



SDG 3: Good Health and Well-being

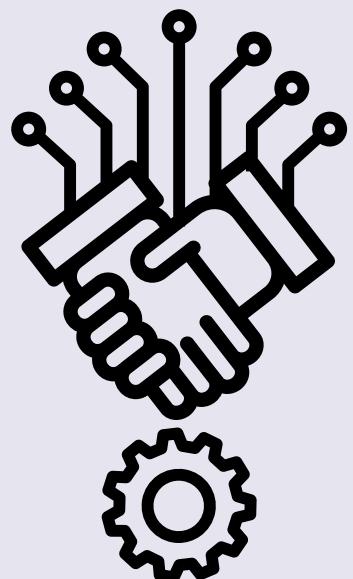
By Healthbeing

DESN3003 Assignment 2



Theme

From analysing external factors using STEP cards, we found that **technological** and **environmental** factors were the most prominent.



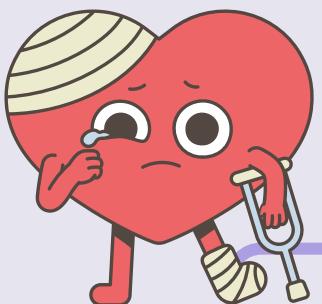
Research goal

How **technology** and **sustainability** can address the **lack of accessible healthcare support**



Justification

Why did we choose to focus on the theme?



Limited healthcare access reinforces socioeconomic disparities, reduces healthcare system efficiency, and jeopardises public safety and security.

Technology addresses environmental issues by allowing humans to create solutions to reduce environmental impacts that concerns health.

There are a variety of existing healthcare solutions using technology, but minimal focusing on **both** technology and sustainability.





Current Impacts: Political

Constant debates over the right level of regulation for technology businesses and products. Advocates suggesting **tougher laws** or use the **laissez-faire** approach.



The concerns over **data privacy**, **cyber security** and ethical use of developing **artifical intelligence**.

The affects of technology has on our **mental** and **physical health**.



Potential risks associate with **electromagnetic radiation** from wireless devices affecting child's development.



Current Impacts: Economic



Investigating the possibilities for keeping health systems financially sustainable while enhancing their resilience.

Finding sufficient funds to pay for more resilient health systems is challenging in the current economic context **COVID-19**.



Example: COVID-19

COVID-19 has demonstrated the necessity of increased, focused funding for public health initiatives, the digitisation of health systems, and the development of the medical staff.

COVID-19

Lessons learnt from COVID-19:

- Smart spending to strengthen health Systems resilience,
- Digital transformation,
- Supporting frontline workers





BACKGROUND RESEARCH

Current Impacts: Cultural

Racial and ethnic inequalities arise in various areas of healthcare. (e.g., diagnosis, treatment, and outcomes).

Rural areas confront several healthcare issues due to poor infrastructure, low literacy rates, poverty, and inadequate chronic illness monitoring.



Zipline.io is a drone delivery business that distributes medical supplies (such as blood, vaccines, and pharmaceuticals) to remote places.





Current Impacts: Social

Since individual characteristics may not fully capture all variables of health status, clinicians and researchers have recognised the relevance of the interaction between socioeconomic circumstances and an individual's health.

A socioeconomic database is crucial to the creation of health management programmes that cater to the unique demands of a particular population.

Social agreement is necessary on the liability for potential misdiagnosis or medical mishaps during the care service, as well as the quality management of AI-based systems.





BACKGROUND RESEARCH

Current Impacts: Environmental

Technology addresses environmental problems by allowing human's to create solutions to ***reduce environmental impacts*** that are ***health concerns***.

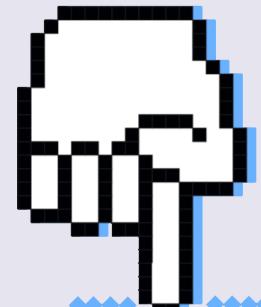
Health concern: Pollutions is the largest environmental cause of ***disease and premature deaths***. (More than 9 million premature deaths)

Technology can be developed to create systems that are ***environmentally sustainable***. It'll allow us to replace traditional practices with more sustainable ones

Environmental Issues: Pollution (air, water, land etc), climate change, environmental degredation



Our Research Objective



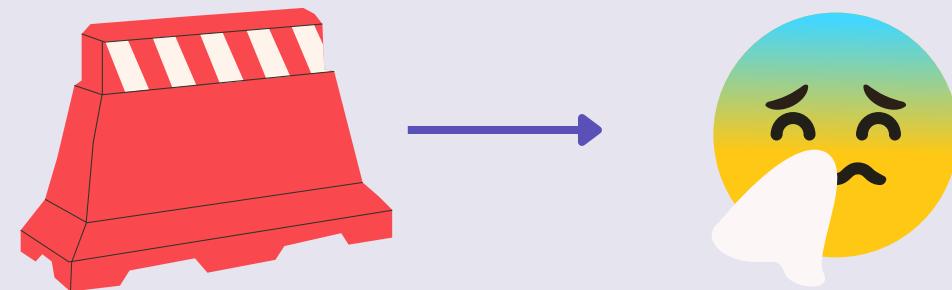
Understand what young adults face in existing healthcare services and how they would adapt to future ecological repercussions to improve future healthcare accessibility by leveraging technology and sustainability.



The following research questions guided the overall research objective.

1

What are some barriers that prevent individuals from accessing healthcare?



2

How effective are existing digitally based healthcare services?



3

How can we utilise technology and sustainability to facilitate accessibility in medical care?

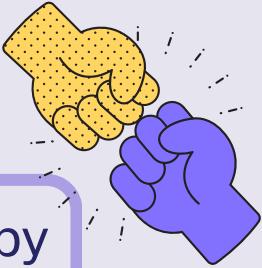


4

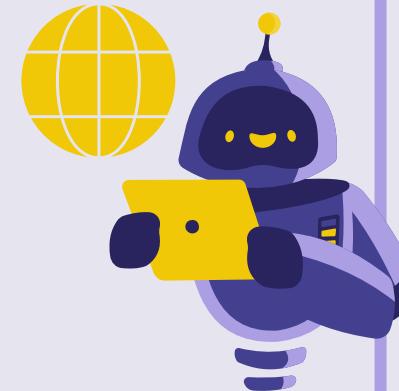
To what extent are individuals acquainted with the current technologies in healthcare?



Research Methods



Background research on academic literature and articles were conducted to gain a better understanding of the SDG and determine an appropriate theme to focus on. (Azarova, 2022), and analysed using **STEP cards** and **design timescapes**.



Strength of **online ethnography** lies in it's accessibility to a wider audience (Tomitsch et al., 2018). **9** online community posts from Reddit and Quora were analysed using an **affinity diagram**.

Questionnaires quickly gather large amounts of data in understanding different experiences and trends (Tomitsch et al., 2018). Questionnaire was open for **5 days** and **45 responses** were analysed using an **affinity diagram**.



Interviews (semi-structured) to gain deeper insights on individuals and develop empathy (George, 2022). **10** interviews were conducted and analysed using an **affinity diagram**.



A **systems map** was created by the team to understand how different systems interact and influence one another in a complex system, offering unique insights for the most effective change in the system (Acaroglu, 2017).

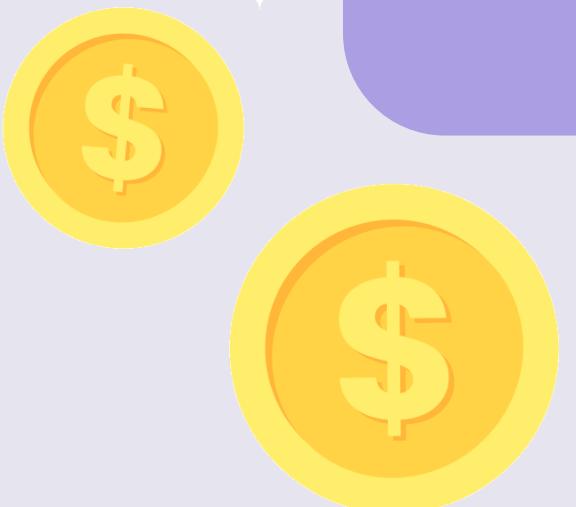
Findings

User needs from affinity diagram



“I want to receive correct diagnosis/treatment online from a reliable physician of choice and only see a physical doctor when necessary”

“I want healthcare to be affordable and fair, and save money when I can”



“I want to feel safe and confident with my diagnosis using technology”

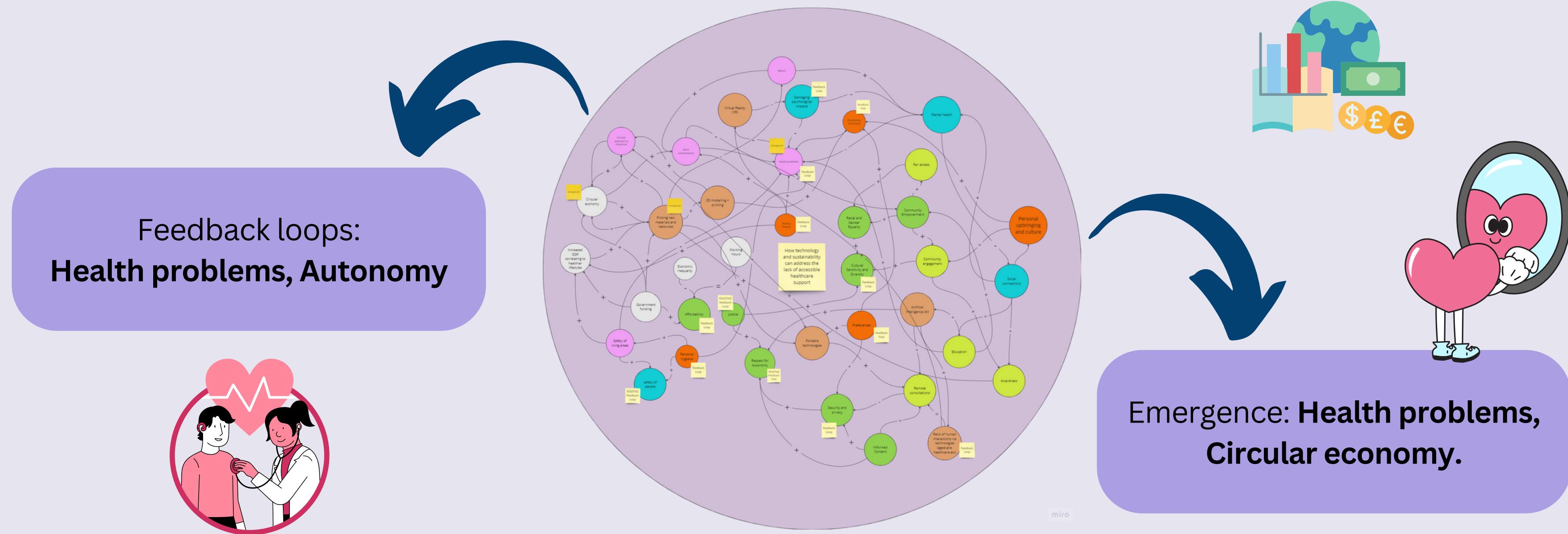
“I want be more sustainable through healthcare without worrying about regulations”

“I want quick and efficient healthcare services”



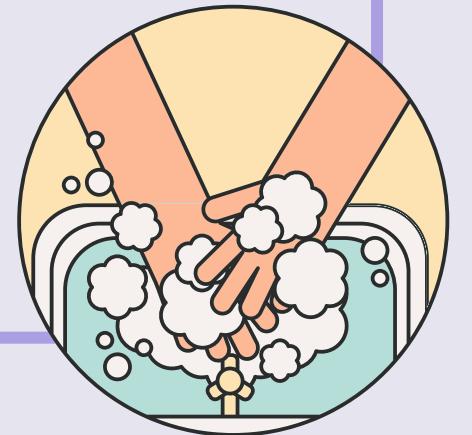
Systems Mapping

Focused on 8 systems: behavioural, political, environmental, economic, social, technological, ethical/moral and personal



Health Problems

- **Dangerous chemicals** at work.
- Uncomfortable work setups.
- Breathing in bad air
- **Improper sanitation** leads to infectious diseases (Better Health Channel, 2012).



Circular Economy

- A sustainable work culture promotes circular economy ideas (Salvioni & Almici, 2020).
- **Reusing** waste helps the environment.
- This approach ensures that resources can be used for **longer periods** of time.



Autonomy

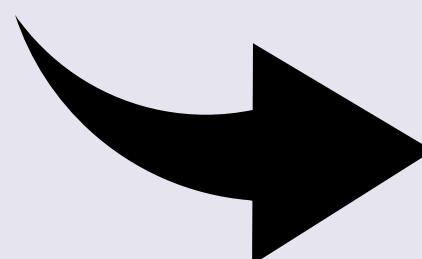
- Users feel **safer** with what information they provide.
- User managed sharing of data builds **trust**.
- Giving users **control** over data makes them feel more in **charge**.



Design Timescapes



Green infrastructures: public/private spaces in our cities that provide environmental benefits by building with nature

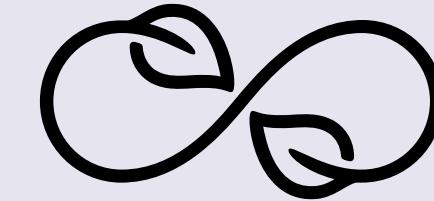


Zipline: a drone delivery service that transports medical supplies, including blood, vaccines, and medications, to remote and hard-to-reach areas (Zipline, n.d.-a). Healthcare workers can place orders using Zipline's mobile app.



Insights from our data

Design Timescapes

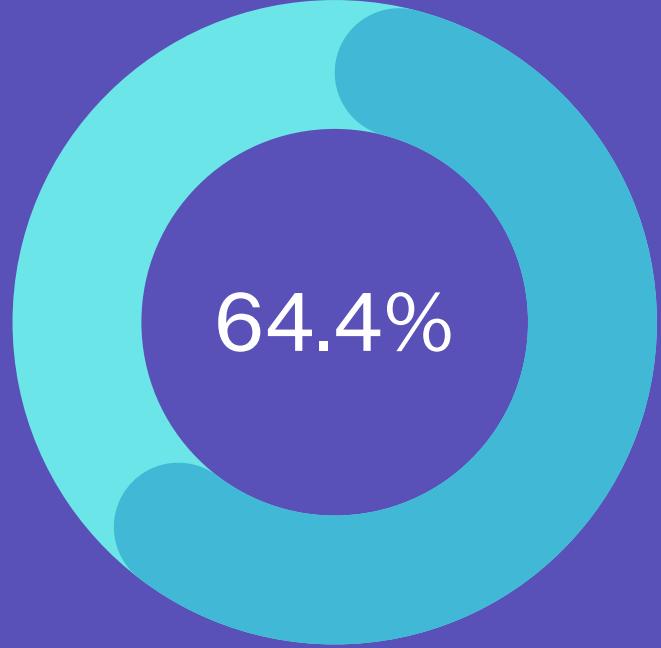


Technological advancement may result in increase of **unemployment, privacy issues, and environmental issues**

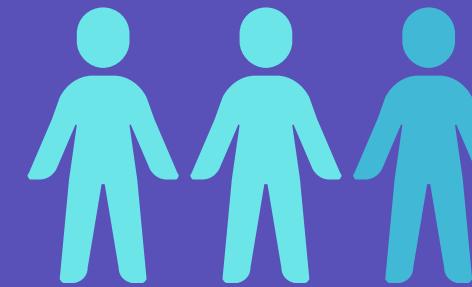
Sustainable solutions = be careful of **greenwashing, accessible beyond the privileged**

Leverage existing innovations to create feasible solutions

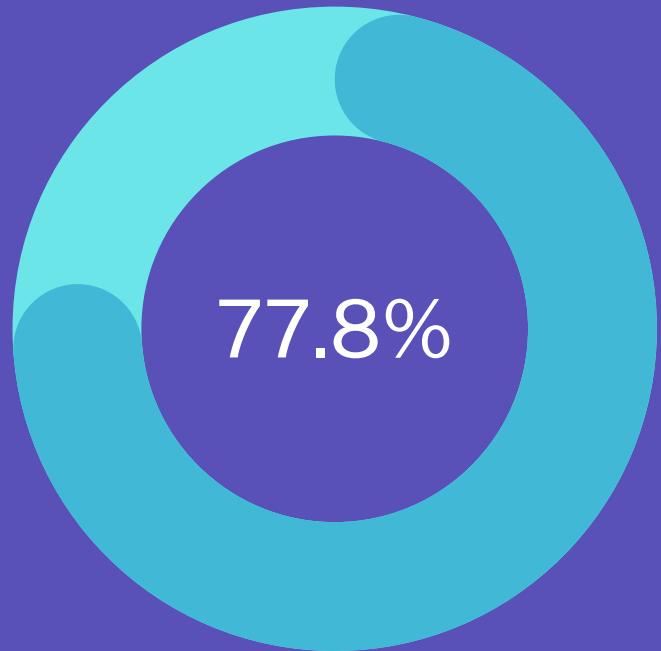
Survey Findings



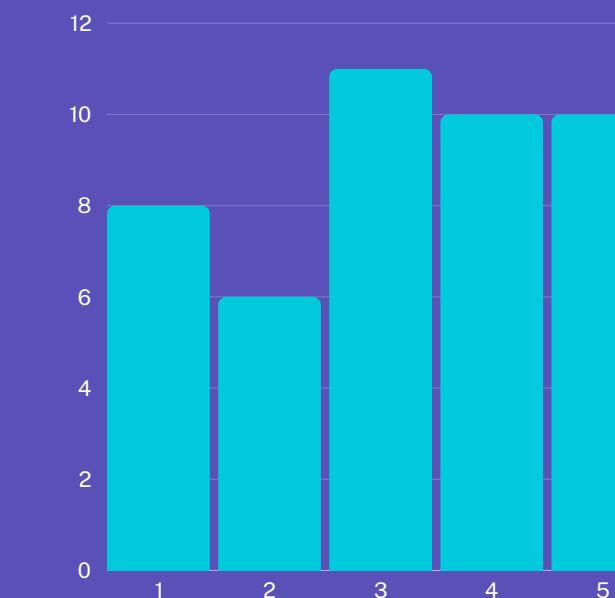
young adults avoided seeking healthcare due to cost or affordability



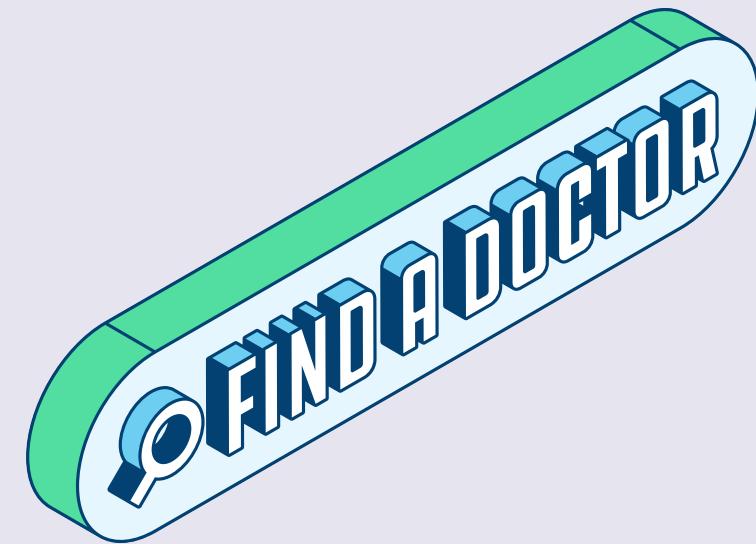
2/3 young adults have an overall satisfaction of 3-4 out of 5 with the availability of healthcare services



young adults are aware of technology-based solutions to improve healthcare access



Varying comfortability for young adults to use technology for healthcare needs



Findings from our overall data

We essentially found that...

1

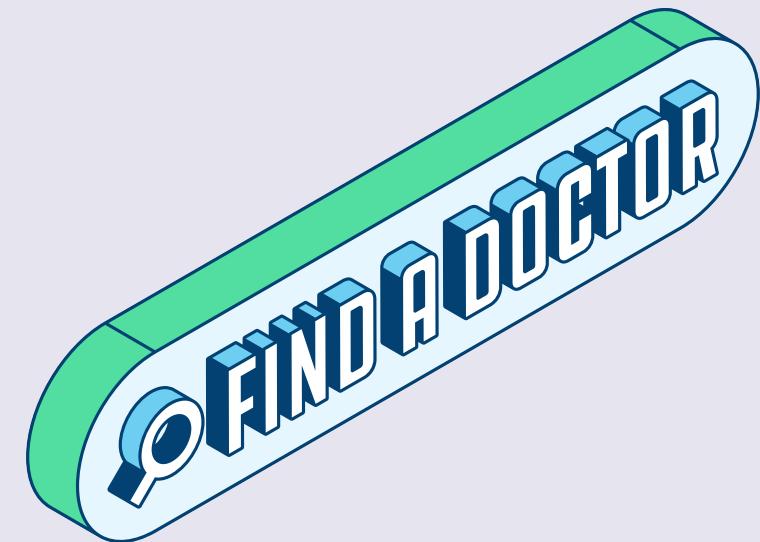
Participants emphasized the importance of the **therapeutic relationship** between practitioners and clients.

2

Streamlining healthcare delivery with technology can reduce the pressure on healthcare systems and make clinicians more accessible to people in need.

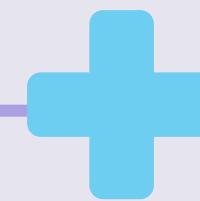
3

There's a need to focus on emphasizing the **need for innovation in healthcare technology. Improve quality of life**



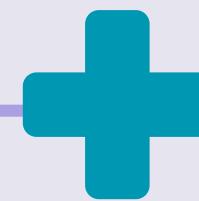
Insights from our overall data

We essentially found that...



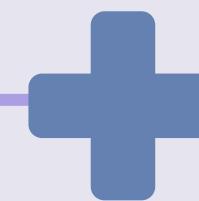
1

People value
therapeutic
relationships with
healthcare providers
over simply technology
solutions,



3

Participants advocate
for healthcare
technology, notably in
age care, palliative care,
and disease prognosis.



2

Desire for leveraging
technology to **expedite**
healthcare delivery.

Problem Statement

Despite technological advancement, young adults are not satisfied enough with technologically advanced healthcare services because of its limited accessibility and lack of comfortability.



Design Goal for the future

Design an **user-centric** healthcare platform that incorporates innovative technology while addressing accessibility, comfort, sustainability, and ethical considerations in order to increase satisfaction and utilization among young people.



Health
is wealth

Thank you very much!



Appendix A: Background Research

Doc link [here](#)

Investigate the current impact/s of your theme

Social

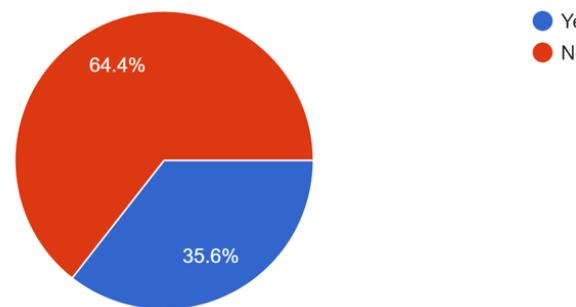
- Clinicians and researchers have recognized the importance of the relationship between socioeconomic factors and individual health (Attaran, 2022)
 - They believe that purely individual characteristics may not capture all determinants of health status fully (Attaran, 2022)
- Socioeconomic database plays an essential role in the development of health management programs that address the specific range of needs for a certain group of people (Attaran, 2022).
- Social consensus must be reached for the critical aspects of AI, including data sharing confidentiality, and liability (Lee & Yoon, 2021).
- Social consensus is required on the quality management of AI-based systems and liability for possible misdiagnosis or medical accidents during the care service (Lee & Yoon, 2021)
- In the context of mental health advocacy, technological determinism suggests that adopting digital tools reshapes the landscape of advocacy practices and societal attitudes toward mental health (Okoro et al., 2021)

Appendix B: Survey

Survey link [here](#)

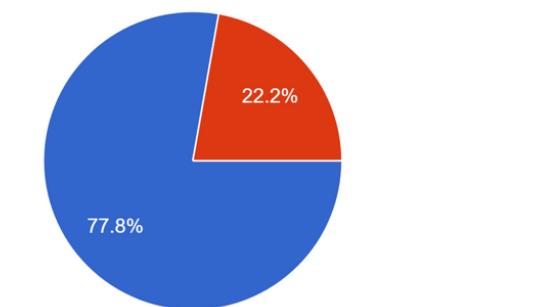
Have you ever had difficulty receiving healthcare services due to issues like cost, distance, or availability?

45 responses



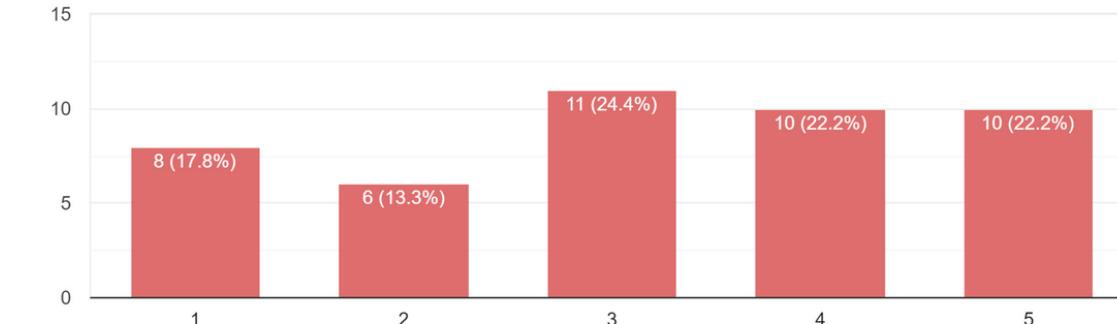
Are you aware of any technology-based solutions or platforms that aim to improve healthcare access in your community? (e.g., telemedicine, mobile health apps, online appointment scheduling)

45 responses



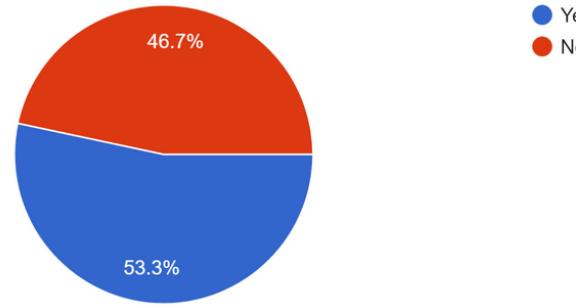
How comfortable are you with using technology (e.g., smartphones, computers) to manage your healthcare needs? ie; using technology to help fight alcohol addiction

45 responses



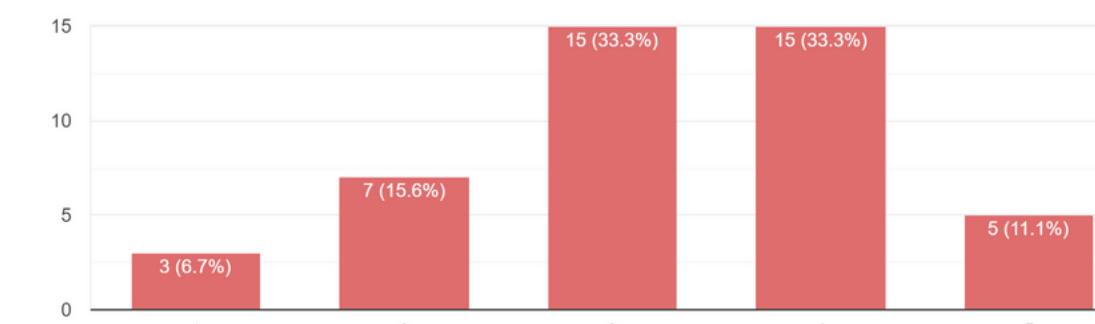
Have you ever delayed or avoided seeking healthcare services due to concerns about cost or affordability?

45 responses



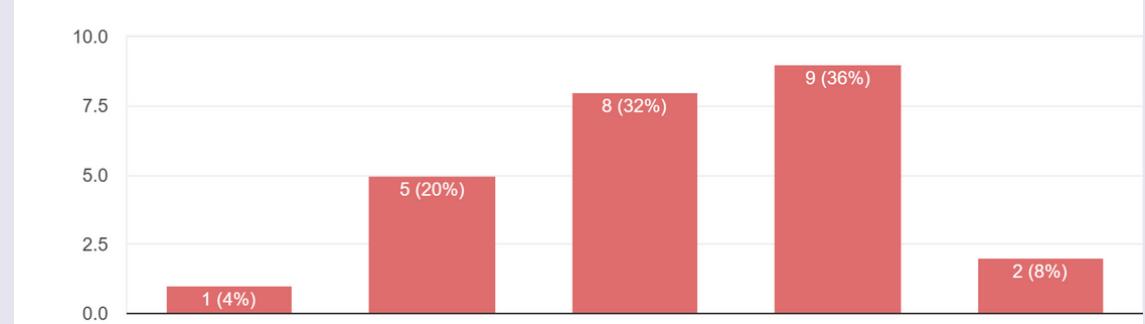
How satisfied are you with the availability of healthcare services in your community?

45 responses



How satisfied are you with the convenience and accessibility of telemedicine services, if you have used them?

25 responses



45 responses, open for 5 days (1 April - 5 April 2024)

Appendix C: Interviews

Interview 1: [here](#)

Interview 6: [here](#)

Interview 2: [here](#)

Interview 7: [here](#)

Interview 3: [here](#)

Interview 8: [here](#)

Interviews 4 + 5: [here](#)

Interview 9: [here](#)

Appendix D: STEP Cards

1 Technological

circleg

The role and impact of technology, e.g. access and affordance, infrastructure, emerging trends, data, AI and automation.

Heading: The Future of Prosthetic technology

Insight Description:

- Today only 1 out of 10 people have access to appropriate assistive products.
- 65 million people living with lower limb amputations globally (World Health Organization (WHO))
- limited mobility not only leads to exclusion and dependency, but starts a ripple effect through themselves, their family and society, increasing the impact of disability

Supporting quote:

"Circleg stands for a new narrative around prosthetic care that enables accessible, high-quality and empowering **solutions for amputees**".

- Circleg contributes to **10 out of 17 SDGs**, with a core emphasis on freedom of mobility for disability-inclusive development.

Links:
<https://circleg.world/>

Image:

We strive to empower people through freedom of mobility to achieve positive social and environmental outcomes while celebrating diversity in all shapes and colours. Our holistic approach focuses on three key areas:

- quality prosthetic care
- sustainable local model
- broader access

2 Environmental

Ecological and anthropogenic forces, e.g. climate change, pollution, weather, biodiversity, waste management, circular economy.

Heading: Environmental Health

Insight Description:

- More than **12 million people** around the world die every year because they live or work in unhealthy environments.
- People with low incomes are more likely to live in polluted areas and have unsafe drinking water.
- Children and pregnant women are at higher risk of health problems related to pollution.
- We also benefit physically and mentally from nature. Access to the ocean, river systems, bushland and forests offers recreational activities that are important for human health and wellbeing, and which we enjoy.
- Achieving zero waste requires an evolution in thinking about how resources are used - from a linear to a circular approach.

Supporting quote:

"Healthy People 2030 focuses on reducing people's exposure to harmful pollutants in air, water, soil, food, and materials in homes and workplaces"

Links:

- <https://health.gov/healthypeople/objectives-and-data/browse-objectives/environmental-health>
- <https://www.climatechange.environment.nsw.gov.au/impacts-climate-change/climate-impacts-our-health-and-wellbeing>
- <https://phmwhcc.co.uk/wp-content/uploads/2022/06/PHM-Circular-Economies-Summary-Report-Eng.pdf>

Image:

3 Social

Attitudes, behaviours, and trends, e.g. demographics, class, family dynamics, lifestyles, cultures, health and wellbeing, beliefs, values, population statistics.

Heading: social health

Insight Description:

- the benefits of social connections are proven to lower rates of anxiety and depression.
- increases self-esteem
- may influence how people seek health advice e.g. treatment choices

Supporting quote:

"People with strong social connections tend to have lower rates of anxiety and depression, and increased self-esteem."

Links:

- <https://www.betterhealth.vic.gov.au/health/healthyliving/Strong-relationships-strong-health#:~:text=The%20benefits%20of%20social%20connections,more%20trusting%20and%20cooperative%20relationships,ips.>
- <https://study.com/academy/lesson/influences-on-health-social-cultural-environmental.html#:~:text=Social%2C%20cultural%20and%20environmental%20factors,like%20going%20to%20the%20gym.>

Image:

4 Ethical

Accepted ethical principles and practices, e.g. attitudes and values, policies and standards, marketing and advertising, sales and procurement.

Heading:

Ethical design and social impact: Innovation with a conscience

Insight Description:

- Cultural sensitivity and ethical consideration vastly increases overall user experience
- Ensuring that the design can resonate with all people with diverse backgrounds
- Overall creates positive social impact for all

Supporting quote:

- "Ethical design starts with inclusivity – the practice of creating products that cater to the diverse needs of individuals. Inclusivity involves recognizing and accommodating the needs of individuals with varying abilities, age groups, and cultural backgrounds."
- "A British brewery faced criticism for a culturally insensitive choice in naming one of their Indian Pale Ales "Veda." In Hindu culture, Vedas are revered as significant religious texts, representing the oldest layer of Sanskrit literature, and serving as the oldest scriptures of Hinduism"

Links:
<https://www.cambridgenetwork.co.uk/news/ethical-design-and-social-impact-innovation-conscience>

Image:

5 Economic

Economic or financial forces, e.g. market demand, industry growth rates, trade and labour, taxation and interest rates, material costs, supply chain.

Heading: How nutrition impacts health and the economy

Insight Description:

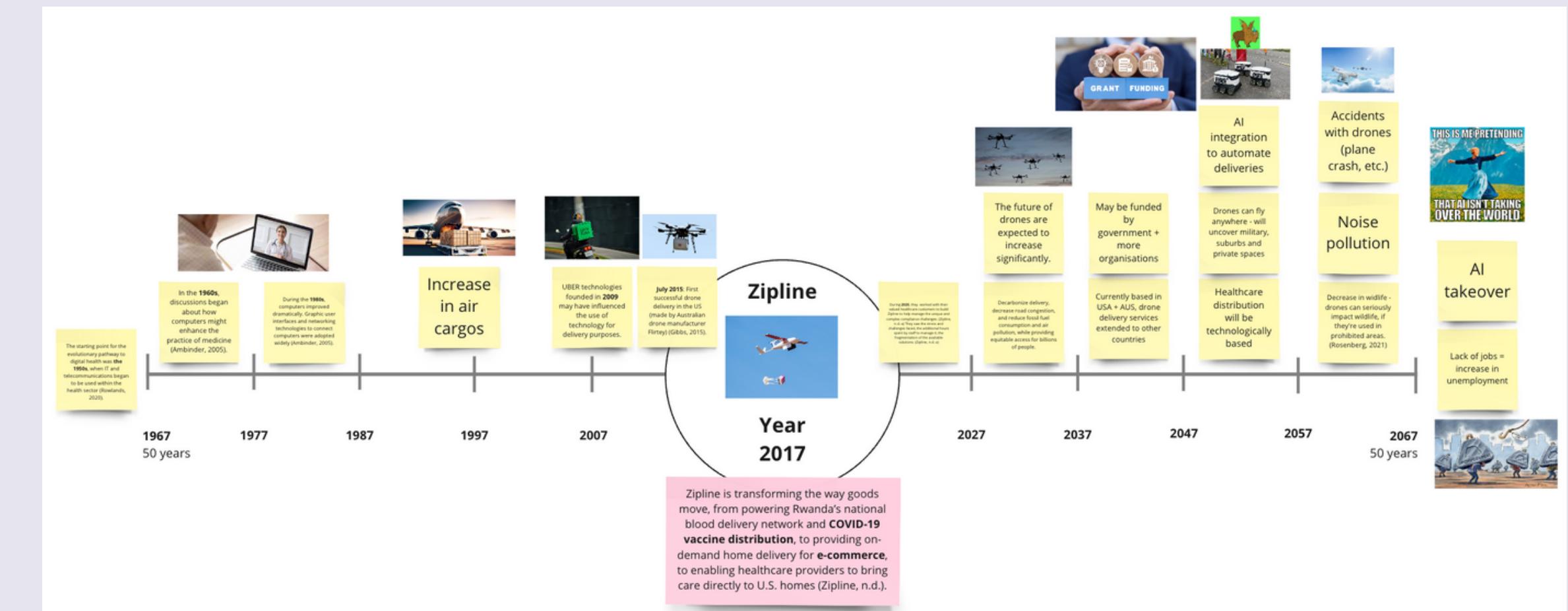
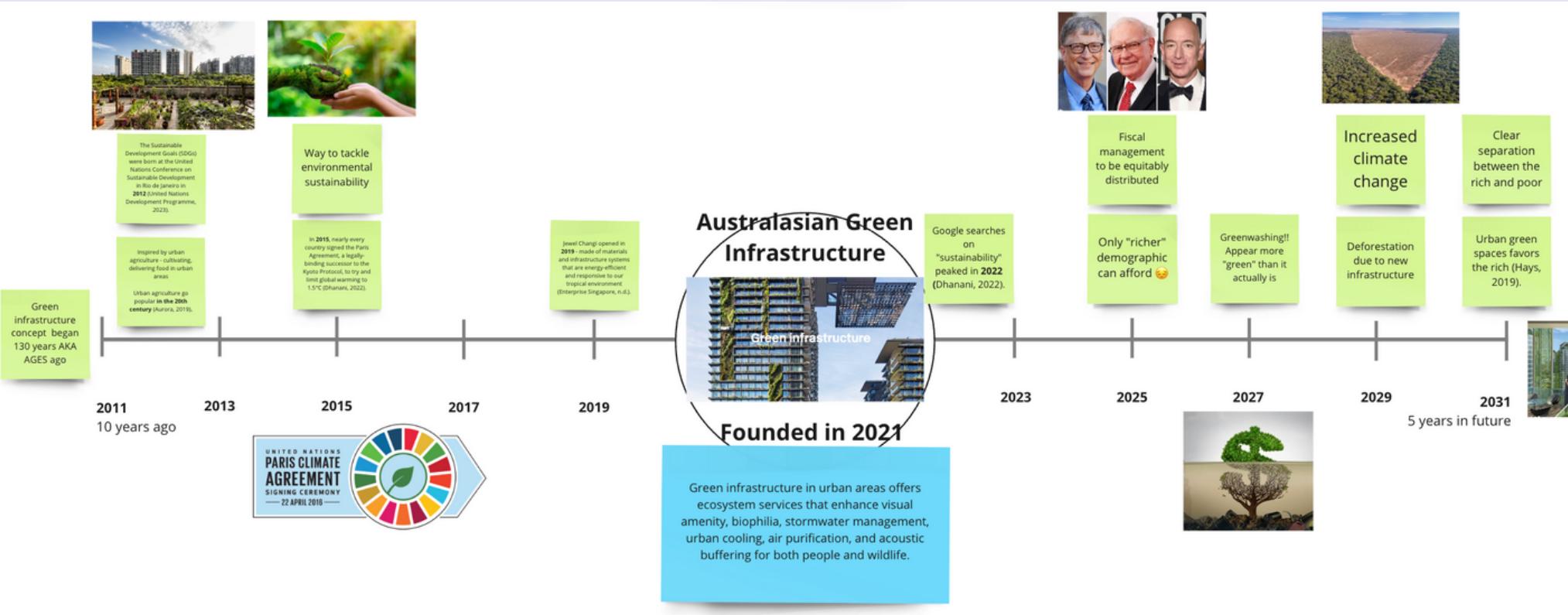
- According to McKinsey, the widespread adoption of healthy lifestyles could add USD 12 trillion to global GDP by 2040, representing 0.4% faster growth every year between now and then.
- Poor health can also exacerbate economic inequality.
- Undernutrition and obesity are both forms of malnutrition, and each is associated with health problems that range from serious to life-threatening.
- Overweight and obesity are linked to more deaths worldwide than underweight.
- When individuals experience poor health, they may need to take sick days, medical leave, or reduce their working hours.

Supporting quote:

Links: <https://www.ubs.com/global/en/sustainability-impact/sustainability-insights/2023/how-nutrition-impacts-health-and-the-economy.html>

Image:

Appendix E: Design Timescapes



Appendix F: Online Ethnography

Doc link [here](#)

Website	Post	Data record	Interpretation
Reddit	"For those who work within the healthcare industry, what exciting new apps/technologies are you working on or would like to see utilised within industry?" https://www.reddit.com/r/iOSProgramming/comments/ua4yjq/for_those_who_work_within_the_healthcare_industry/	<p>Commenter 1 "Seriously though, the healthcare field is so difficult to disrupt b/c of regulatory compliance (and this can be a good thing, especially when patients lives are involved), corporate obstructionism (often through the use of increasing regulatory compliance requirements to hinder new entrants), and also staff resistance.</p> <p>What we need is an OpenHealth initiatives with open APIs, much like what OpenBanking has done for FinTech."</p>	<ul style="list-style-type: none">• Hard to make changes in healthcare due to regulatory compliance• There is a need for open APIs to facilitate technological innovation

Appendix G: Affinity Diagram

Doc Link [here](#)

Affinity Diagrams

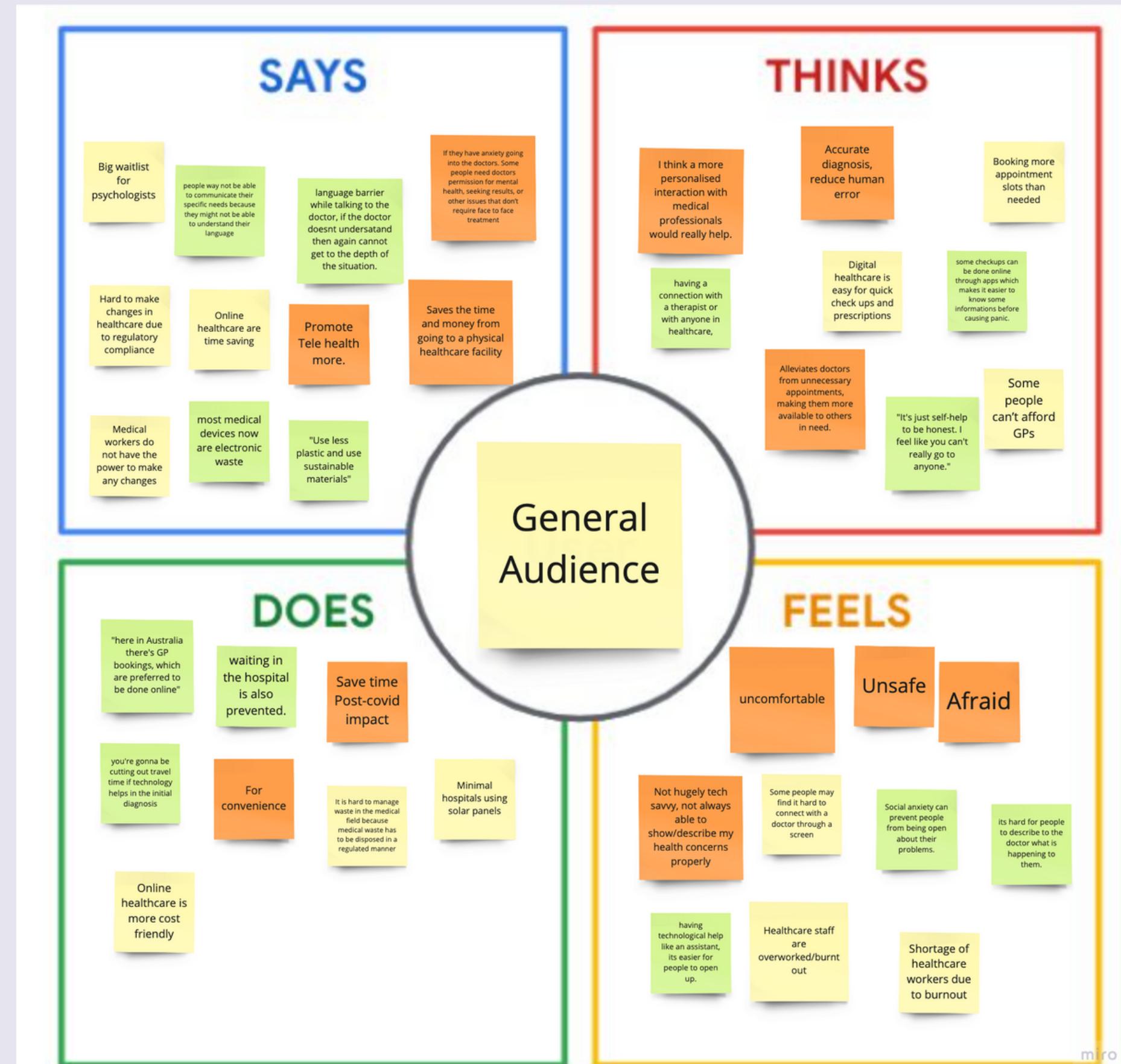
See the board



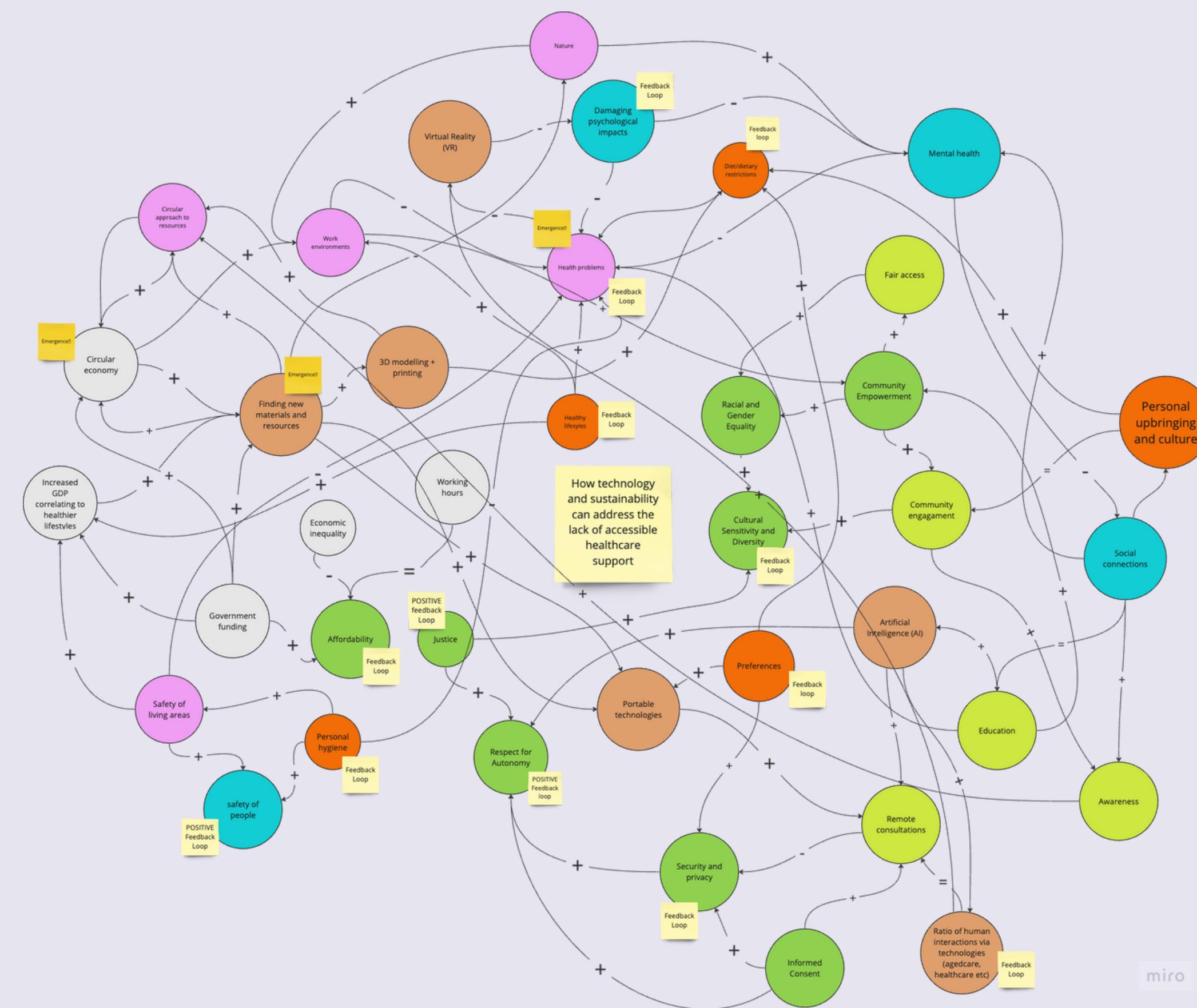
Affinity Diagrams ↗
Modified an hour ago



Appendix H: Empathy maps



Appendix I: System Mapping



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