TV channels already in place, programming was simply expanded. This was made possible mostly to the huge budgets funded by public spending there.

Some countries like the Democratic Republic of the Congo received assistance from UNICEF and UNESCO to establish a radio broadcast learning platform, Radio Okapi, dubbed “Okapi Ecole.” Similar programs are currently running in Madagascar, Ivory Coast, and Senegal based on previously dormant programming. Unfortunately, most of this radio broadcasting is still under development and is not fully developed.

Other countries did not have these systems in place at the start of 2020 but were able to broadcast some lessons on radio at specific times of the day. This was often sporadic and unstructured, which eventually led to such broadcasting abruptly being taken off the air.

Dzidza FM brings the added feature of integrating the entire education syllabus at each learning level into audio pre-recorded classes. These classes are then broadcast on dedicated frequencies during the day and rebroadcast during the night. Dzidza FM will require students to submit assignments on school-issued workbooks during the broadcasts. Assignments are completed and stored for submission at the end of each month or assessment cycle.

Workbooks for writing assignments will be issued by the respective schools through the teachers at the school. In this format, Dzidza FM becomes a platform that allows teachers to be directly involved with their students. As previously mentioned, every four weeks assessment tests are held at the school or the local village at a disclosed location, whilst observing social distancing protocols. These assessment tests can be scheduled to prevent social distancing guidelines from being broken. These assessment tests will allow schools to monitor the effectiveness of the broadcasting platform and ensure uniformity of education for all students.

Dzidza FM is more than just broadcasting random

lessons on radio. It is a fully integrated platform usable by all schools that follow a standardized or national syllabus. This concept as described above is not currently being implemented in any of the countries that are currently broadcasting lessons to students at home. Though there are similarities with other programs being implemented, the structure that Dzidza FM brings is completely unique. It can be adopted easily and readily in any country or region, regardless of the language of instruction.

Admittedly Dzidza FM is a concept based on similar radio and TV based education broadcasting programs. The difference is that it builds on the known methods of delivery by incorporating the actual curriculum the educators use and provides the educators the ability to continue assessment and evaluation of their students. This aspect of the proposal is especially important for teachers who do not have the resources for online instruction.

Internet-based virtual instruction platforms such as Moodle and Blackboard allow students and teachers to interact. Dzidza FM will also bring similar interactive features, because students will be able to get feedback from teachers after submitting assignments and assessment exams. Another key difference is the structured involvement parents and guardians will have in assisting their children during lessons and completing assignments. Through written feedback to students, teachers can communicate to parents what they need to do to reinforce the understanding of concepts and theories when the students are home.

Project Description

Dzidza FM would be tested in Mazowe District and the schools in that area. Successful implementation at this scale will allow expansion to the rest of Zimbabwe and eventually throughout Sub-Saharan Africa. The final goal is to see the implementation of the platform across the world in every region where it is needed.

In order to start this initiative, Dzidza FM has already been proposed to the District Education Office in Mazowe and is currently proceeding with further discussions with the Ministry of Education of Zimbabwe for possible implementation. Possible partners and financiers are also being identified during this time.

Pathway

The following pathway illustrated in Figure 2 describes the steps to implement Dzidza FM, along with possible time-lines.

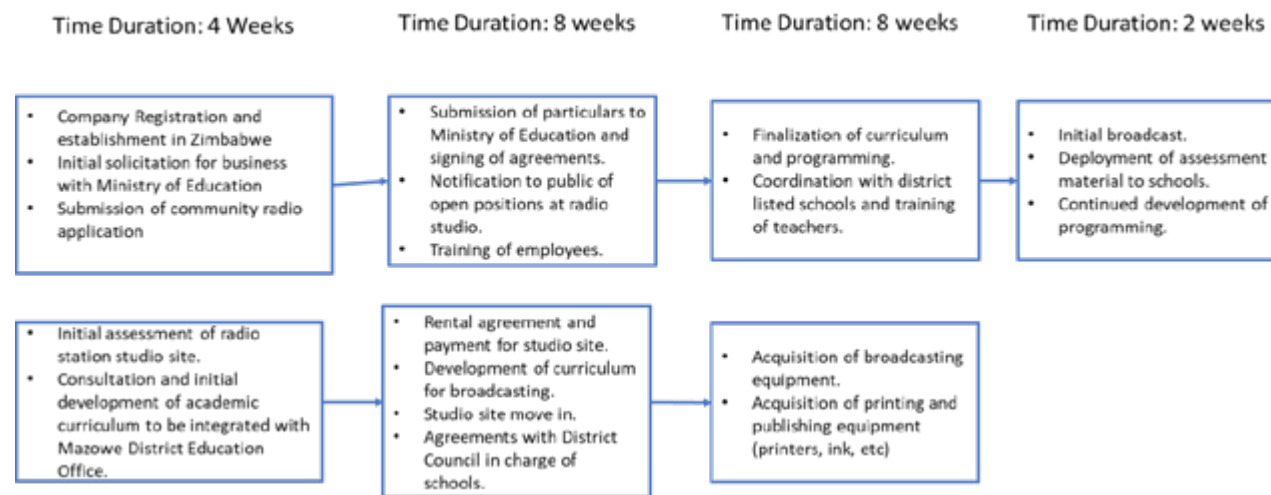


Figure 2. Illustration of Pathway to project implementation.

Implementation of Dzidza FM will be streamlined and prioritized due to the urgency of the need to find solutions to providing education delivery affected by COVID-19 lockdowns.

Dzidza FM is not a school but rather a broadcasting and logistics company. The entity will need to be officially registered in Zimbabwe by the Deeds and Registry Office of Zimbabwe as non-profit organization. This process typically takes between two and four weeks. During this same period, a location for the radio studio will be sought and identified in Mazowe District. Initial consultations with educators will begin on developing and drafting the curriculum used from Early Childhood Education (ECD) to Primary and Secondary school.

Once registered, a Community Radio License application is to be filed with the Broadcasting Authority of Zimbabwe. The license will allow the operation of the studio within the local district area. Rates for the different licenses are gazetted publicly and readily available [4]. Please review the budget provided in this proposal.

Formal solicitations and agreements with regards to operations will be made with the Ministry of Education of Zimbabwe. This will grant the Mazowe District

schools the right to utilize the services offered by Dzidza FM since the curriculum is administered by the District schools directly. Job openings at the studio will be publicized along with development of future employee training modules.

At the same time rental agreements for the studio site will be made, along with final service agreements with the District schools of Mazowe. This last procedure is important for the sustainability of Dzidza FM because each individual school will charge a fee to each student towards the payment of the broadcasting service. **There are three semesters per year and a charge of US\$1.50 per semester per student is considered adequate for the continuation of the service (\$4.50 per year).** Lastly, employees and operations will move into the rented studio facility.

The following eight weeks will be for development of the curriculum into prerecorded modules. Acquisition of radio broadcasting equipment and publishing equipment will also be done. Teachers will be trained during workshops on the monthly procedures of assessment exams. The final draft of the curriculum programming will be issued for review prior to the final two weeks leading to the first broadcast.

The pathway is made plausible because there are few local requirements and regulations to operating. A community radio license, company registration, and user service agreement with the Ministry of Education are the primary requirements after capital is acquired. Even then, the District schools could sign the user agreements without Ministry involvement because they are operated by the local District government.

Challenges

Some of the obvious bottlenecks will be the possible slow adoption due to inefficient administration by respective government offices. This is mitigated by requiring less government participation and inclusion beyond licensing and registration. Other potential bottlenecks will include the actual development of educational programs. The curriculum integration and prerecorded classes might take longer than planned to complete. This is mitigated by simultaneously developing modules for all learning levels following each semester in sequence. Creation of strong administrative systems will also protect the project from failure.

Partners and Participants

The main players with Dzidza FM are firstly the schools in Mazowe District that currently cannot administer classes directly to students and the students themselves. Without the payment of fees, the program cannot function. The Ministry of Education and the Broadcasting Authority of Zimbabwe are the next participants who will provide the licensing to operate the service to the schools. The third group of participants are the community and private funding societies who will initiate the funding to get the program running, after which it will be self-sufficient. A strong team of experienced educators and radio programmers will also be vital for the success of the project.

After success at the District level, Dzidza FM would proceed with acquisition of a national broadcasting license and sign user agreements with other school districts in the country. Final expansion will require the adoption of the prior procedures in other countries that indicate interest. Funding would be sourced from community-based crowd funding to private donor funding from charities and individuals interested in investing in education. Alternatively, the schools within the dis-

trict could pool funds for initial investment and loan the funds to Dzidza. Agreements could also be set up to pay the licensing fees in monthly instalments, thereby allowing the allocation of capital to other functions of Dzidza.

In a scenario in which the initial capital is received as a loan, Dzidza FM would be able to pay back any loans over time. If Dzidza took on individual partners who would invest startup capital, this would lead to a change in the pathway to implementation from a nonprofit to a for-profit business. Public funding, private and public loans, private funding are all pathways in the implementation of Dzidza FM. UNICEF and UNESCO are also possible partners who can provide another pathway, especially because of previous work on similar projects.

Budget Estimate

The budget illustrated in Table 1 provides an initial estimate of the start-up costs broken down in segments. The budget was made with a 10% margin for error and would be further developed upon implementation of the proposal. Figure 3 illustrates an annual operating cost analysis showing how the operation would be self-sustaining whilst supporting 100,000 students throughout a 12-month period.

Narrative

Necessity

This idea, Dzidza FM, is more important now than ever because of its ability to revolutionize access to education to millions of children and adults. In rural areas such as Mazowe District where the average population of rural school children is around 75% of all school goers [3], students must walk several miles each day to school even in rain or winter. This challenge, coupled with high poverty rates in the rural areas, makes it difficult for most rural children to attend school. This explains why the bulk of the 20% of school absconders are from rural areas. Dzidza FM will bring these lost students back into the classroom at home.

Since March 2020, when schools shut down, most children stopped learning completely. Online learning tools like touch screen pads and laptops are beyond the

means of the schools and students, so most students ended up spending the last seven months herding cattle or working in the fields. Dzidza FM will provide them with the cheapest option to get back lost time in the classroom whilst social distancing protocols are in place.

Item	Cost (US\$)	Units
Company Registration	300.00	1 time
Radio License (Nonrefundable)	11,000.00	1 time
Radio License	20,000.00	per year
Publishing Resources (Printers, office equipment)	80,000.00	1 time
Radio Studio Equipment	100,000.00	1 time
Studio Rental	15,000.00	per year
Operating costs: salaries, fees, recording etc.	240,000.00	per year
Logistics (Transportation, printing resources)	50,000.00	per year
Total Initial Cost (1st year)	466,300.00	1 year

Table 1. Illustration of initial estimated startup budget.

Motivation

Dzidza FM came to conception through discussions with my mother, a high school English and history teacher back home in Mazowe. She explained to me how COVID-19 lockdowns had left her at home for extended periods, sometimes as long as three months without communicating with her students and keeping them occupied with classes. The district schools simply did not have the resources to give students online learning materials, let alone equip their staff with tools to offer online instruction.

My mother did the best she could by posting recordings of lessons on WhatsApp and sending them out to the few students who could afford the data rates to download the videos. I was shocked and frustrated at how thousands to potentially millions of children were being denied their right to an education. Meanwhile here in the US, we have Zoom, Microsoft Teams and other platforms for students to use to continue learning.

Another inspiration was the six weeks during this semester of graduate school I spent not attending school after Hurricanes Laura and Delta destroyed most of my campus. Lake Charles was without power for almost a month, yet radio stations were still broadcasting. I felt somehow the university missed an opportunity to make use of this form of media.

I wanted to develop a cheap and affordable system that would offer features like online learning, such as interactive coursework, assignments, and instructor assessment and feedback. Dzidza FM would incorporate assigned workbook exercises during the radio broadcast lessons that would eventually be graded by the same teachers at the same schools the students were attending. The service aids both teachers and students, providing them an experience similar to what online learning offers. I wanted to prevent the repetition of previous programs, which lacked the interactive workbook assignments that this idea incorporates.

I believe Dzidza FM will be successful because of its ability to be easily adopted by thousands of low-income families and their school-going children. Radio is cheap, accessible, and proven technology, making it simpler to roll out. Unlike other current education radio broadcasting programs, Dzidza FM puts educators in a

proactive position, allowing them to indirectly instruct and assess their students.

Impact

Mazowe District Statistics	
2018 Student Population	109546
Rural students	82160
Students with computer access	27387
Student Orphans	23005
Rural Student Orphans	17254

Table 2. Summary of Education demographics in Mazowe District 2018 [3]

Mazowe District will be the testing ground for Dzidza FM. In this area covering 5000km², a small FM broadcasting set up as outlined in the budget will be able to broadcast to a projected 109,546 students, the majority of whom are rural dwellers. Once successfully implemented, Dzidza FM will expand to the rest of Mashonaland Central Province and provide services to a combined 503,215 students [3]. With enough positive indicators, the platform would be expanded to the national level and cover the entire 3.3 million rural dwelling student population [3] of Zimbabwe. The hope is to expand the program beyond the borders of Zimbabwe to other regions of the world.

Dzidza FM is not based on any language or education system and can be adopted in any country. The technology and logistical structure of the platform means that it can be set up wherever broadcasting licenses are issued and printing and testing facilities are available to make workbooks. This includes areas such as sparsely populated rural areas, refugee camps, immigration detention camps, migratory communities, and shelter areas whenever natural disasters occur. This versatility allows the technology to serve diverse groups of societies.

To promote the idea and ensure the public responds well to Dzidza FM, the platform will be apoliti-

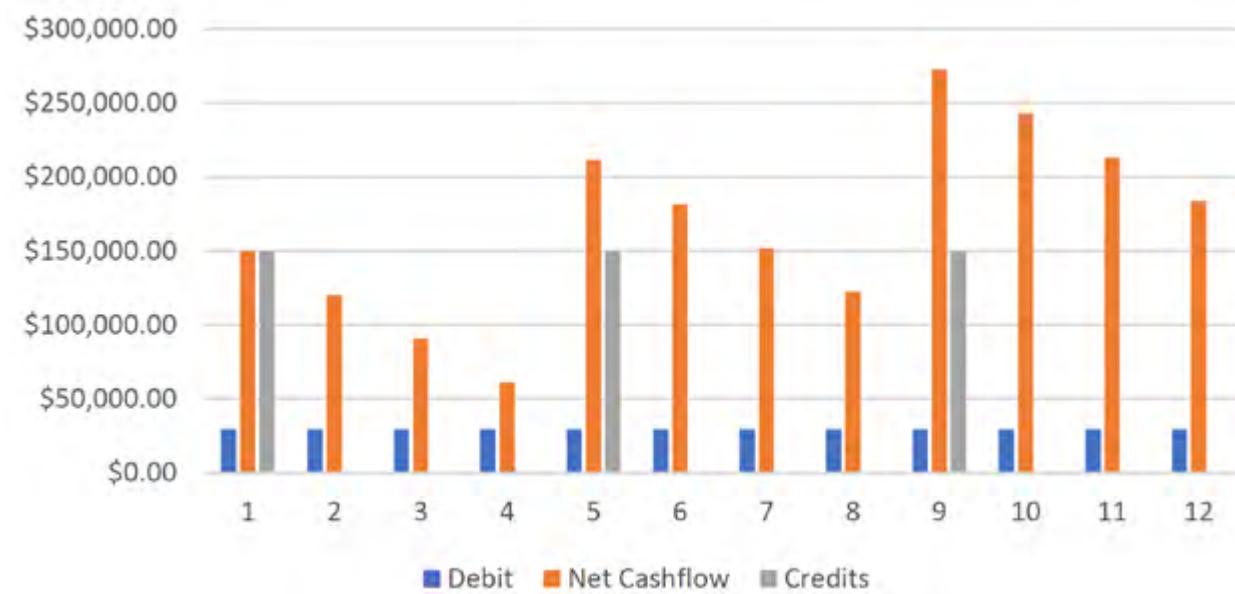


Figure 3. Annual operating costs

AFTER LOCKDOWNS DZIDZA FM WILL ALSO UNLOCK LEARNING OPPORTUNITIES IN AREAS DISRUPTED BY CONFLICT (SUCH AS REFUGEE CAMPS), MASS MIGRATIONS, AND NATURAL DISASTERS. THE CURRICULUM COULD ALSO BE TAILORED FOR THE AUDIENCE IN THAT SPECIFIC LOCATION AND GEOGRAPHY

cal and remain entirely focused on education delivery. Since Dzidza FM will integrate the curriculum of the country of operation, the ideas and values of the learning programs will be based on the norms and values of that society.

One of the key features of Dzidza FM is the ability to gather participation and performance data. The workbooks students will have to complete during lessons will be submitted for grading to their teachers at the end of the month during monthly assessment exams. Grades for assessments and workbooks will be collected and analyzed by Dzidza FM and Mazowe District Education Office. Good indicators of the effectiveness of the platform would be a high number of participating students. High average grade attainment would indicate the effectiveness of programming.

Mazowe District education standards would also be compared to previous historical data and data from neighboring districts. Higher than average national passing rates on national final exams (ZIMSEC Ordinary and Advanced Levels) would also indicate the effectiveness of Dzidza FM. Surveys would also be taken from teachers and evaluators to assess better metrics. The same barometers mentioned before would be used to indicate effectiveness in special areas such as refugee camps.

Conclusion

Dzidza FM will be a SUSTAINABLE initiative once it starts operating, with fee payments from students being used to fund operations. It would be ideally a non-profit set-up, hence all proceeds from fees collected would be used to enhance services provided. Dzidza FM would be very EFFECTIVE, as radio frequency cov-

ers long areas and is cheap and readily available. Compared to similar programs, Dzidza FM would provide INOVATION through teacher-supported assessments and evaluations, a key component in learning that is currently missing from other education broadcasting programs.

Radio is a known and proven technology; hence adoption is more timely making Dzidza FM a more FEASIBLE response to the education crises. Utilizing an existing education infrastructure also means Dzidza FM will be easily MEASURABLE against known benchmarks of student performance. This will make the platform easy to improve due to the availability of previous records.

Dzidza FM will also open a gateway to adult education for those of the population who lack a formal education and are considered illiterate. Another facet will be the ability to support children with disabilities (excluding deafness) living in rural areas who would normally end up forfeiting an education due to the logistical challenges involved in travelling to school. This idea would greatly open learning opportunities for them.

After lockdowns Dzidza FM will also unlock learning opportunities in areas disrupted by conflict (such as refugee camps), mass migrations, and natural disasters. The curriculum could also be tailored for the audience in that specific location and geography. Lastly, this platform will incorporate participation from parents and guardians of school children, bridging the gap that was often left during normal schooling.

Dzidza FM will revolutionize distance learning as we know it!

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PROPOSAL

MIGRANTS AND REFUGEES:

A pandemic of
inequality exposed

Authored by:

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[Listen to Audio Intro](#)



THE PANDEMIC HAS EXPOSED THE FAULT-LINES IN OUR SOCIETY – MARGINALIZED MIGRANT AND REFUGEE COMMUNITIES HAVE BORNE THE MAJOR BRUNT OF THE VIRUS

Abstract

The defining image of the COVID-19 pandemic is that of migrant workers and refugees—bags perched on their heads and toddlers in their arms—walking barefoot in a desperate attempt to escape not only the virus but also the prospect of dying of starvation. Governments across the world imposed stringent lockdowns without thinking of their consequences for these communities. As the economic fallout from COVID-19 was exacerbated, these communities also became an easy target for populist leaders, who framed them as “the other,” labelling them as a cost and a burden.

The pandemic has exposed the fault-lines in our society: marginalized migrant and refugee communities have borne the major brunt of the virus. They have died, fallen sick, and been laid off in disproportionately large numbers (UN, 2020). My grandmother was a political refugee escaping persecution, and my grandfather was a migrant worker in the coal mines of Wales. The callousness of our COVID-19 response towards this global community of migrants and refugees has surprised and sickened me. Their plight has become a humanitarian crisis within a crisis. We have neglected them and shunned them to the fringes of society. If this continues, we risk a world that is more unequal than it was before, long after the pandemic is over.

As we adjust to the new normal, we must empower our migrant and refugee communities to get back on their feet and rebuild their lives. However, over 20 million of them can't access upskilling opportunities and are unable to secure decent work or command good salaries. Therefore, the concrete action I propose is to launch an online learning platform that enables them to get globally accredited certifications and de-

gree-granting programs, funded through “income sharing agreements” (ISA) with an avenue for job placement with partner employers. Local communities and volunteers would provide language and tutoring support that builds bridges and helps them assimilate into the mainstream. While there may be other measures to address their problems, I believe that this concrete action would go a long way in making them self-reliant and escaping the “economic trap.” I plan to name the platform “Noli Cedere Cognoscere (NCC),” which means “never stop learning” in Latin.

This Platform (NCC) will help mobilize resources and direct investment in harnessing the human capital potential of these migrants and refugees. The pandemic has so far defined the contours of winners and losers, privileged and vulnerable. This is a step towards rectifying that wrong and dissolving the lines of tribe that separate the haves and have-nots.

Landscape Review: How is my idea innovative?

There are multiple existing learning platforms and Massive Open Online Courses (MOOCs) such as Coursera and edX that partner with universities to provide certification and degree programs. There are also other skilling solutions like Singapore's SkillsFuture and India's National Skill Development Corporation (NSDC) that provide free or government-subsidized upskilling opportunities. However, from the lens of a refugee or a migrant worker, these programs suffer primarily from three major problems:

- a) Fees are due upfront
- b) Courses are monolingual
- c) Job placements are not assured

Therefore, the solution I propose provides three differentiating features that create a closed ecosystem and a strong feedback loop:

1. Income share agreement (ISA) enables students to complete courses without paying fees upfront. Upon securing a job, a percentage of their salary is used to defray the costs of the course over 12-24 months
2. Language and tutoring support provided by local communities and volunteers allows for broad access, multilingual instruction and rapid assimilation of immigrant communities into the mainstream
3. Partnerships with employers creates a bridge between certification and job placement. Curriculum is designed with inputs from partner employers' hiring managers and is updated regularly so that graduates can make impactful contributions from Day 1

There are a few learning platforms globally that currently cater to the unique needs of refugees and migrants. The most advanced and developed of these is Kiron, which provides a learning platform in Germany in partnership with local universities to offer degree-granting courses and credits to refugees. However, their funding model relies mostly on charities and government grants to pay for such courses. My idea (NCC) introduces two crucial mechanisms that makes my proposition scalable and sustainable in a way that Kiron isn't: income sharing agreements (ISA) and job placement partnerships with employers. The ISA ensures that we do not need to rely on regular grants or aid assistance to drive enrollment growth and scale globally, while the job placement angle helps link skill attainment to job attainment. This overcomes a major issue for under-represented minorities in securing jobs in areas such as STEM and finance.

Existing learning platforms that are scalable like Coursera and edX suffer from coursework that is geared more towards academics than practical, job-focused

training, while others like Udacity and Udemy do not provide job placement upon graduation. On the other hand, government-subsidized programs like Singapore's SkillsFuture and India's NSDC rely on third-party service providers whose quality control and accountability leaves much to be desired. These government programs have been exposed for having issues with implementation as well as misuse of government credits for leisure courses rather than practical work training (Ng, 2020 and Mallapur, 2017). Moreover, direct job placement, on-the-job apprenticeship models, and integral involvement of hiring managers in designing coursework is lacking in all these existing platforms. My proposed solution, NCC, combines practical coursework with university accreditation and a pathway to job placement that is unrivaled and uniquely differentiated when compared to other existing solutions. Moreover, with global smartphone and internet penetration at ~50% and ~60% respectively (GSMA, 2020), we will leverage technology to scale rapidly and ensure broad access. A global community of empowered refugees and migrants will also unlock beneficial secondary effects such as a more diverse and inclusive society and workplace.

A comparative study of existing solutions and their features compared to my idea is depicted in Exhibit 1 on page 258.

Project Description and Narrative

In a world where immigrants and refugees are considered as outsiders, the focus is always on “the migrant as a problem” rather than “the problems of the migrant.” Political sensitivities and xenophobia that long pre-date the pandemic have led to years of government neglect and a policy vacuum. The COVID-19 pandemic is merely underscoring our collective failures and highlighting these inequalities and injustices. The question is what can be done, not only to address problems now but also for what comes next?

The asymmetrically devastating impact of COVID-19 on this community reflects their precarious condition, characterized by “low wages, little to no benefits, a lack of control and security, and temporary contracts” (Mijs, 2020). A summary of the country-wise COVID-response

Learning Solution	Fee Structure for Certification/Degree	Accreditation of Degree	Focus of Curriculum	Job Placement	Scalability through Online	Language Support & Bilingual Courses
Coursera	Upfront	By partner universities	Academic	No	Yes	No
Udemy	Upfront	By individuals	Practical, geared towards job market	No	Yes	No
Udacity	Upfront	By learning platform	Practical, geared towards job market	Career coaching available, but no direct placement with employer partners	Yes	No
edX	Upfront	By partner universities	Academic	No	Yes	No
Kiron	Government and aid agency sponsored	By partner universities	Academic	No	Yes	Yes
SkillsFuture	Government and aid agency sponsored	By individuals	Practical, geared towards job market	No	Some courses are	No
Lambda School	Income sharing agreement (ISA)	By learning platform	Practical, geared towards job market	Yes, fast-tracked interviews	Yes	No
My idea (NCC)	Income sharing agreement (ISA)	By partner universities	Practical, geared towards job market	Yes, fast-tracked interviews	Yes	Yes

Exhibit 1: Competitive landscape of learning platforms and their features (EAD Courses, 2019; Kiron, 2020)

and its impact on migrants and refugees may be seen in Exhibit 7 in Annexure/Attachments in the Supplemental Document.

COVID-19 hides a transformative power: it is an opportunity for us to challenge the status quo, rethink the economic and social fragilities that affect us, and look past temporary, stop-gap solutions to fix the wrongs.

Why is it important and Why now?

COVID-19 is exposing how broken our global systems are for migrant and refugee communities: “extreme inequality, shredded safety nets, limited public services and insecure jobs” (Mijs, 2020). These issues are not merely tactical but structural: the recent events are a manifestation of the deep-seated problems that mi-

grants and refugees face. The gradual structural shift from the informal to the formal sector to which these communities were adjusting has been accelerated by the pandemic. Many disruptors that have been hailed by the economic recovery experts have in fact eliminated the jobs that were traditionally done by these communities. Moreover, migrants and refugees face an environment that is un conducive to develop their talents. Against this backdrop, the pandemic presents “an opportunity to rethink the world [and] to make it better” (Schmidt, 2020) by working towards championing their cause and helping them get back up on their feet.

This is not an easy task, since over 20 million migrants and refugees face hurdles when accessing upskilling opportunities in their respective countries (UN-HCR, 2019 and Milken Institute, 2020). This makes them

ineligible for many jobs and highly vulnerable to exploitation and exclusion. The closure of schools, universities, and technical and vocational training institutes is robbing these communities of their future by denying them an education today.

For migrants and refugees, the main challenges in accessing up-skilling avenues are:

1. High upfront costs/fees
2. Rigid timings of institutions
3. Lack of capacity in institutions
4. Language barriers
5. Documentation for enrollment that migrants and refugees may not have
6. Job placements

Proposed solution

To address the above issues, the concrete action I propose is to provide migrants and refugees with an online learning platform that enables them to get globally accredited certifications and degree-granting programs, funded through “income sharing agreements” (ISA) with an avenue for job placement with partner employers. This would help in:

1. Exempting them from upfront payment of tuition fees through ISA mechanism
2. Offering flexible, on-demand resources—anytime, anywhere
3. Providing a scalable and high-quality content platform that is unconstrained by local institutions’ capacity limitations
4. Providing global language support and multi-lingual coursework delivery
5. Enabling them to enroll without immediate submission of legal documentation
6. Integrated on-site apprenticeship training and adequate industry interface with on-the-job skill attainment through partnerships with employers

Such a platform would upskill and reskill migrants and refugees. They will thereby be able to secure better jobs and command higher salaries, which will economically and socially uplift them as well as help in their integration into mainstream society. An online platform with live and pre-recorded content complemented by deep internet and smartphone penetration can enable such a solution to scale rapidly all over the world. An early beta version of this learning platform solution may be seen below in Exhibit 2.



Exhibit 2: Beta version of idea (NCC Learning Platform for migrants and refugees) with practical training & multi-lingual blended delivery

The success of this idea rests on our ability to sign up university and vocational institutions as partners that are willing to offer degree-granting and certification programs on an ISA basis, and employers who are willing to consider applicants who have completed the coursework. Some employers that have already supported ISA and refugee/migrant employment programs globally (at the likes of Kiron, Lambda School, Hactiv8, etc.) include UBS, H&M, Microsoft, Grab, and Tokopedia.

I have prepared a detailed implementation plan to turn my idea into reality. In addition, I have mapped out the relevant stakeholders and risks as well as mitigation plans to make execution highly practical and seamless. First, we intend to launch a pilot project where we will run a randomized control trial (RCT) to evaluate our strategy and take course correction measures if required. These will be done in Phase I countries where

there are willing stakeholders and high technological feasibility. Subsequently, we will scale to Phase II and Phase III countries. We intend to target 2,000 students to be enrolled by end of 2021, 100,000 students by end of 2022, and 2 million by end of 2023.

Implementation Plan and Budget

The Platform will be launched through a pilot program in selected prioritized countries (namely, Phase I countries such as Germany, Sweden and Canada; see Exhibit 3 for prioritization matrix) based on supportive stakeholders (regulatory support from government, existence of partner universities, and employers that are already working closely with migrants and refugees) and technological feasibility (widespread internet and smartphone penetration).

Important steps to be taken as per the Implementation Plan are given below (Refer to Exhibit 6 on Page 266-267 to see detailed Gantt Chart and Implementation Timeline):

1. Enlist and onboard partner universities and vocational institutes agreeable to ISA through a compelling marketing strategy, underscoring commercial benefits as well the social benefits of our idea
2. Identify partner employers who abide by fair employment practices, and provide decent working conditions and pay structures. Prioritize employers who have a history and track record of working with ISA-providers and refugee/migrant focused initiatives
3. Engage with banks and payment gateways to set up ISA mechanism for direct debit upon employment and utilize ISA service providers such as Meratas and Leif for administration, fulfillment, monitoring, etc.
4. Consult with employers to identify roles they're looking to fill and skills required and accordingly tailor the coursework for that. Design the coursework and curriculum with inputs from hiring managers at partner employers so that graduates can make a meaningful contribution from Day 1
5. Launch the program and features in Phase I countries using a Randomized Controlled Trial (RCT) to monitor and revise key components based on performance of initial cohorts
6. Identify a growing group of passionate, committed people across countries to lead global launch
7. Scale globally in a phased manner to have a larger impact in Phase II and Phase III countries. A one-size-fits-all approach won't work, so each country will require its own nuances. For example, in India, where enforcement of legal contracts is lax, it is imperative to rope in the government and have employers automatically deduct a portion of the salary and hold it in escrow as fees for the program

A budget has been prepared on the basis of the Implementation Plan. It is proposed that the NCC Learning Platform would charge employers a commission of

\$100 per student that they employ in 2021 (for subsequent years, \$50 per student). This would be used for upfront development costs, administrative and marketing expenses, hosting and ISA service fees, provisions for ISA default by students, etc. (See Exhibit 4 for Budget).

Key participating stakeholders, their roles and the resources required

1. Partner universities and vocational training institutes: provide certification and degree granting programs. They are able to increase enrollment and receive course fees through ISA.
2. Partner employers: provide jobs at fair wages as well as inputs and feedback in designing coursework and curriculum. They gain exclusive access to tailor-made talent and reduce search and recruitment costs.
3. Local communities and volunteers: provide language & tutoring support. This interaction will help build bridges between communities and drive assimilation of refugees and migrants into the mainstream.
4. Banks and ISA service providers (e.g., Meratas, Leif): provide financing, administration, monitoring etc. of the ISA and direct debit deduction at source upon employment. They receive ISA service fees from universities.
5. Technology platforms (LMS, Video): provide API and hosting that links learning management system (LMS) (e.g., Instructure etc.) with video recording capabilities (e.g., Panopto, Zoom). Receive hosting fees from the NCC platform.
6. Local governments: recognition and accreditation of certification and coursework.

Risks & Mitigation: How to overcome potential roadblocks, barriers, or bottlenecks?

1. Collection of ISA: direct debit and legal enforcement system in many countries isn't robust, which may pose challenges on how the platform recuperates the amount that is owed as fees
 - a) Mitigation: Launch pilot and initial versions

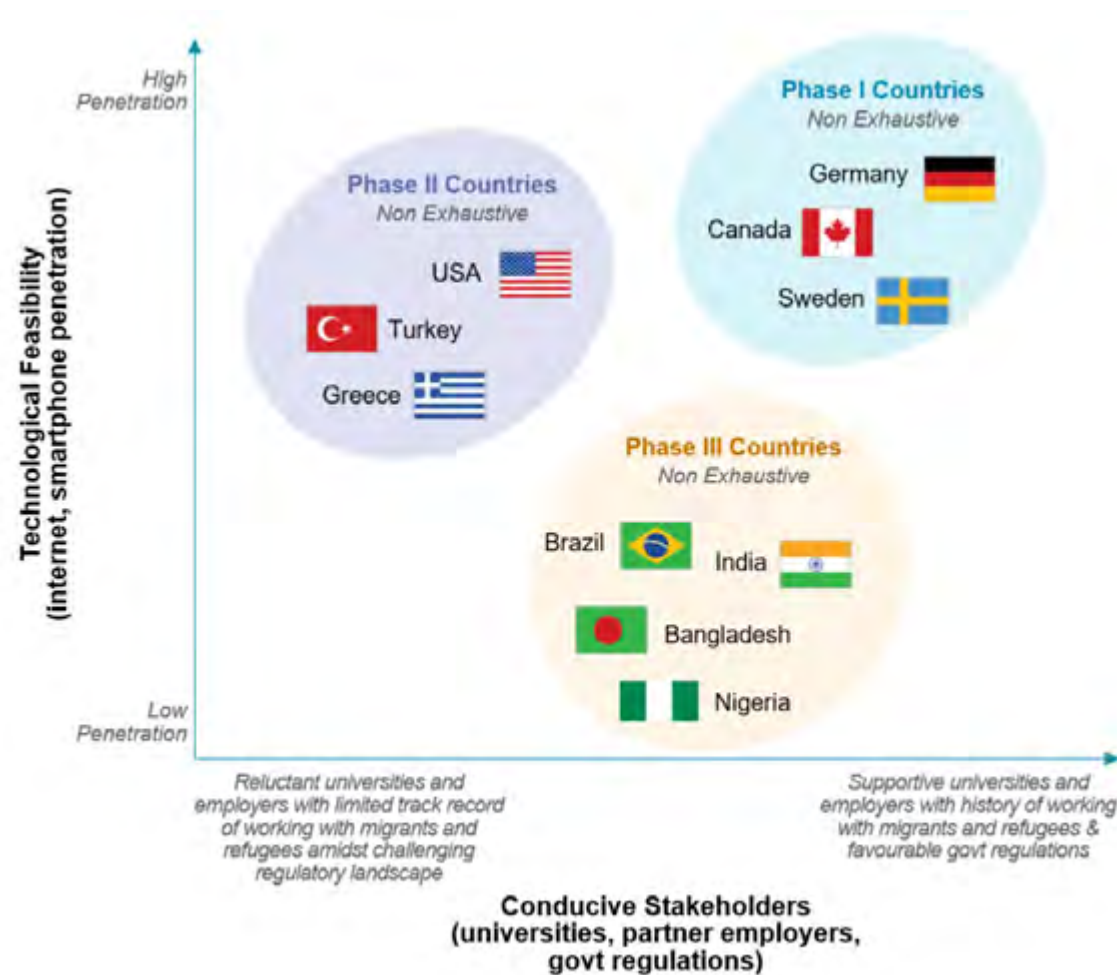


Exhibit 3: Prioritization of countries into Phase I, Phase II and Phase III

	2021	2022	2023
One-time upfront costs			
Cost of platform development and upgrade	\$8,000	\$0	\$1,000,000
Ongoing Costs - Fixed Costs			
Admin., ISA Management, Reporting, Tech, Volunteer Mgt. and Support Staff costs related to onboarding & maintaining relationships with universities & employers			
Phase I - 3 employees @ \$35,000/year	\$105,000	\$105,000	
Phase II - Additional 8 employees @ \$40,000/year		\$320,000	
Phase III - Additional 10 employees @ \$40,000/year or \$20,000 / half year (Phase III is live only during Q3 and Q4)		\$200,000	
Steady-state for scaled platform - 650 employees @ \$50,000 / year			\$32,500,000
Total Administrative Costs	\$105,000	\$625,000	\$32,500,000
Hosting Fees (Based on LMS estimates like Instructure)	\$20,000	\$100,000	\$1,000,000
Ongoing Costs - Variable Costs			
Direct marketing cost (CAC of \$20 in 2021; \$15 in 2022; \$5 in 2023 / student * # of students)			
Cost of acquisition / student	\$20	\$15	\$5
# of total students	2,000	100,000	2,000,000
Total Marketing Cost	\$40,000	\$1,500,000	\$10,000,000
Provision for default on ISA			
% of students defaulting	1%	5%	5%
# of students defaulting	20	5,000	100,000
Cost of each course default	1,200	500	500
Total Default Cost	\$24,000	\$2,500,000	\$50,000,000
Total Cost	\$197,000	\$4,725,000	\$94,500,000
Revenue			
Commission charged / student	\$100	\$50	\$50
# of students (excl defaulting students)	1,980	95,000	1,900,000
Total Revenue	\$198,000	\$4,750,000	\$95,000,000
Breakeven # of non-defaulting students required	1,970	94,500	1,890,000
Breakeven # of total students required	1,990	99,500	1,990,000

Exhibit 4: NCC Learning Platform Budget

of the platform in countries with robust legal and banking systems to ensure product-market fit before expanding into other countries

2. Finding university partners
 - a) Mitigation: Prioritize universities that already offer coursework on other MOOCs such as Coursera or on immigrant-focused platforms such as Kiron
3. Finding employer partners and speed/time required to onboard new partners – limiting factor to growing student enrollment
 - a) Mitigation: Focus on partners that have already supported other ISA and migrant / refugee employment programs. Once critical mass is achieved, use testimonials from initial cohorts to sign-up subsequent partner employers
4. Poor quality of graduates produced
 - a) Mitigation: Leverage relationship with partner employers to inform coursework offered and relevance of skill-sets to performing the job and accordingly review and revise the course offerings and coursework
 - b) Mitigation: Identify those lagging behind and provide them with personalized tuition support from local communities and volunteers

c) Mitigation: Match aptitude, career interest with coursework: different strokes for different folks

5. High churn among partner employers
 - a) Mitigation: Strengthen relationship with employers through regular interaction and seek feedback on performance of students placed at partner companies. Gauge reasons for non-performance of students and accordingly improve coursework and training.
6. Scaling without adversely impacting quality and placement rate
 - a) Mitigation: Stage-gate approach with prioritized first few countries where the platform would be launched first, and then phased expansion
7. Access to internet and smartphones
 - a) Mitigation: Involving local communities and volunteers can unlock access to internet, smartphones or other electronic devices for migrants and refugees

		Degree of Probability		
		Low	Medium	High
Degree of Impact	High	Finding university partners (#2) Access to internet & smartphones (#7)	Collection of ISA (#1) Poor quality of graduates (#4)	
	Medium	High churn among partner employers (#5)	Finding employer partners & speed / time required to onboard new partners (#3) Scaling without adversely impacting quality & placement (#6)	
	Low			

Exhibit 5: Overview of risks based on degree of impact and certainty

An overview of the risks categorized into degree of impact and certainty can be seen below in Exhibit 5

Feasibility

- **Technological feasibility:** MOOCs and online learning are tried and tested technology platforms that carry little execution risk
- **Operational feasibility:** Global smartphone and internet penetration at ~50% and ~60% respectively and increasing rapidly ensures broad access
- **Economic feasibility:** Financially sustainable through Income Share Agreement mechanism (Success stories of the ISA model include the likes of Lambda School in USA, Hacktiv8 in Indonesia, etc.)

- **Regulatory and legal feasibility:** MOOCs and ISA represent a proven method that have been legally accepted in many countries

Measurability – How to know we succeeded?

There are seven aspects that I believe are important to measure the success of this idea. We will measure these statistics at a country level and benchmark the performance across different geographies to a high precision. Based on the relative performance, we would bucket the countries, identify laggards, and take necessary corrective actions.

- **Enrollment rate:** Number of migrants and refugees who sign up for a course and attend the first class. Target as defined in Implementation Plan is 2,000 by 2021, 100,000 by 2022, and 2 million by 2023
- **Graduation rate:** Percentage of students who start a program and go on to complete the program. Success threshold set as 90%. (Conversely, measure Dropout rate).
- **Job placement rate:** Percentage of students who are placed into jobs after completing the program. Success threshold set as 90%
- **Time to placement:** Time taken to be placed into a job after graduation. Success threshold set as 3-6 months
- **Financial improvement:** Increase in income levels before and after taking a course on the platform. Success threshold would differ by country but should be at least 20%
- **Time to payback:** Time taken to pay back the fees through the income sharing agreement. Success threshold set as 12-24 months
- **Social inclusion:**
 - Reducing residential segregation as proxy for assimilation
 - Level of assimilation (graduates to reply on a scale of 5; success threshold set above 3)

Ensuring Ethics and Integrity

I believe that this is an ethical way to empower mi-

grants and refugees with new tools and opportunities. The employers could be identified through a stringent vetting process before bringing them on board on the learning platform. Job placement partnerships would be established with only those employers who abide by fair employment practices and provide decent working conditions and pay structures.

While we ensure the ethical conduct and integrity of the employers and partner institutions, it is equally if not more important to ensure the integrity of the processes involved, including the selection and exclusion mechanism and the ethical conduct of the target group. A healthy mix of incentives and disincentives will be built into our system to avoid incorrect disclosures and false information as well as transparency and accountability in the processes.

Inclusion

Global smartphone and internet penetration are at ~50% and ~60% respectively (GSMA, 2020) which ensures broad access. Moreover, coursework is delivered online on both a live and pre-recorded basis. Thus, my idea can be easily scaled once it has been piloted in a few countries (see Implementation Plan in Section III and Exhibit 6 for Timeline). Besides, the coursework would be delivered in short, digestible videos that can be viewed even in regions with low internet speeds and bandwidth issues, thereby benefitting economically and socially diverse communities. The interactive and gamified platform would drive retention among users by making the experience immersive. Such technology enables us to deliver with speed and quality, thus making it inclusive in all aspects.

Why me?

I have spent the last six years of my professional and personal life engaging in capacity building with a focus on migrants and refugees: I've co-founded an EdTech start-up—SDI Academy, which provided training to low-skilled South Asian migrant workers in Singapore and Middle East—presented research to the World Economic Forum at Davos on how civic bodies can address employment challenges, and designed re-skilling workshops for Fortune 500 companies.

Conclusion & Implications

COVID-19 has taken a disproportionate toll on refugee and migrant communities who were already marginalized before the crisis hit. Furthermore, their condition is exacerbated since they do not qualify for unemployment benefits or severance, and are excluded from government aid programs.

The current upskilling landscape denies opportunities to immigrants and refugees. Leaving them behind as the rest of us recover is not a viable option. As we envision a post-COVID world, it is imperative we build an inclusive economy and society. My idea empowers migrants and refugees with the tools and skills to get a seat at the table. It unshackles them from the clutches of relying on government and multi-lateral assistance, gives them a platform to realize their true potential, and empowers them to climb the economic and social ladder.

Our NCC learning platform will be able to achieve secondary effects such as helping these migrant and refugee communities assimilate into the mainstream and create a more inclusive society. By harnessing their skills and toolkits, they will be able to make a more meaningful contribution to their workplaces. Research shows that diverse workplaces have increased productivity, creativity, and profits (Thomas, 2004). Given the detailed feasibility assessment as well as a rigorous risk and mitigation plan, I believe that rollout and execution of my idea would be successful.

We entered the COVID-19 pandemic as a grossly unequal society; we run the risk of leaving it with those inequalities sharpened and amplified. But it doesn't have to be that way. The pandemic is an opportunity to challenge the status quo, reconfigure our mindsets, and create a better and more just and equal world for our migrant and refugee communities. My idea is a small step towards that endeavor.

		2021				2022				2023			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Key Steps													
1	Prioritize countries based on conducive stakeholders (universities, employers, govt) and technological feasibility (internet, smartphone penetration)	█											
2	Categorize into Phase I, II and III countries	█											
3a	For Phase I countries, enlist partner universities & partner employers and gain required accreditation from local government and supranational agencies		█										
3b	Identify relevant jobs and skills that employers are looking to fill roles for and design curriculum with inputs from hiring managers		█										
3c	Sign-up local communities and diaspora in Phase I for content creation, tutoring and language support			█	█	█	█	█	█				
3d	Launch platform in Phase I countries and tweak features based on RCT results. Run the courses and place graduates into jobs			█	█	█	█	█	█				
4	Collate key learnings from Phase I countries and initial cohorts and modify / revise offerings & features				█								
5	Repeat steps for Phase II countries					█	█	█	█				
6	Repeat steps for Phase III countries							█	█				
7	Scale globally									█	█	█	█

Exhibit 6: Timeline for implementation plan

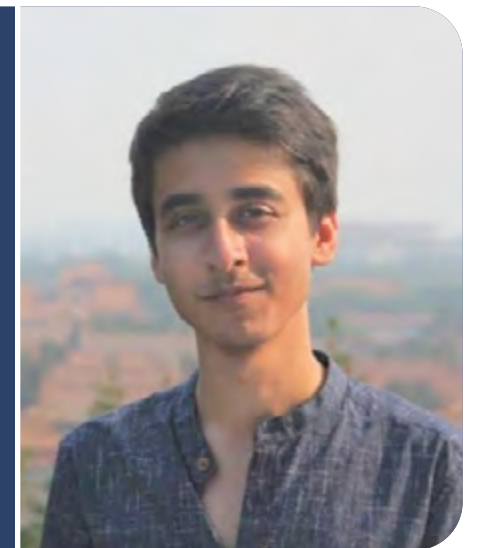
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Manas Punhani is a graduate student at Yale School of Management pursuing a Master of Business Administration. Manas grew up in multiple locations across Asia, Europe, and North America and, prior to business school, worked at an edtech start-up and management consulting firm.



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