



**A Shift Towards Prevention: Uncovering People's Hidden Potential to Enable them to  
Enjoy More Healthy Years**

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## Synopsis

According to the GGD Friesland, life expectancy rates in the Netherlands continue to rise. This means that the healthcare system in Friesland will not be able to keep up with the rising demand in the near future. In order to alleviate the pressure on professional healthcare, a solution is needed to the following challenge: “how might we trigger individuals and communities alike to enable them to enjoy more healthy years?”. We have attempted to assess the underlying problems through the eyes of the inhabitants of the northern Netherlands themselves, as well as calling on the expertise of multiple professionals within various health-related fields. The main finding is that health is not only a broad concept but also a personal concept. Therefore, we have looked into two models that include more factors than just the biological aspects of health: the ‘definition of positive health’ and the biopsychosocial model. Furthermore, by analyzing our field research, we have formed five health clusters to continue with more detailed research: Physical Activity, Nutrition, Mental Health, Smoking Cigarettes, and Drinking Alcohol. Our target group, the ‘Sandwich Generation’, faces multiple problems concerning healthy lifestyles: time management issues, lack of knowledge about (the importance of) a healthy lifestyle, lack of trustworthy information or an overload of information, and the feeling that a healthy lifestyle is not affordable. During the Ideate Phase, we designed prototypes in an attempt to address these problems. However, we came to understand that one prototype can hardly cover all issues within the five clusters. Therefore, we decided to continue ideating within only one of the clusters, Nutrition, which led us to our final prototype: Mienskip Resepten. This prototype is built around the idea that locals can provide healthy recipes for each other which can be distributed on recipe cards in stores and uploaded on online platforms. Mienskip Resepten aims to fill both client and end-user needs by providing an accessible, time-efficient, affordable

and trustworthy way of healthy cooking while simultaneously offering a local and community-building nature.

## 1. Introduction

In the Netherlands, life expectancy rates continue to rise (Poos & van der Wilk, 2020). With increasing age comes an increase in health-related problems and consequently a higher demand for professional health care (Seker en Sûn, n.d.). According to the GGD Friesland, our healthcare system will fail to keep up with the demand for professional care in the near future. Therefore, we work together with our client, an advisor for the GGD Friesland, to develop a solution or strategy that aims at supporting individuals and communities to enjoy more healthy years without the need to depend on healthcare professionals heavily. We noted that the healthcare system in the Netherlands often adopts a problem-focused way of treating illness, which means resources are allocated and attention is paid only to existing health problems. In our view, communities and organizations need a tremendous shift towards a prevention-focused system, which aims at avoiding preventable diseases in the first place. In this way, the pressure on professional healthcare could be further alleviated.

According to RIVM, Friesland struggles with several threats to its population's health, including elevated blood pressure, obesity, and coronary heart disease (Volksgezondheidszorg, n.d.). Due to the diversity of the health problems in Friesland and the broadness of the concept of health, we came up with a research question to take a closer look at this major health challenge: 'how do different groups of people in northern Netherlands experience health?'. With this research question, we intend to look through the eyes of the inhabitants of northern Netherlands to define the underlying problems and customize any future solutions to suit them, their lifestyles, and their environment. Only if we have a precise definition of the issues can we develop creative solutions or strategies to trigger individuals' and communities' strength to enable them to enjoy more healthy years.

In this report, we discuss the multiple phases we went through to find a solution to our challenge. Firstly, we review the Discovery Phase, in which we conducted field and desk research to have a close look at the challenge at hand. Secondly, we discuss our Define Phase. In which we set out to further define the problem, using, for example, personas and customer journeys to obtain a clear understanding of the position of the end-user in the problem. Third, we review the Ideate Phase. This phase revolves around the imagination of multiple prototypes. These prototypes are discussed, as well as the feedback we have received from our end-users, and a review of the possible impactfulness and feasibility of these ideas is displayed. The last phase, the Prototype and Testing Phase, concludes the report by explaining our final prototype and how it fills both our end-users' and our client's needs as a solution to the challenge.

## **2. Discovery phase**

To develop an impactful and suitable prototype as a solution to our challenge, we began with a phase called the 'Discovery phase.' We conducted field and desk research to obtain critical and vital information from primary and secondary sources in this phase. This phase started by meeting the client to understand his needs for the project and we continued by interviewing people on the streets, as well as experts. Additionally, we conducted complementing desk research. The aim was to gather enough information by the end of the Discovery phase to define our problem.

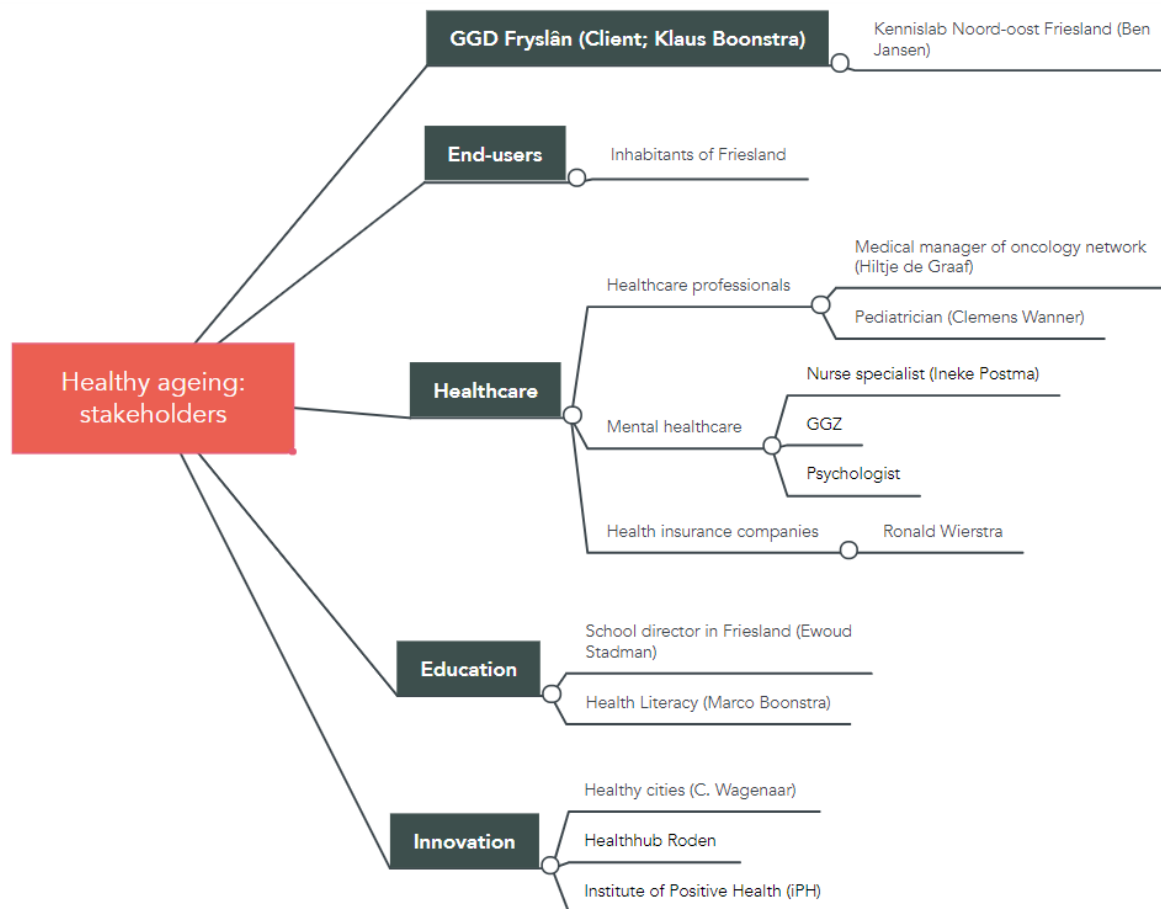
### **2.1 Introduction**

In workshops and brainstorming sessions, we have selected stakeholders that are of importance to this challenge. There is a great variety of people and institutions related to this challenge. In figure 1, a selection of our most important stakeholders is organized in a mind-map.

#### **Figure 1**

*A mind map of the selected stakeholders*



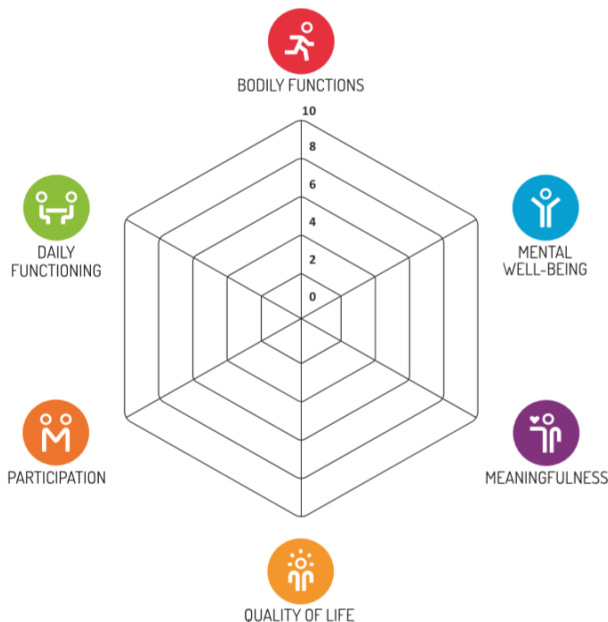


In the first interview with our client, Klaus Boonstra, he indicated that we were free to define our challenge further. The client introduced us to current projects that he is working on together with the Kennislab Noordoost Friesland. One major project focuses on transforming the healthcare system to make it, in Boonstra's words: "more sustainable and able to provide sufficient services in the future." A project which has significant overlaps with our challenge. What stuck after the interview is that Klaus Boonstra thinks a change in mentality is needed in the general public to make people feel responsible for being in charge of their health and looking out more for others while not solely relying upon health professionals. Additionally, we were introduced to the concept of positive health by Machteld Huber, a relatively new approach to defining an individual's health in a more holistic and personalized manner. Machteld Huber

(2011) defined health as "the ability to adapt and to self-manage" (p. 236). In figure 2, the model of positive health can be seen; it includes bodily functions, mental well-being, daily functioning, meaningfulness, participation, and quality of life.

## Figure 2

*Model of the definition of positive health (Huber, 2011)*



The GGD Friesland has conducted research on the "experienced health" of the Frisian population in 2016/17 (GGD, & de Graaf, M.). The research measures health in different aspects, where the results are divided into two main age groups, 19 - 64 year-olds and 65+ year-olds. More insights into distinctions between other age groups are provided as well. In the context of our challenge, we focused on 35 - 49 year-olds. The article further compares gender, education level, and the presence/absence of disabilities.

The main result suggested that 79% of Frisian citizens consider themselves healthy. Concerning mental health, the only disorders taken into account are anxiety and depression, keeping in mind that it is not further distinguished between self- or professional diagnosis. In

most aspects, self-experienced health is not distributed equally among groups. For example, the research reveals depression to be prevalent mostly in young adults (19 - 34 year-olds), while loneliness is represented in all age groups but more prominently among men.

Striking findings of the research are that the prevalence of many conditions among the population increases with age. For example, the presence of chronic diseases increases from 19% of young adults (19 - 34 year-olds) to 50% of the 75+ year-old population. It is also important to note that the lower the education level, the higher the occurrence of one or more chronic diseases in the Frisian population. These chronic conditions are shown to lead to constraints in mobility among the affected individuals, further influencing individual's decline in health.

Additionally, the level of obesity was compared between different age groups. A steep increase in moderate to severe obesity from 32% among young adults to 51% among adults (35 - 49 year-olds) was observed. When comparing these numbers to possible risk factors of obesity, it was shown that a low percentage of the population meets the dietary references—taking vegetable consumption as an example, where only 16% of adult respondents met the recommended requirements. Likewise, statistics show that this age group exercises the least, regardless of their gender.

The research concludes that the most prominent causes of death, i.e., dementia and obesity, could be prevented by employing a healthy lifestyle consisting of physical activity, healthy nutrition, and a social network. Socioeconomic status seems to play a recurring role in the occurrence of chronic diseases, suggesting a correlation between low income and the development of such disorders. In conclusion, the research shows the unequal distribution of unhealthy habits between different age groups and socioeconomic status.

While this research gives an essential insight into the differences between several groups of the Frisian population, the results have to be looked at from a more critical perspective. For our challenge, more detailed research is needed for an insightful understanding of Frisian health.

By approaching our research with a broad view and from different perspectives, we reduce the risk of missing out on our end-users' crucial factors. Therefore, this discovery report is divided into two sections. After our initial field and desk research, we have divided the concept of health into five clusters to have a more in-depth perspective on the concept of health. The report is divided in our research before and after defining these clusters.

## **2.2 Pre-cluster research**

### **2.2.1 Field research**

**Street interviews.** To gain a comprehensive perspective on the problem, we put a focus on field research. We took into consideration that the challenge is aimed at the individual, as well as at the community. For this reason, we have conducted field research in Leeuwarden and Groningen. We have interviewed participants, and we have asked questions regarding their perception of health, their well-being, and what could be changed to improve it.

The main findings include the fact that people tend to define health in terms of exercising and eating healthy. Eating healthy refers to the consumption of fruit and vegetables and avoiding sugars. Participants also voiced that healthy food tends to be less accessible and more expensive. Moreover, some participants mentioned that they see the effect of socioeconomic status on children's overall health. Most participants demanded government action to reduce smoking and sugar consumption, whereas others viewed it as a personal responsibility. Some also brought up the concept of mental health when defining the term 'health'. It also must be noted that most of

the participants were aware of the health risks of smoking, drinking alcohol, and high consumption of sugar; however, they still found it difficult to limit their use. Finally, a typical response to the question “why do you think you are healthy?” indicated an absence of illness.

We can conclude that health is a personal concept, where answers included topics, such as physical activity, mental health, smoking cigarettes, drinking alcohol, and nutrition. Some participants viewed health as a personal, individual responsibility, whereas other participants brought up the need for governmental interventions.

**Interviews with experts.** Early on, during the Discovery phase of the challenge, interviews were conducted with a teacher and a healthcare professional. These interviews provided a deeper understanding of health from different perspectives.

Ineke Postma, a nurse specialist, and teacher in academic mental health, believes in a holistic worldview in which health includes physical, social, and mental aspects. These three aspects together constitute health by influencing each other. According to Postma: “in order to be healthy, a balance is needed.” This balance is found individually. Still, Postma sees an increasing difficulty in finding this aforementioned balance due to the growing availability of unhealthy foods in the Netherlands. This accessibility leads to more ‘wrong choices’ being made. Her advice to avoid the wrong decisions is to focus on awareness and prevention-based solutions.

Hiltje de Graaf, internist oncologist and medical manager, states that there are many definitions of health. However, most descriptions do not include the medical perspective, which shows that humans’ DNA is flawed, preventing us from being 100% healthy. Nowadays, public health is continually improving. De Graaf notices that “60 is the new 40.” People are getting older, and their health gains more and more importance. To ensure health in old age, “unhealthy”

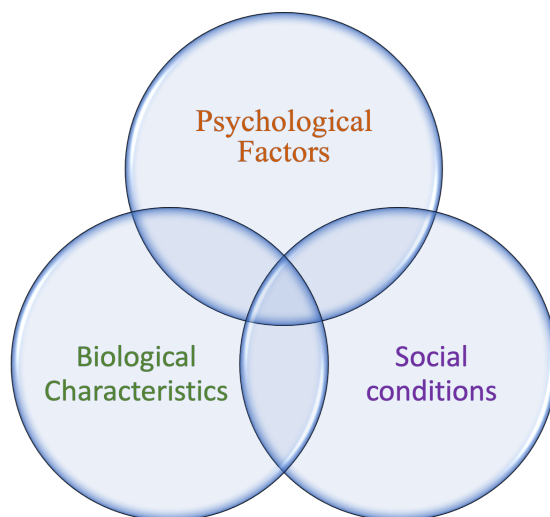
habits need to be tackled before they have formed, not afterwards. This can be achieved, for example, by targeting primary schools with guidance from parents.

### 2.2.2 Desk research

**Health psychology.** Our first desk research focused on health psychology, where we learned about the biopsychosocial model, shown in figure 3. It is a holistic model that looks at health from a social, psychological, and biological stance. The model emerged four decades ago and despite the evidence for its utility, the biomedical model of illness, which is characterized by a reductionist approach, remains dominant in healthcare (Wade & Halligan, 2017). As we adopt a broad view of health and health problems, we agreed to use a model that tackles the topic from different perspectives. We are convinced that only this will lead to a fair representation of the complexity of the underlying issue.

**Figure 3**

*The biopsychosocial model*



**Frisian News Articles.** While conducting desk research, we also looked into Frisian newspapers, where we found exciting initiatives in place and new topics in the region that sparked our interest. Our main findings included healthy schools and health literacy. For instance, the healthy schools include three Frisian schools that implemented a programme to promote a healthy diet amongst their students. They did this by providing classes on healthy eating, replacing vending machines with healthy alternatives, and more. These topics also led us to experts to interview, including Ewoud Stadman, a healthy school director in Friesland, and Marco Boonstra, a health literacy expert, further discussed in section 2.3.2.1.

## **2.3 Post-cluster research**

### **2.3.1 Defining clusters within health**

After having analyzed the initial field and desk research, we defined five clusters that capture our findings within the concept of health. People have mentioned five different clusters most when we have asked them what they think about health. The clusters are Nutrition, Physical Activity, Mental Health, Smoking Cigarettes, and Drinking Alcohol, as illustrated in figure 4. We continued our research within these clusters.

#### **Figure 4**

*The five clusters within health*



**Nutrition.** By developing healthy dietary habits and healthy body weights, general public health can be improved (RIVM, 2017). A generally healthy diet constitutes all components of the so-called ‘Wheel of Five’, developed by the Netherlands Nutrition Centre (cf. figure 5). The general recommendations include the food groups and to what extent we should consume them. This model ensures that all essential nutrients are taken in via the diet while maintaining a balance. However, since a healthy diet cannot be generalized, the model can be modified to suit an individual’s needs. Optimal nutrition, especially during the first two years of life, is crucial for healthy growth, cognitive development, reducing the risk for obesity and reducing the risk of developing non-communicable diseases (NCDs) later in life. A healthy, balanced diet depends on many personal factors, but the basic principles remain the same for everyone - the number of specific nutrients needed changes with age (Khodaei et al., 2015).

### Figure 5

*Wheel of five, developed by the Dutch Voedingscentrum*





An increasing trend of obesity can be observed within the Dutch population. According to the RIVM, Dutch people “eat too much and consume the wrong types of foods” (RIVM, 2006). This leads to an overall health loss caused by an unhealthy diet, comparable to that caused by smoking. As one expert phrased it, “Obesity is the new smoking.” Interventions are needed to put a halt on the decrease in public health. The increase in obesity leads to growing incidences of metabolic diseases, such as diabetes. Once metabolic diseases have developed, they cannot be reversed. Therefore, the healthcare sector must put a focus on encouraging a healthy diet. This can be achieved by appealing to the private sector and the consumer (te Pas, 2018).

From the field research conducted in Drachten, we concluded that participants mostly believe that a healthy diet is the one that was followed by people in the past. Some participants learned about healthy diets from their parents, and others also emphasized that “the absolute healthy diet is having your own garden and growing your own food, the way our grandparents did.” Strictly speaking about healthy diets, most participants believed it should consist of fruit, vegetables, potatoes, milk, meat, and bread. Moreover, the participants used different methods to reduce the consumption of sugary goods by their children.

**Physical activity.** Our genes were selected for an environment of abundant physical activity, while our current lifestyles normalizes high levels of sedentary behavior (Booth et al.,

2007). This increased amount of inactivity is associated with multiple adverse health consequences, including NCDs like Diabetes Type 2. The positive effects of exercise include reducing blood pressure, enhanced cardiovascular fitness, weight loss, and prevention of chronic diseases such as cancer, diabetes, hypertension, obesity, osteoporosis, and cognitive conditions like Alzheimer's disease (Mikkelsen et al., 2017). When high levels of physical activity (60 to 75 minutes per day) are adopted, the negative consequences of sedentary behavior seem to be eliminated (Ekelund et al., 2016).

In the field research in Drachten, participants varied from people who did intense sports to people who were barely physically active. The active participants mentioned that certain competitive apps make them exercise more. Moreover, participants preferred team sports over individual ones since they are more motivating. In terms of their well being and health, most participants, whether active or not, considered themselves moderately healthy.

Even though there are pre-existing interventions to increase physical activity, research shows that their use is usually discontinued due to lack of internal motivation and social support (JMIR MHealth UHealth, 2019). Moreover, the use of competitive apps could be misused to an extent where it leads to harmful excessive physical activity. This was also evident in one of the street interviews, where a participant who bikes 300km a week to compete on a smartphone application said that this sometimes leads to unhealthy physical consequences. For this reason, such apps are not adequate if people are not aware of how to properly utilize them.

**Mental health.** Mental health plays a vital role in personal well-being when looking at it through the definition of positive health. It has a far-reaching influence not only on the mind but also on the body. There is cumulative evidence on the positive effects of exercising on mood states like anxiety, stress, and depression (Mikkelsen et al., 2017). Additionally, it is noteworthy

to mention stress as a significant threat to physical and mental health. While short-term stress boosts the immune system, chronic stress weakens it, which leaves the body struggling more with fighting infections (Segerstrom & Miller, 2004). As chronic stress leads to an overstimulation of the sympathetic nervous system, it increases the risk of heart disease. Lastly, an association appears between chronic loneliness and several psychological and health problems (Cacioppo & Patrick, 2008). Accumulating evidence indicates a link between loneliness as a predictor of physical illness and mortality (Hawkley & Cacioppo, 2010).

Concerning our field research, mental health appears to be an essential concept of health for some but not all. In semistructured interviews, mental health appeared now and then when asked about what health means to the individual. Yet, other people left it out, focusing more on the physical aspects of health. One interesting finding is that most young people (teenagers and students) stressed the importance of their mental well-being. According to one participant, “happiness is the best way to be healthy!” Older people still appeared open about mental health but only after having been asked about it specifically. Participants indicated that they primarily gain information on mental health by actively informing themselves and less by being informed through governmental institutions.

**Smoking cigarettes.** Research on smoking tobacco keeps finding more and more evidence for the negative consequences of smoking on health. Second-hand smoke and third-hand smoke (tobacco residue left on furniture, skin, etc.) can adversely affect health (Mackenbach et al., 2017). Active smoking can be associated with many diseases and premature death. Even though the detrimental effects of smoking are well-known and well-researched, nicotine addiction is difficult to overcome and is linked to several unpleasant withdrawal symptoms (Mackenbach et al., 2017).

During the field research in Drachten, we observed that a lot of people were smoking. When asked about it, participants were aware of the health risks and complained about how expensive it is. The participants expressed their wish to quit smoking; however, they expressed the need for support to do it.

**Drinking alcohol.** Alcohol is causally related to more than 60 different medical conditions (Room et al., 2005). Treatment research shows that early intervention regarding health problems caused by alcohol is feasible and effective (idem, 2005). According to a study from the Centers for Disease Control and Prevention (CDC, 2020), alcohol is one of the causes of chronic diseases. Furthermore, in an interview, cancer specialist Hiltje de Graaf mentioned that consuming too much alcohol increases cancer risk. The research by Room et al. also confirms this finding. During our desk research, we looked into the behavioral aspects regarding drinking alcohol. Figure 6 shows different motivations of why people choose to drink alcohol and what their goals are.

**Figure 6**

*Why humans consume alcohol (Bazar, 2016)*



From the conducted field research, we can conclude that participants did not mention alcohol as often as smoking or a healthy diet. When participants mentioned it, it was mostly because people said they drink alcohol, however, “not that much.” Moreover, an interviewee noted that they drink because of social pressure, without mentioning an intention to quit drinking. Only one participant stated that they wanted to stop drinking.

### 2.3.2 Further research

Apart from the cluster-specific research, we gained more general insights from further field and desk research. We will elaborate upon the more general insights in the section below.

#### 2.3.2.1 Field research

We gained many insights which are of relevance to all of our clusters from conducting interviews with multiple experts and specialists within different fields.

Pediatrician Clemens Wanner provided insight into the influence of parents' lifestyle on their children's health and lifestyle choices in later life. According to him, a lot of factors are of significant impact, such as socioeconomic status (e.g., the ability to provide healthy nutrition), education (e.g., knowledge of health and its importance), exercise habits, use of electronic devices, and the level of cohesion within communities. Wanner concludes that “in the end, after puberty, people take up the same habits as their parents.”

Since not all children are provided with a healthy environment at home, Ewoud Stadman, school director of Singelland De Venen in Drachten, wants to stimulate healthy lifestyles for their students at school. This ‘healthy initiative’ started with providing ‘healthier’ alternatives in

the school cafeteria, but they eventually want to tackle issues like lack of physical activity and smoking.

Marco Boonstra, PhD-student on low health literacy (LHL), gave us insights into the importance of health literacy and food literacy: the ability to understand health and nutritional values and understand information about health and nutritional values to implement this knowledge into daily life. By improving health literacy, through measures like e-health adapted to the LHL individual's skills, prevention can be supported. However, according to Boonstra, interventions need to be implemented on multiple levels to enable people to maintain their behavioral changes.

Jaap Koot, an expert within the field of global health and health policy, also endorses the importance of health literacy to prevent disease and promote general health. He notes that LHL is most prevalent among those of low education and/or low socioeconomic status. However, it is vital to also account for the exceptions; people can still be health literate while being poor, as is seen in some developing countries and among farmers in Friesland. They listen to their bodies' needs, are physically active, and grow their own foods (effectively lowering the consumption of processed foods). According to Koot, the Netherlands are not focused on prevention and will only act when problems have already come to the surface. Therefore, to improve health, more integration between prevention and primary healthcare is needed. To fully implement health initiatives within communities, you need, in Koots' words, "a champion who is a part of the community themselves."

Cor Wagenaar, professor of History and Theory of Architecture and Urbanism, is an expert on 'healthy cities.' According to him, healthy cities' future is urbanization, while suburbia is dangerous to health due to, among other things, car dependency. This problem is also prevalent

in villages in Friesland. People need to commute to work and facilities due to the large distances. Furthermore, there are fewer social hubs in these low-density regions, which can be troubling for lonely individuals' mental health.

“Many people do sports, I reflect!”, this quote is by health psychology specialist and trainer in individual mindfulness-based cognitive therapy, Joke Fleer, who emphasizes the importance of adaptiveness in coping strategies and health. Her approach to maintaining excellent health is being reflective. Thereby she means taking a step back once in a while and look at the bigger picture. In her words, “people who are capable of this and adjust when needed are generally doing well.” Another insight we gained from talking to Joke is using the biopsychosocial model to understand that body and mind are intertwined. An example is that poor mental health often accompanies unhealthy lifestyle habits such as smoking, excessive eating, and drinking alcohol. This avoidant coping will soothe people in the short-term but will make people sick when adopted over more extended periods. Further, being active was brought up as an essential part of being mentally and physically healthy, as in her view, when people are inactive, they “get bored out instead of burned out.” Additionally, according to Joke, mindfulness practices can help facilitate the journey of illness, which is achieved by becoming actively aware of the disease and learning to adjust to it. It is also helpful in getting to know oneself better. It can be used as a tool and is not to be thought of as a spiritual or religious practice.

Expert in public policy and governments focusing on health, well-being, and poverty, Sepideh Yousefzadeh, talked to us about how she sees health as a multidimensional concept. Other dimensions are essential to physical and mental health, such as employment, shelter, access to water and sanitation, and mobility. She claims that we need to look beyond the traditional definition of health. As Yousefzadeh has worked in countries in a conflict or

post-conflict situation before, she sees the Dutch healthcare system as good since healthcare is accessible for everyone. What could be improved, in her opinion, is a shift from the extreme individualistic approach to a more collectivistic one. According to Yousefzadeh, there is often more focus on the individual than on the community in the Netherlands. Lastly, she emphasizes that context matters and needs to be taken into account more when providing resources. These conclusions come from a research project which was conducted in and around Groningen. The restraints an individual might face need to be explored, and more attention should be put on what is of importance to the individual.

To gain more knowledge about the connection between healthy diets and food production, we spoke with a local farmer from the northern part of Friesland, Gysbert Lettinga. His company includes the growing and harvesting of mostly seed potatoes, different kinds of consumption potatoes, and grain. He grows the grain to feed his 70.000 sustainably held broilers. Lettinga told us that products from local farmers are most often shipped abroad and not distributed locally. He believes that including local farmers in a possible plan to promote healthy diets would positively affect the Frisian society. Furthermore, it is important to spread knowledge about food and food production to make people aware of what they are consuming. This might make them rethink their diet and its effect on their health.

A general practitioner's assistant in Leeuwarden, Ruby-Leigh Welles, spoke to us about her viewpoint regarding a healthy lifestyle and what she encounters in this regard in her field. She explains why a healthy lifestyle is advised to patients and how patients are referred to nutritionists or physiotherapists. Living healthier can result in needing no or less medicine for specific NCDs and can even prevent NCDs from developing in an early stage. Welles believes that a lack of information or misinformation is a possible cause for people leading an unhealthy



lifestyle. According to Welles, especially the spread of false information through social media is of great influence since people are not sure what information they can trust. From her own experience within the practice, she thinks that health illiteracy is an important topic. Welles often comes across patients who blindly follow her or the doctor's advice since they do not understand their explanation.

#### 2.3.2.2 Desk research

**Health in Friesland.** From the data we retrieved, we found that in 2019, 4.105 deaths in Friesland had been caused by NCDs. This is important to know since the risk of developing NCDs is often increased by adhering to an unhealthy lifestyle. Most deaths within this group are caused by new formations of benign and malignant tumors (1.949), closely followed by cardiovascular system diseases (1.683). Compared to other causes of death, tumors alone cause almost as many deaths as all other deaths not caused by NCDs (2.151) (CBS, 2020). A chance of getting a NCD increases when maintaining an unhealthy lifestyle. In the Northeast of Friesland we found that 14% of the community is obese and 48% does not get enough physical exercise. Proving that a great number within the population is at risk of getting a NCD. This makes it clear that NCDs are a health threat within the Frisian society. Therefore, causing more pressure on the regional healthcare system. This is in line with the insights we gained from research within our clusters and interviews with multiple experts.

Compared to the national level, Friesland has less than half of the number of general practitioner's practices within a 3km reach. There is only one hospital per 20km in Friesland, while the Netherlands average is 4.6 hospitals per 20km. The same conclusion counts for the approximate distance one has to travel to get to a general practitioner or a hospital. This distance is much bigger in Friesland than in the Netherlands in general (CBS, 2020). From these findings,

we can see that healthcare availability and accessibility of healthcare in Friesland differs much from the national level. These factors are essential since less availability, and more distance can cause hindrance for people calling for a solution that reduces people's dependence on professional healthcare.

### 2.3.3 Defining a specific target group

**The Sandwich Generation.** We have decided that the target group of our challenge will be the so-called 'Sandwich Generation', a term coined by Dorothy A. Miller (1981). It describes the middle-aged generation who are responsible for the care of their children and have to look after their own parents to some extent (Miller, 1981). The reason for selecting the sandwich generation as our target group is that we can indirectly target three generations due to the influence they have on each other. In this way, we hope to develop a solution that will impact multiple generations of the community of Friesland.

After speaking to our client, we have decided that we will not be focusing on the outliers within our chosen target group. We will target the 'average' Frisian individual within the sandwich generation, meaning the largest group among them regarding income, education, and other factors. To determine the largest group, we retrieved numbers from the Centraal Bureau Statistiek. The population of Friesland counts a total of 649 957 people. Within this group, approximately half is male, and half is female. 28.5% of the Frisian population are people between 45 and 60 years old, making this the biggest age group in Friesland. Most Frisians within the Frisian population are or have been married and have children. Furthermore, most students in Friesland follow a secondary vocational education (mbo-level). Most people work in commercial services within the working population, which includes wholesale, retail, and

transport (CBS, 2020). This information, along with further research, was used to set specific criteria covering different aspects to narrow down the target group.

## **2.4 Discussion and conclusion**

To conclude, our research has taken perspectives from different stakeholders, i.e., experts and our target group, into account. The main finding that has emerged is that Dutch healthcare, in general, is focused on a problem-based approach. To achieve our goal within our challenge, a change is needed, which should steer Dutch healthcare, especially in Friesland, to a prevention-focused approach. We can accomplish this by mainly raising awareness within the population and among healthcare professionals and policymakers, e.g., health insurance and municipalities.

Still, there is an urgent need to develop an initiative to accomplish this. We conclude that health and food literacy in the population should be a priority. The research on the “experienced health” of the Frisian population which was conducted by the GGD Friesland shows that an increase in the incidences of chronic diseases throughout the population can be observed with increasing age. A correlation between these increasing numbers and decreasing socio-economic status was noted (GGD, & de Graaf, M.). By improving the understanding of a healthy lifestyle, it can be assured that individuals can be more responsible for their own health. If individuals are more aware of the importance of a healthy lifestyle and have a better understanding of how to follow a healthy lifestyle, the risks of developing disease could decrease. Thereby, the pressure on healthcare professionals is alleviated.

By targeting the Frisian sandwich generation, we intended to influence three generations and reach our goal more effectively indirectly. For a more personalized approach that focuses on improving our target group's health, we agreed to focus on three of the five clusters: Nutrition,

Mental and Physical Health. By combining these three clusters, we aimed to find a solution that enables individuals to enjoy more healthy years in a personalized manner. By recognizing this individuality, we can uncover people's hidden potential to steer the community towards more healthy years.

### **3. Define Phase**

To find a solution to the given challenge, we aimed to further define the problem in the ‘Define Phase’. In this phase, we created personas and customer journeys to get a clear idea of our end-users’ health issues. By analyzing the personas and customer journeys, we were able to formulate a more detailed problem definition.

#### **3.1 Introduction**

During our Discovery phase, five health clusters were defined based on the analysis of the field research. These clusters are Physical Activity, Nutrition, Mental Health, Drinking Alcohol, and Smoking Cigarettes. Together with our client, we have decided to focus only on the first three of these clusters while working towards a solution for the challenge. According to our client, the clusters of Drinking Alcohol and Smoking Cigarettes are disease-based, which results in the necessary inclusion of professional healthcare in the solution for these problems. Since our challenge aims at triggering people to live more healthy years without relying on professional healthcare, these clusters do not fit our challenge. Therefore, we will only focus on Physical Activity, Nutrition, and Mental Health for this part of the report. We hoped to find a connection between these clusters that enables us to find a solution that still targets health in a broad sense.

#### **3.2 Personas**

To obtain a clear image of our end users, we have created personas. Since our challenge is broad, we decided to create multiple personas for an inclusive overview of our end users and to include our clusters in the best way. Some examples of our personas are demonstrated here.

First, we created Marijke de Boer, a 45 year-old woman who lives with her husband and son in a small village in Friesland. Marijke is taking care of her son and her parents next to

working at the local library. She suspects that her partner is suffering from depression, but when confronting him about this, he withdrew even further. She talks about this issue with her son, who is very open about it and concerned about his father.

Our second persona is Wendy Dijkhof. She is a 40 year-old single mother who lives in Leeuwarden. She works as a saleswoman in a shoe store next to studying part-time. Since her mother has passed away recently, and her father has hypertension, she has to take care of him as well. Working, studying, and taking care of her child and father takes a lot of time in Wendy's schedule, thus, she is struggling with getting enough physical activity every week and cooking healthy meals.

Finally, we created the persona of Maarten van der Laan. He is a 31 year-old divorced man with a 2 year-old child. He works full-time at a factory in the town he lives in and can only see his child during the weekends. Next to work, he dedicates a lot of his time to his parents, who are in bad health. They are both obese and suffer from multiple non-communicable diseases, even though they are not that old yet. He is worried about his weight because he can see that his parents are so unhealthy. Maarten wants to adopt a healthier lifestyle and support his parents in this, but he struggles because of his friends who tend to eat unhealthy foods.

As seen above, we have tried to include our clusters in our personas. Marijke struggles with her husband's mental health; Wendy struggles with getting enough physical activity, and Maarten wants to eat healthy and do sports. All the personas we have created are within our target group (30 - 50 year-olds) and have children/ parents to look after. For all the personas that we created, we refer to the appendix.

### 3.3 Customer journeys

Based on these personas, we created several customer journeys to obtain a clear understanding of the personas' positions in our challenge. It is noteworthy that we created each persona's customer journey in light of a different cluster.

The first customer journey is devoted to Marijke, which begins with her husband's mental health issues coming to her attention. Even though she tried to confront him about it, his withdrawal was an obstacle, which left her feeling helpless and alone. This helplessness was mostly a result of her lack of knowledge about mental health. The only expectation she had is for him to get better eventually, just like her mother did, who suffered from depression. For this reason, Marijke decided to seek knowledge by using the internet and a 'healthy living' app where she found trustworthy sources on how mental health problems arise, interventions, and hope. She proceeded to inform her husband about the insightful information she had gained, yet she did not solve the problem since he still did not feel able to ask for help. Even though Marijke thought that she had accomplished something since her husband did not instantly withdraw, she realized that she needs to be cautious with approaching him with conversations about his mental health. For this reason, she expected that support from external sources would be helpful and therefore set up a meeting with a therapist for her husband. Marijke had high hopes for this meeting, and she expected that the therapist would be able to convince her husband to start therapy. After a couple of weeks of therapy sessions and the constant support of Marijke, her husband started working on implementing new changes towards a healthier lifestyle to get rid of behaviors that are harmful to his mental health. This makes her proud of both herself and her husband, and she expects continuous support for her husband as long as it is necessary. She also hopes that her husband will continue to implement healthy behaviors.

As for the second persona, we created Wendy's customer journey in light of the physical activity cluster. Her journey began when she realized that her lifestyle lacked adequate physical activity since her job and errands related to her child's school took up most of her time. She was aware of the importance of physical activity for both her and her child; however, the limited amount of time she had to dedicate to physical activity left her hopeless. To seek knowledge, she looked at other busy single parents who had similar struggles to see how they handled this, which made her feel supported and hopeful that they will collectively find solutions. Wendy began to invite other parents to go on walks together; however, this proved to be impossible due to their busy schedules, which left Wendy with disappointment. She then turned to social media platforms that target single parents to gain some tips on how to tackle this problem, and even though she did receive some responses, she was still unsure whether those tips were going to work. Those responses made her happy yet doubtful; however, she expected that at least some of them will help to increase her physical activity. For the reasons mentioned above, she decided to implement the tips and experiment whether they are useful for her and her child, which left her hopeful.

The final customer journey is for Maarten, which is related to the nutrition cluster. Maarten was aware that he is prone to obesity and NCDs if he did not change his eating habits. He was also aware of the social pressure imposed by his coworkers and friends to eat out and drink alcoholic beverages, but he did not want to miss out on the social interaction. Since he lacked sufficient knowledge of healthy eating habits because his parents had not taught him that, he tried to reach out to alternative sources that provided information regarding healthy diets, such as lifestyle and nutrition apps, which made him happy. He expected that those apps would make the journey of losing weight easy and quick. After taking initial action, he realized that



such apps are difficult to follow consistently. For example, when he took a salad to work to eat at lunch break, he received mocking stares and comments from his coworkers for trying to be healthy and not joining them for the usual fast food. He, therefore, stopped having lunch with them and missed out on bonding time. For the reasons mentioned above, he stopped taking a salad, or other healthy alternatives, to work. Unfortunately, he also lacked the financial resources and time for consulting a nutritionist regularly, and for this reason, he felt defeated and was left with low expectations. However, he overcame the feeling of defeat and decided to talk to his next-door neighbor, who sometimes invited him for a healthy dinner. They exchanged healthy recipes that suit his busy lifestyle. His neighbor also introduced him to his other friends, who likewise followed a nutritious diet, which raised Maarten's hopes and motivation to lose weight, especially with support from his new friends. Therefore, he decided that spending time with a healthy group of friends and changing his environment and surroundings would facilitate the process of maintaining a healthy diet. By the end of the journey, he became proud of himself and expected long-lasting healthy eating habits and reaching a healthy weight, preventing NCDs.

### **3.4 Problem definition**

With the help of the personas mentioned above, we have defined the problem in more detail. There are recurring aspects within each cluster that seem to lead to unhealthy behavior, which is prevalent at the moment. From our personas, problems among the people crystallized. Problems with time management emerged several times. People with a full-time job who have children and their parents to care for often do not have enough free time. This makes them more inclined to opt for unhealthy meals that can be prepared fast and easily. This lack of time also often comes at the expense of their physical activity because they feel like they cannot exercise due to their many obligations. On top of that, a lack of knowledge on the importance of a healthy

lifestyle and the vast possibilities that already exist to maintain it, adds to the difficulties our target group faces when attempting to follow such a lifestyle. Concerning the mental health cluster, the problems mentioned above of time-management and lack of knowledge pile up because of the existing stigma.

This problem definition illustrates that there may be several reasons for the unhealthy lifestyle many people of the sandwich generation lead. It becomes evident that the three clusters that we have identified are more interconnected and do not stand on their own. Problems that emerged in one cluster can often be found in another. Our aim with this challenge is to keep targeting health in a multidisciplinary way while finding a solution to trigger people to live more healthy years. We want to achieve this by keeping the problems in mind and tackling their roots' primary issue.

### **3.4 The 'how might we?' questions**

After having defined the problem in relation to the personas that we have created, we came up with several "how might we" questions, as part of a workshop, that could guide us towards a feasible solution for the challenge. Most questions can be categorized into the intention of what problem we aim to solve by posing those questions.

We have phrased general 'how might we' questions so that they describe our intention for the challenge as a whole when answering them. Most questions go after adjectives, such as "encourage" or "support." By doing that, we aimed to stimulate a change in people's behavior and thereby establish new habits. Respectively, our main questions are: "How might we encourage our target group to motivate themselves and the people around them to be healthier?" And 'how might we support people with better time-management for healthy behavior?'

In the following step, we broke up the point of view. Since health or a healthy lifestyle as a whole can be an overwhelming concept, we have divided questions of the problems into manageable portions in the context of our three clusters. That way, a healthy lifestyle can be more accessible for individuals because they can target one problem area at a time or combine them according to their preferences. Here, most questions aimed to motivate people to customize their journey to a healthy lifestyle. Moreover, we hoped to instill new habits in our target group by offering ways to achieve that.

For our first cluster, Nutrition, the two main questions are: ‘How might we increase the access to low-cost healthy food products to the Frisian people?’ And ‘how might we motivate our target group to opt for healthy food options?’

For our next cluster, Physical Activity, the focus lies on the following questions: ‘How might we motivate our target group to exercise regularly?’ And ‘how might we create a working-environment that allows adequate physical activity?’

Lastly, for the Mental Health cluster, we came up with the following questions: ‘How might we normalize talking about the importance of people’s own mental health and those around them?’ And ‘how might we start an open discussion about mental health in Friesland?’

We have developed these questions specifically, not only concerning our personas but also by taking insights from field research into consideration. Interviewees often mentioned that they do not have time to exercise or that cooking a healthy meal is expensive. Additionally, they noted that there is a perceived stigma around mental health. To see a behavioral change, assumptions like these need to be invalidated by the people. That is why we chose to question these assumptions and help our target group see opportunities where they saw obstacles before. These questions will guide us to develop an appropriate prototype that will appeal to Friesland's

inhabitants and attempt to change their behaviors—thereby establishing new, healthy habits in them.

### **3.5 Conclusion**

To conclude, we further narrowed down our challenge within our ‘Define phase’ and decided upon focusing on three out of the five initial clusters. Within these three clusters, we set up several personas using statistics of our target group. We created one customer journey per persona, each in light of a different cluster. This provided additional insights and details regarding our target group. With the customer journeys in mind, we were able to find underlying connections between the three clusters. Firstly, what was prominent was the issue of tight schedules, numerous tasks, and the many expectations that they face, which often overwhelmed our personas. Secondly, a consensus is missing on healthy lifestyle information. This is the case in multiple respects, including what a healthy lifestyle entails. Finally, setting up several ‘how might we’ questions made us look at the challenge from different perspectives and with different approaches for a possible solution in mind.

Moving on from here, we will continue working on connecting the three clusters further and looking for additional interconnections among them. Eventually, we will be able to develop a solution that tackles as many aspects of the clusters as possible.

## **4. Ideate Phase**

In the ‘Ideate Phase’, we brainstormed various prototypes, which we then tested to see if they are impactful, feasible, and suitable to our challenge. The results from the testing, including feedback from our stakeholders, will help us design our final prototype further.

### **4.1 Introduction**

We had two full days of brainstorming for solutions in the ideate phase, creating prototypes, trying out test plans, and receiving feedback. These were called ‘Sprint Days’. On the first Sprint Day, four of us were asked to work on the other four challenges, and the rationale behind that is for us to have a change of perspective. However, our challenge was still assigned to one member of our team. We already had our personas and customer journeys and our ‘how might we’ questions that we formed accordingly. The remaining member had to observe and listen to the ‘alien’ group members who had to discuss our challenge from different perspectives. She had to create a prototype as a solution to our challenge together with them. The resulting prototype was a health competition on regional levels. As for the second Sprint Day, we had a full day of brainstorming and creating prototypes for our challenge. We came up with two prototypes, a Health Booth and a FitBus where we received feedback from other group members in the form of ‘what works’ and ‘what is still needed’. Afterwards, we pitched the FitBus prototype and the health competition to our client, and we also received constructive feedback from him. Since he dismissed some ideas while stating the reasons behind them, we gained a clearer picture of what he expects and what he thinks is feasible. As for making a test plan, we learned that it is good to start small, test it on a small scale, and then work out the product further. This is cost-effective and saves time. More essential insights are that it will be

challenging to include all three clusters in one solution and connect them. Furthermore, behavioral change and nudging techniques seem to be the most feasible solutions.

## **4.2 The process of idea selection**

During the workshops of this phase, we have come up with different ideas and created some prototypes. All of them shared some common ground but differed in other areas. For example, our primary goal was to target the sandwich generation of Friesland with the product. To achieve this, we considered the different personas and customer journeys. That way, we wanted to make sure that the product appealed to many people but could still be individualized. Furthermore, another critical aspect was that the product fit nicely into the three clusters of health by either incorporating them or combining them in one way or another.

Once an idea fit the criteria above, we would consider its feasibility. To what extent would the implementation of the product need access to financial means? On what scale could it be implemented in Friesland? How difficult would it be to execute? And how effective would it be? If these questions were answered, and the idea would not prove to fulfill the expectations, it would either be adjusted or dismissed. However, if it would be realistic and received positive feedback from our client, we would further work out the idea. We would then incorporate the feedback into the final product.

In the future, we would test the idea once it had been established and labeled as feasible. Depending on the possibilities regarding corona measures, we would seek direct or indirect feedback from members of the sandwich generation. Thereafter, we could adjust the idea further to suit the target group's needs better.

### 4.3 Solution brainstorming

When thinking about possible solutions, we intended to keep multiple aspects of our previous research and results in mind. We incorporated our desk research by looking at existing interventions focusing on healthy living in the region of Friesland and other countries to see if we could improve on them or gain knowledge and inspiration from them. Next to this, we conducted research on behavioral change, specifically health behavior changes, to learn what aspects to target within our solution to make it as useful as possible.

We took our field research results into account in the ideate process. We thought about essential aspects the participants mentioned during the street interviews, took our observations into account and tried to fit these within a possible solution. During the interviews, we asked every participant what aspects they thought should be improved to create a healthier society and how they would implement this. We compared their answers to see if there were topics to improve that were mentioned more often. In this way, we could see which topics might have an impact on our challenge.

Furthermore, we were focusing on the three clusters (Mental Health, Nutrition & Physical Activity) that came forth as most important out of our results. In the process, we tried to find a possible solution that could impact each of the three clusters simultaneously. This turned out to be a challenge; thus, we started looking into solutions fitting for one cluster at a time and intended to see whether we could combine these individual solutions into one.

Lastly, we also included our personas and their customer journeys in the ideate process. During our brainstorming sessions, we imagined our personas trying out our solutions. This made us more able to look critically at the solutions we established and see whether they fitted to alleviate our personas' struggles.

#### 4.4 Feedback of stakeholders

To develop a solution that fits both our client's and our end-users' needs, we incorporated the feedback of different stakeholders in the selection and improvement of a final solution.

In multiple workshops, we received feedback on different prototypes. We found it to be important that the final solution is easily accessible to a large audience. The idea of a personalized solution that also builds a sense of community, without excluding any generation, enjoyed popularity. According to members of other groups, it is essential to use multiple forms of promotion and access to the solution to be inclusive. Using only smartphone applications and social media might exclude older generations. Additionally, other groups received the feature of raising awareness on the importance of a healthy lifestyle positively. An aspect of one of our prototypes, the "FitBus," was that the solution comes to the people. According to the feedback we received in the workshops, this can be important, since this feature allows people to improve their lifestyle in terms of health in their own, familiar environment.

We also kept the insights we had gained from speaking with our client in mind. According to our client, a solution or strategy must work on more than one level to have a real impact. Social change can only happen when there is a change on the strategic, tactical, and operational levels. Moreover, these levels need to cooperate for the solution to make a lasting impact. Secondly, we learned the importance of the fact that learning goes both ways. To motivate people to change their behavior, it can be beneficial if they can also help someone else. Since our client told us that funding for prototypes such as the "FitBus" might be challenging to raise, we explored the possibilities of developing entirely new solutions or strategies and improving on solutions already in place. Feedback on our prototype of a "health competition"



between villages taught us that the idea of having towns compete with each other might stimulate a hostile atmosphere. However, the aspect of competition itself might be interesting in motivating people. Moreover, our client received the feature of connecting shops and people to promote the consumption of healthy foods positively. All the feedback and suggestions must be taken into account when developing a final solution to our challenge.

#### **4.5 Impactfulness and feasibility**

From the feedback which we had received from our client after presenting him our preliminary solution, the ‘FitBus”, we became more aware of the importance of considering feasibility. A solution that needed extensive funding and could only be implemented on a larger scale was unlikely to get implemented. Especially, having to pay for personnel would quickly lead to an excessive need for funding. Therefore, we have decided to develop a different, more feasible prototype. We explored nudging techniques and behavioral change further, as we knew such measures were feasible and based on an extensive body of research.

## **5. Prototype and test phase**

Using what we had learned in the Discovery phase, Define phase, and Ideate phase, we developed a final prototype as one solution to our challenge. We eventually decided to narrow down the challenge to only look at the cluster of Nutrition since we ultimately discovered in the Ideate phase that a prototype targeted at all clusters of health was too broad of a project. We encountered a need to make healthy nutrition accessible, time-efficient, attractive, and affordable. Mienskip Resepten aims to fill this need. We created a logo for our prototype which can be found in Appendix C.

### **5.1 The prototype**

The idea of our prototype is having Frisians send in their favorite, healthy recipes through multiple channels. This can be done via email, through social media, via the website or handing them in at a local collection point. The recipes then get checked by a team of a nutritionist and professional chef, who validate whether they are healthy and have good nutritional values. Once the recipes are printed out as a recipe card, they are delivered to local stores where people who do grocery shopping can pick them up. An example of recipe cards can be found in Appendix C. It includes an explanation of the recipe, a grocery list, price indication and a personal picture of the dish. On the established website and social media accounts more information about recipes, extra activities and ways to stay in contact with the community can be found, allowing the community to grow on multiple platforms. In order for this initiative to be successful, local stores and organizations can work together. Not only to support the initiative but also for their own benefits, in the form of increased sales and customer attraction.

Our prototype is based on psychological research on social and behavioral interventions. Firstly, Bandura's Social Learning Theory (1977) posits that through vicarious learning, people adopt the behavior displayed by those around them. The likelihood to imitate behavior is higher when the model is perceived as similar to oneself. We therefore hope that once our initiative is implemented, vicarious learning will aid in the process of having people join our community. Moreover, self-efficacy plays an important role in health literacy in general and in the foundation of our prototype. The concept of self-efficacy relates to individually held beliefs of one's own capabilities to perform specific tasks (Bandura, 1977). Therefore, we keep the threshold to join the initiative low in order to attract people, especially those that either might not have sufficient knowledge in nutrition or motivation to eat healthily. Self-efficacy proves to be a good predictor of short- and long-term success (Schunk et al., 1984). Furthermore, we took the health belief model into account which posits that "individuals will take action [...] if they believe that the anticipated barriers to (or costs of) taking the action are outweighed by its benefits" (Rosenstock, 1990, pp.43-44).

## **5.2 The goal**

So, what is the goal of our mission? What do we want to achieve with Mienskip Resepten? First and foremost, we plan to establish a community that consists of local people who want to become healthier but want to do so in a time-efficient manner. As we target people in Friesland, we will provide the information in a Frisian and Dutch combination. Besides the language, the design will also have a local theme. Additionally, we will try to keep most ingredients of the recipes fresh, regional, and seasonal.

Various platforms, through which our clients will be able to communicate and retrieve the newest recipes, will help build up a community. Next to multiple social media accounts,

including Instagram and Facebook, we will have a main website and distribute recipe cards in local supermarkets and other stores. We hope to reach as many people as possible to be part of a healthy wave, enjoying nutritious and tasty food.

The recipes are provided by locals for locals, and online profiles, as well as recipe cards, can be individualized. People who send in recipes are encouraged to add a short personal story about the recipe describing where the recipe is from and why it is important to them. This provides a personal touch and assures that there is interaction with real people. We aim to connect and are open to everyone!

Our next expected achievement is the feasibility of our undertakings. We aim to keep the threshold for joining Mienskip Resepten low because we have the mission to facilitate healthy eating without causing any additional trouble. To maintain this low threshold, the only condition is that the recipes contain fresh and non-processed ingredients. That way, the recipes fit the message of Mienskip Resepten. Recipe cards will provide all the information needed, including a shopping list, expected expenses, estimated cooking time, and what diet (e.g., vegetarian or vegan) it fits. This helps with choosing only the ones that lie within personal preference, budget, and the available time schedule.

Of course, the utmost importance is the factor of creating a healthier community and a shift towards healthy meals and eating habits. People like their fries and fatty dishes, which is not worrisome if enjoyed occasionally, but it becomes problematic when there is no healthy alternative or variant. We want to be precisely that variation. A secure platform for everyone where anybody can discover something tasty, which is assured to do good!

### 5.3 Factors of success

To ensure the success of Mienskip Resepten, a certain level of commitment from the people involved is needed. A team of professionals needs to establish a platform where people can easily and comfortably choose recipes that fit their needs while interacting with other people in their community. This interaction between community members is a vital aspect of the project since one goal is to encourage people to support each other. Therefore, once a safe platform is offered, enthusiastic people can participate in the project and send in healthy recipes. The connection between committed Frisians and a dedicated team of professionals who can advise and encourage them will eventually ensure this project's success and, in the best-case scenario, lead to a healthier community. However, it is necessary to keep the community engaged in the project long-term to effect change in their eating habits. We can achieve this by frequently offering new recipes and providing the opportunity to interact with people via social media platforms. There are many possibilities to make the community an essential part of the project, not only by sending in the recipes but also by engaging them with other challenges and activities.

Another critical factor is that this project can be implemented quickly to gather recipes and promotion, mainly because only a small number of people are needed for this small-scale intervention. After initial successes, the project can be developed further into a large-scale intervention, including other villages or cities in the area. Yet, the focus should remain on building a local community. Additionally, by continuously engaging the people and offering new and exciting recipes made of seasonal ingredients, Mienskip Resepten has the potential to be a long-term project.

In terms of financing, initial investments for promoting the recipes cards and website will be needed. But since most of the promotional work will be done online, either directly on the

website or via social media platforms, the costs can be kept to a minimum. In later stages of the project, the costs will include printing recipe cards and flyers and paying the experts' team. The cards and flyers will be made available at different places in the town, such as supermarkets and community centers. By encouraging people to help each other and work together, the costs for staff and team members can be kept low as well. From a long-term perspective, there might be a possibility to gain money through advertisements and collaborations with different local farmers or supermarkets.

#### **5.4 The team**

The team consists of supervisors, professionals, supermarkets, and sponsors. Even though the GGD will be responsible for finalizing proposals and initiating negotiations with other parties to start up this project, it is essential to note that this is a community project that requires the participation and engagement of different community actors. For this reason, all the contracting parties would have to oversee the implementation and development of this project according to any agreed terms. This could include financial contributions or benefits.

There will be a wide range of professionals, increasing their variety and size as the project grows. Initially, professionals such as nutritionists, chefs, social media officers, a promotion team, a website designer, and a development professional are of utmost importance to this project's start-up and success. The nutritionists' role is to decide which recipes are healthy and which are not, thereby selecting which recipes are to be displayed. They are also required to set standards for what 'healthy' is and give feedback and points to develop an unhealthy recipe into a healthy one. To provide healthy alternatives, the cooperation with a chef/professional cook is of significance. The chef will therefore utilize their expertise to share a healthy and tasty recipe. The social media officers will have control over the Facebook and Instagram accounts of

this project. They will use their marketing skills to make this project as appealing as possible. Their task will consist of posting the recipes, creating online challenges, and keeping the people engaged. As for the promotion team, their duties lie near the social media officers; however, an extra task is to make sure that the flyers and recipe cards are printed and distributed in the right locations. An example of such a flyer can be found in Appendix C. The website designer will have to update the website with all the recipes provided and add the nutritional value in more detail (with the nutritionist). The website must be very detailed and easy to navigate. Clients should be able to filter any allergies or specific nutritional diets to find the desired recipes and ensure a consumer-friendly experience. Furthermore, a development professional is required to keep track of this project's success by assessing the activity and engagement of the people. Moreover, such professionals will have to provide future developments and improvements to this project along the way. Finally, a finance expert will be in charge of tracking the financial affairs.

Another vital part of the implementation is cooperating with supermarkets where the flyers and recipe cards will be distributed. If an agreement is concluded between the GGD and any supermarket, they will be asked to distribute the recipe cards in strategic locations. Perhaps the entrance or next to the main ingredients of the recipe.

## **5.5 Challenges & Voids**

While developing this initiative, multiple challenges came to light. The first challenge to tackle is the competition with similar projects and initiatives. Some examples of these initiatives are recipes offered by supermarket chains like Albert Heijn or the food boxes of Hellofresh. To launch Mienskip Resepten, one needs to think about a way to make it stand out. It is important to emphasize how this project is different from others to attract people. Mienskip Resepten stands out from competing initiatives because of its local and community-building nature. Moreover,

recipes offered by big chains are impersonal, while Mienskip Resepten is a project people can join themselves in. These aspects of the project need to be emphasized when introducing it to the public.

Furthermore, another challenge that needs attention is the promotion of the initiative. Within this challenge, multiple questions are raised. It needs to be considered which promotion strategy effectively reaches as many people as possible while maintaining a low threshold. In this respect, our target group must not have to put in too much effort to join the project or find information about it. Specific aspects of promotion strategies should be considered: what flyers, posters, and social media posts should include visually and informationally to grab someone's attention and convince them to participate in this project. An example of a flyer and poster can be found in Appendix C. Moreover, the project needs a plan for its social media representation. This plan entails what social media platforms are being used and what kind of posts and activities are published. For the social media platforms, we recommend using both Instagram and Facebook to target multiple age-groups.

Lastly, it might prove to be challenging to keep the project going once it has been launched. Steps that should be taken to maintain the level of excitement and engagement with the project on a long-term basis are still open to further investigation. Such actions will lead to a long-lasting, positive effect on participants. The idea is to create challenges in which participants can engage, for example, who can upload the most recipes in a specific period, or who uses the platform most.

There are some crucial aspects of our project that need further investigation. First of all, the funding necessary for the promotion, implementation, and future growth of Mienskip Resepten has not been investigated adequately. Funding will be provided by the different parties



collaborating as a community on the project. However, since we do not know the budget and resources of potential partners or the amount of funding needed, we do not have the means to finalize this investigation. Another important aspect is the cooperation with the local municipality, supermarkets, schools, and any other collaborating parties. We neither know about local stores nor organizations' willingness to work with us on this project nor do we know on what scale (e.g., how many stores) the project will be implemented.

## **5.6 End-user feedback**

During the development of the prototype, we collected feedback from several end users. It was indicated that they especially liked the inclusive and easily accessible design of our prototype. Furthermore, not only people from within our target group, the sandwich generation but also other age groups claimed they would make use of this prototype. On the other hand, some of our end users were afraid the recipes provided would be too difficult for them to make or understand. For example, one of the participants questioned whether our recipe cards were accessible enough for people with a low literacy level. We decided to put symbols on the recipe card to make it as inclusive as possible.

## **5.6 Conclusion**

By developing this prototype, we aspire to build a healthy community within the Frisian population. Knowledge and ideas on nutritious food and healthy recipes should become easily accessible to everyone. Therefore, there are multiple ways to join the health-wave and access the Mienskip Resepten, which are tailored to various lifestyles and age groups' needs. This prototype provides a way of implementing a healthy diet into one's life in an accessible,

affordable, and time-sensitive manner while also building a community sense. Recipes for the community, by the community!

## **6. Conclusion**

In conclusion, our initial aim was to find a solution to the challenge 'How might we trigger individuals and communities alike to enjoy more healthy years?', which was given to us by the GGD Friesland. In recent years, the age distribution in the Netherlands, and Friesland especially, started to shift towards older ages. While this increasing age of the population might be perceived as a sign of health, unfortunately, it is accompanied by several age-related diseases and complications. As a consequence, a higher demand for professional healthcare arises, which poses a serious concern. New solutions are needed to alleviate the pressure on the healthcare sector and support the ageing population to enjoy a future in good health.

During our Discovery phase, we have seen that a shift to move from the currently employed problem-focused healthcare system to a prevention-focused approach is needed in the Netherlands. The need for such a change became evident from our field research, especially through interviews with experts in different fields connected to health and healthcare. Additionally, our desk research revealed the significance of taking a look at health from a holistic perspective with the biopsychosocial model. With this broad view in mind, we developed our initial research question: 'How do different groups of people in the northern Netherlands experience health?'.

With a broad view in mind and the results from the initial field and desk research, we have developed five clusters to define health in Friesland more accurately. These clusters are Nutrition, Physical Activity, Mental Health, Smoking Cigarettes, and Drinking Alcohol. The

impact of each cluster, or rather combinations thereof, on the health of individuals differ depending on education level or socioeconomic status. We aimed at finding a solution within those clusters that can be applied to every member of the population without favoring those with higher (health) literacy. In order to target as many people as possible, we have set our target group to be the so-called ‘sandwich generation’, intending to reach three generations at once. The sandwich generation consists of 30 - 50 year-olds who often have to take care of their children and parents. Thus, by instilling new healthy habits in this generation, the other two generations can be influenced indirectly and an overall healthier population can arise.

We continued with the Define phase, in which we took a closer look at the problems that our target group is facing concerning their health and the causes that might be leading to health concerns in the long-term. Since within our target group the clusters Nutrition, Mental Health, and Physical Activity contribute most to health, the other two clusters were left out, in accordance with the client. To paint a clear image of the challenges that the sandwich generation is facing, we have created personas and corresponding customer journeys. With the help of these, we were able to define the problem more accurately. We have evaluated recurring aspects that affect the health of our target generation. These aspects were lack of time, knowledge, and, in terms of mental health, the existing stigma.

Lastly, in the Ideate phase, we came up with different ideas for prototypes that could tackle the problems we have defined earlier. The prototypes aimed to include previous findings and tackle the issues that our target group faces at the root. We decided to focus on the Nutrition cluster and aid people who have difficulties cooking healthily due to time restraints or knowledge gaps by offering a new platform called Mienskip Resepten. The underlying idea is to alleviate the pressure on healthcare professionals by building a strong and health-conscious

community by encouraging people to send in local, affordable, and above-all healthy recipes, which will be made available throughout the city and online. This is intended to strengthen communities in Friesland while simultaneously establishing healthy cooking with local ingredients as a new norm.

To summarize, by introducing Mienskip Resepten, we strive to start uncovering the people's hidden potential to enable them to enjoy more healthy years.

## References

- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bazer, Gina. (2016, July 1). *The 9 Motivations for drinking alcohol*. Retrieved from:  
[https://www.halversongroup.com/our-solutions/jobstobewon\\_blog\\_the-9-motivations-for-drinking-alcohol/](https://www.halversongroup.com/our-solutions/jobstobewon_blog_the-9-motivations-for-drinking-alcohol/)
- Booth, F. W., Laye, M. J., Lees, S. J., Rector, R. S., & Thyfault, J. P. (2008). Reduced physical activity and risk of chronic disease: the biology behind the consequences. *European journal of applied physiology*, 102(4), 381-390.
- Cacioppo, J. T., & Patrick, W. (2008). *Loneliness: Human nature and the need for social connection*. New York, NY: Norton.
- CBS (2020, October 30). *Regionale Kerncijfers Nederland*. Retrieved from:  
<https://opendata.cbs.nl/statline/#/CBS/nl/dataset/70072NED/table?fromstatweb>
- CDC. (n.d.). (2020, October 1). *Drinking too much alcohol can harm your health. Learn the Facts*. Retrieved from:  
<https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm#:~:text=Over%20time%2C%20excessive%20alcohol%20use,liver%20disease%2C%20and%20digestive%20problems.&text=Cancer%20of%20the%20breast%2C%20mouth,esophagus%2C%20liver%2C%20and%20colon.>
- Ekelund, U., Steene-Johannessen, J., Brown, W. J., Fagerland, M. W., Owen, N., Powell, K. E., ... & Lancet Sedentary Behaviour Working Group. (2016). Does physical activity attenuate, or even eliminate, the detrimental association of sitting time with mortality? A

harmonised meta-analysis of data from more than 1 million men and women. *The Lancet*, 388(10051), 1302-1310.

GGD, & de Graaf, M. (2017). *Gezondheidsmonitor 19+ - GGD Fryslân*. Ggdfryslan.nl.

Retrieved from:

<https://www.ggdfryslan.nl/professionals/cijfers-en-onderzoek/gezondheidsmonitor-19plu/>

Gowdy, L. D., & McKenna, M. (1994). A healthy diet: whose responsibility?. *Nutrition & Food Science*.

Grundy, E., & Henretta, J. (2006). Between elderly parents and adult children: A new look at the intergenerational care provided by the 'sandwich generation'. *Ageing and Society*, 26(5), 707-722. doi:10.1017/S0144686X06004934

Hawkey, L., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, 40, 218–227.

Huber, M. (2011). HEALTH: HOW SHOULD WE DEFINE IT? *BMJ: British Medical Journal*, 343(7817), 235-237. Retrieved November 6, 2020, from <http://www.jstor.org/stable/23051314>

Khodaei, G. H., Emami Moghadam, Z., Khademi, G., & Saeidi, M. (2015). Healthy diet in children: facts and keys. *International Journal of Pediatrics*, 3(6.2), 1183-1194.

Kononova, A., Li, L., Kamp, K., Bowen, M., Rikard, RV., Cotten, S., & Peng, W. (2019) *The Use of Wearable Activity Trackers Among Older Adults: Focus Group Study of Tracker Perceptions, Motivators, and Barriers in the Maintenance Stage of Behavior Change*. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6473213/>

- Mackenbach, J. P., Damhuis, R. A., & Been, J. V. (2017). The effects of smoking on health: growth of knowledge reveals even grimmer picture. *Nederlands tijdschrift voor geneeskunde*, 160, D869-D869.
- Mikkelsen, K., Stojanovska, L., Polenakovic, M., Bosevski, M., & Apostolopoulos, V. (2017). Exercise and mental health. *Maturitas*, 106, 48-56.
- Miller, D. A. (1981). The 'sandwich' generation: Adult children of the aging. *Social Work*, 26(5), 419-423.
- Te Pas, M. (2018, October 1). *Early detection of diet-induced metabolic disease*. Retrieved from: <https://www.wur.nl/en/newsarticle/Early-detection-of-diet-induced-metabolic-disease.htm#:~:text=An%20increasing%20proportion%20of%20the,%2C%20and%20cardio%2Dvascular%20diseases.>
- Poos, P.J.J.C. and van der Wilk, E.A. (2020, June 18). *Gezonde levensverwachting samengevat*. Retrieved from: <https://www.volksgezondheidenzorg.info/onderwerp/levensverwachting/cijfers-context/infographic>
- Rattan, S. I. (2013). Healthy ageing, but what is health?. *Biogerontology*, 14(6), 673-677. RIVM. (2006). *Our food, our health* (Nr. 270555009). Retrieved from: <https://www.rivm.nl/bibliotheek/rapporten/270555009.pdf>
- RIVM. (2017, November 13). *Healthy nutrition*. Retrieved from: <https://www.rivm.nl/en/healthy-nutrition>
- Room, R., Babor, T., & Rehm, J. (2005). *Alcohol and public health. The Lancet*, 365(9458), 519–530. doi:10.1016/s0140-6736(05)17870-2

- Rosenstock IM. The health belief model: explaining health behavior through expectancies. In: Health behavior and health education. Theory, research, and practice. San Francisco: Jossey-Bass Publishers, 1990:39 – 62.
- Schunk D, Carbonari J: Self-efficacy models, in Matarazzo J, Weiss S, Herd J, Miller N, Weiss S (eds): Behavioral Health: A Handbook of Health Enhancement and Disease Prevention. New York, NY, John Wiley & Sons, 1984
- Seker en Sûn, (n.d.). Samen voor de beste zorg in 2030. Retrieved from: <https://www.sekersun.frl/over-het-project/ontstaan>
- Seegerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychological Bulletin*, 130, 601–630.
- Voedingscentrum. (n.d.). *Gezond eten met de Schijf van Vijf*. Retrieved from: <https://www.voedingscentrum.nl/schijfvanvijf>
- Volksgesondheidszorg. (n.d.). Retrieved from: <https://www.volksgesondheidszorg.info/onderwerp/atlas-vzinfo/alle-kaarten#G>
- Wade, D. T., & Halligan, P. W. (2017). The biopsychosocial model of illness: a model whose time has come. *Clinical Rehabilitation*, 31(8), 995–1004.  
<https://doi.org/10.1177/0269215517709890>



## Appendix A

### Personas

Statistics on Friesland have been taken into account in the creation of part of the personas.

#### **Bart Boonstra** (31-years-old)

- 1 child, Daan (1-year-old)
- Lives together with his wife in a flat in Leeuwarden
- Has a bachelor's degree in international relations
- Works for the government
- His wife is currently working part-time, to spend more time with Daan
- The wife works as a primary school teacher
- Both of Barts parents are still alive and live in a smaller village outside of Leeuwarden
- They are in relatively good health (considering their age), his dad has diabetes, but he manages well, and they are very autonomous
- They usually visit them each weekend
- His wife's parents died some years ago already in a car accident
- The two bike a lot and like to go for walks together with Daan
- When it comes to food it usually has to go fast – sometimes fresh ingredients are in reach but if they aren't, a less healthy choice makes it on the table
- For the wife, these times are stressful, having a new-born, she struggles with fatigue and does feel tense most of the time.

#### *Goal/need:*

- having a more balanced life & eating healthier (diabetes runs in families)

**Marijke Boer (45-years-old)**

- Lives in a small village in Friesland
- Has a partner and they have one son
- They live close to her family's home, where her parents live on a small farm
- The parents are already quite old and not as fit as they wish anymore
- Some daily chores need to be done by Marijke or her son for them, such as grocery shopping once a week
- Her partner is not feeling his best anymore for some time already, and Marijke suggests that he might suffer from depression but when she confronted him with this idea once he got very angry and withdrew even further
- He still manages to work in a local shop
- Marijke is working in the village's library

*Behavior:*

- Has recently read about mental health issues, how they develop and what different kinds of treatment possibilities exist
- She can openly talk about her concerns with her son, he seems very understanding and also concerned about his dad
- Marijke bikes to the library every day (15 minutes ride), no matter the weather, but apart from that she does not do any other physical activity

*Goals/Needs:*

- better communication with her partner about mental health
- she doesn't know this herself, but she should be eating a healthier diet

**Laura de Jonge (42-years-old)**

- 42 years old
- Lives in a small town in Friesland
- Married
- 2 children, 11 and 7 years old. The eldest is just in the first year of high school and has to bike 1 hour to get there. The youngest is still going to school in the town and needs to be brought to school.
- Works part-time at a bookstore in a different part of Friesland. She drives to work for half an hour every day by car.
  - Husband works as an accountant in the village
  - “Average” income
- Her parents are around 75 y/o. Her father is in relatively good health for his age, but her mother shows signs of early-onset dementia and is in increasing need of care and attention (a source of stress/worry).

*Behavior:*

- Laura likes her job a lot, but it can be difficult to time it with bringing her youngest kid to school
- Laura is free on Fridays, and she visits her parents for a cup of coffee every Friday morning.
- On Monday evening, Laura often goes for a walk with a friend of hers to chat. However, Laura often tries finding excuses to not go for the walk, either because of the weather or that it's too dark because she doesn't feel like walking.

- Laura wants to have the kids do sports outside of school; however, this is very expensive, so she relies on the P.E. classes in school.

*Goals/Needs:*

- Laura believes that a healthy lifestyle is important but is often confused by the amount of information there is (a lot of contrasting information).
- Laura wants her kids to be healthy. However, she feels like she's losing control in this regard over her eldest, she often hears stories that high school kids buy unhealthy foods in the break.
- Laura wants to help her father take care of her mother more, but she doesn't have the time. They're considering homecare, but this might be too expensive.

**Maarten van der Laan** (31-years-old)

- Divorced, has one young kid (2-years-old)
- Works full-time at a factory in Friesland, in the town where he lives
- Since he is divorced and works full-time, he only sees his child most weekends.
- His parents are 60 and 70 years old and in bad health. They are both obese and have troubles with their heart etc. Maarten also struggles with his weight and it worries him to see his parents like that, not that old yet, but already in need of care for something preventable

*Behavior:*

- He is super worried about his weight because he can see that his parents are so unhealthy. He wants to live a healthier life and also help his parents with this, but he finds it hard

because of his friends – they often go out for beers and snacks and he doesn't want to miss out. Also, at work, his work buddies often go out for fries or something in the break and he always goes with them because it's nice to have a chat in the break.

- Sports have never been something that Maarten was encouraged to do by his parents or in school, so he doesn't regularly do physical activity. He only bikes to his work, which is a 20-minute bike ride.
- Since he works full-time, he often has a quick meal when he gets home, often pre-made dinners – these contain a lot of salt, but he isn't aware of this.

#### *Goals/needs*

- Maarten needs clear information on what healthy is, how to incorporate making healthy choices in his own life – despite peer pressure and a busy schedule.
- Maarten needs either his current peers to support healthier choices or different peers which support healthy choices
- Maarten needs his parents to also live healthier, he is worried about them.
- Maarten's goal is to raise his young kid to not make the same bad choices. But it's hard because he doesn't see his kid that often, only on the weekend. He feels out of control.

#### **Laurens van der Laan (35-years-old)**

- Married (47,5% of the Friesian population)
- Living in a village (most people in Friesland do not live in an urban region)
- Has 2 children (more households have children than without, 32,7%) (5 and 12 years old)
- Finished mbo education
- Works as a nurse (most people work in the O-U sector, non-commercial sector)

- Average income
- Has parents, both just stopped working (AOW age, around 70)

*Behavior:*

- Laurens has different schedules and times he works at every week; this is why he is not always available to take care of the children or get them from school for instance.
- Because of his work, Laurens does a lot of physical activity every day, but it also causes him to have less time or motivation to do sports outside of his job
- His wife does have a part-time job as a primary school teacher, so there is always a parent-free in the evening.
- Laurens often eats his dinner at the cafeteria at his job, otherwise, he eats at home but his wife cooks and does groceries more often (does not have optimal control over his diet or the diet of his children, lack of knowledge about diets)
- Does not have a lot of time left to take care of his parents

*Goals/needs:*

- Wants to care for his parents but is not able to provide it himself. His goal would be to have them live as healthy as they can so they will need less help.
- Despite not always having a lot of time to take care of his children he wants to use the time he has with them to educate them about living healthy so they can make responsible choices by themselves when he is not around.
- Overcome the inconsistency in his schedule to make sure he and his family are living as healthy as they can.

**Wendy Dijkhof (40-year-old)**

- Woman

- Single mother
- Lives in Leeuwarden
- Has 1 child, 13-years-old
- Is following an hbo education (part-time) after graduating from a mbo education
- Works as a saleswoman in a shoe store
- Her father is still alive, but his health is decreasing due to cardiovascular issues (hypertension)

*Behavior:*

- Since she works and studies, she has a very busy schedule, she tries to schedule these things as much as she can during the high school times of her child, so they have time together.
- Since she is the only parent she decides about their dinner and lifestyle. She wants them to live healthily but does not know how to combine this with her busy schedule. She believes when having not that much time to cook, most options left are unhealthy and that she has no choice in that regard to eating healthily.
- On the weekends she has 1 day free of school and work and keeps this day free to do sports and visit her father.

*Goals/Needs:*

- Wendy wants to provide her child with a good and healthy lifestyle but is not always sure what she can or cannot control within their lifestyle.
- She also wants to do more physical activity than a couple of hours on one day of the week (since her job or school is not that active)

- She wants to make sure that she can take care of her father even though his health is decreasing.

**Femke van de Straat** (39-years-old)

- Owns Bakery, family business
- Retired parents
- Married to Alberto, Three children (12-, 9-, and 8-years-old)

*Behavior:*

- Works early in the morning, until 4 pm
- Visits her parents as often as possible (usually 2-3 times a week)
  - Her parents help take care of the children (they go there after school)
- She and her husband both work full-time
- Likes to drink a glass of wine in the evening, on free days more
- Tries to be active with her family on the weekends (go for walks)
  - Every Sunday: Family day, cook together (only day they eat fresh)

*Attitude:*

- Goals
  - Eat healthier more often in the week
  - Learn more about a healthy diet, especially for her children
  - Lose weight
- Quotes
  - “Just because my husband is Italian, does not justify us eating Pizza so often”
  - “Bread is healthy, but not a substitute for fresh vegetables”

**Fedde Boer** (35-years-old)



- Works full-time at a supermarket, Groente afdelingsmanager
- Father died; the mother is retired (retirement home)
- Married, one child (4-years-old)

*Behavior:*

- His wife works part-time to take care of their toddler
- He often gets the groceries; focuses on fast and cheap products, not on healthy ones
  - He rarely cooks
- Smoked for 10 years, has been trying to stop on/off for four years
- Hobby: long-distance running, participates in marathons
- Visits his mother approximately every 10 days

*Attitude:*

- Goals
  - Quit smoking for real
  - Take more time for cooking/ helping his wife → more healthy alternatives
  - Visit his mother more often
  - Establish a healthy environment for his son
- Quotes
  - “When I’m running, I feel healthy” “The competition with my brother is what keeps me going”
  - “I have never focused on healthy eating before, but I want to be a good role model for my son”

## Appendix B

### Customer Journeys

- Nutrition

Persona: Maarten van der Laan

- 31-years-old
- Divorced, has one young kid (2-years-old)
- Works full-time at a factory in Friesland, in the town where he lives.
- Since he is divorced and works full-time, he only sees his child most weekends.
- His parents are 60 and 70 years old and in bad health. They are both obese and have troubles with their heart etc. Maarten also struggles with his weight and it worries him to see his parents like that, not that old yet, but already in need of care for something preventable.

#### Behavior

- He is super worried about his weight because he can see that his parents are so unhealthy. He wants to live a healthier life and also help his parents with this, but he finds it hard because of his friends – they often go out for beers and snacks and he doesn't want to miss out. Also, at work, his work buddies often go out for fries or something in the break and he always goes with them because it's nice to have a chat in the break.
- Sports have never been something that Maarten was encouraged to do by his parents or in school, so he doesn't regularly do physical activity. He only bikes to his work, which is a 20-minute bike ride.

- Since he works full-time, he often has a quick meal when he gets home, often pre-made dinners – these contain a lot of salt, but he isn't aware of this.

#### Goals/needs

- Maarten needs clear information on what is healthy, how to incorporate making healthy choices in his own life – despite peer pressure and a busy schedule.
- Maarten needs his parents to also live healthier, he is worried about them.
- Maarten's goal is to raise his young kid not to make the same bad choices. But it's hard because he doesn't see his kid that often, only on the weekend. He feels out of control.

Table 1

#### *Customer Journey - Maarten van der Laan*

| Stages     | Awareness                                                                                                                                                                             | Seeking knowledge and motivation                                                                                                    | Taking action                                                                                                                                                                                                                         | Seeking help                                                                                                                                    | Implementing changes                                                                                                                                                   |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Activities | He is aware that he is prone to become obese and suffer from NCDs if he does not change his eating habits. He is aware of the social pressure of eating out/drinking by his coworkers | He tried to reach out to alternative sources that provide information regarding healthy diets such as lifestyle and nutrition apps. | He realized that such apps are difficult to follow. For example, when he takes a salad to work to eat at lunch break, he receives mocking stares and comments by his co-workers. He also stopped having lunch with them and therefore | He talks to his next-door neighbor who sometimes invites him for a healthy dinner. They exchanged healthy recipes that suit his busy lifestyle. | He decides that spending time with a healthy group of friends and changing his environment and surroundings will facilitate the process of maintaining a healthy diet. |

|                 |                                                                                                                                                                                        |                                                                                   |                                                                                                                                                                                                       |                                                                                       |                                                                                               |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|                 | and friends, but he does not want to miss out on the social interaction. He lacks sufficient knowledge of healthy eating habits because his parents did not teach him that.            |                                                                                   | missed out on bonding time. For the aforementioned reasons, he stopped taking a salad to work. Unfortunately, he also lacks the financial resources and time for consulting a nutritionist regularly. | His neighbor also introduces him to his other friends who also follow a healthy diet. |                                                                                               |
| Feeling & Needs | He is feeling neutral about it. This is because he's aware of the problem, however, did not succeed in solving it so far. He feels helpless because all his attempts are unsuccessful. | Ecstatic                                                                          | Defeated                                                                                                                                                                                              | Hopeful                                                                               | Proud                                                                                         |
| Expectations    | He begins his journey with low expectations because he knows he lacks knowledge and is aware of the social pressure.                                                                   | He is expecting those apps to make the losing weight journey very easy and quick. | He expects that he won't be able to lose weight as long as he's busy and financially strained.                                                                                                        | He expects this to motivate him to lose weight and to have constant support.          | He expects long-lasting healthy eating habits and reaching a healthy weight, preventing NCDs. |

- Physical activity

Persona: Wendy Dijkhof

- Woman
- Single mother
- 40-years-old
- Lives in Leeuwarden
- Has 1 child, 13-years-old
- Is following an hbo education (part-time) after graduating from a mbo education
- Works as a saleswoman in a shoe store
- Her father is still alive, but his health is decreasing due to cardiovascular issues (hypertension)

Behavior

- Since she works and studies, she has a very busy schedule, she tries to schedule these things as much as she can during the high school times of her child, so they have time together.
- Since she is the only parent she decides about their dinner and lifestyle. She wants them to live healthily but does not know how to combine this with her busy schedule. She believes when having not that much time to cook, most options left are unhealthy and that she has no choice in that regard to eating healthily.
- On the weekends she has 1 day free of school and work and keeps this day free to do sports and visit her father.

Goals/needs

- Wendy wants to provide her child with a good and healthy lifestyle but is not always sure what she can or cannot control within their lifestyle.

- She also wants to do more physical activity than a couple of hours on one day of the week (since her job or school is not that active)
- She wants to make sure that she can take care of her father even though his health is decreasing.

Table 2

*Customer Journey - Wendy Dijkhof*

| Stages          | Awareness                                                                                                                                                                                            | Seeking knowledge and motivation                                                                                                                             | Taking action                                                                                                                | Seeking help                                                                                                                                                                                      | Implementing changes                                                                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Activities      | Wendy is aware that she doesn't have a lot of physical activity in her current lifestyle with work and school. She knows that physical activity is important for her health, but also for her child. | Wendy looked at other busy single parents to see how they handle this. She talks to other parents and realizes that they have the same or similar struggles. | She asks another single parent to go for walks together. However, no one has free time to do this at the same time as Wendy. | She turns to some social media platforms for single parents to gain some tips about how to tackle this problem. She does get some responses but is not sure whether these tips are going to work. | She decides to try and implement the tips she gained and see whether they are effective for her and her child. She knows not all will be helpful for her, but some might. |
| Feeling & Needs | She feels a little helpless because she wants more physical                                                                                                                                          | She feels supported since she is not the only one with                                                                                                       | Excited, then sad.                                                                                                           | She was happy when getting responses to her                                                                                                                                                       | She feels hopeful when implementing the tips in her lifestyle because she                                                                                                 |

|              |                                                                                                                           |                                                         |                                                                             |                                                                                                                                 |                                                                                                                                                                                |
|--------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | activity for herself and her child, however, she doesn't feel like it's possible with the limited amount of time she has. | the problem.                                            |                                                                             | question but also doubtful when reading them.                                                                                   | thinks one will help her.                                                                                                                                                      |
| Expectations | She has low expectations at first, she doesn't feel like she can make a big change.                                       | She feels hopeful that they can figure it out together. | She expected that doing the activity with someone else will make it easier. | She expects one of these tips might be effective for her situation and make it easier for her to become more physically active. | She believes one or two tips from single parents online will help her and her child to get more physical activity and feels less helpless because she has some changes to try. |

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- Mental health

Persona: Marijke Boer (45-years-old)

- Lives in a small village in Friesland
- Has a partner and they have one son
- They live close to her family's home, where her parents live on a small farm
- The parents are already quite old and not as fit as they wish anymore
- Some daily chores need to be done by Marijke or her son for them, such as grocery shopping once a week

- Her partner is not feeling his best anymore for some time already, and Marijke suggests that he might suffer from depression but when she confronted him with this idea once, he got very angry and withdrew even further
- He still manages to work in a local shop
- Marijke is working in the village's library

Behavior:

- Has recently read about mental health issues, how they develop and what different kinds of treatment possibilities exist
- She can openly talk about her concerns with her son, he seems very understanding and also concerned about his dad
- Marijke bikes to the library every day (15 minutes ride), no matter the weather, but apart from that she does not do any other physical activity

Goal:

- better communication with her partner about mental health
- she doesn't know this herself, but she should be eating a healthier diet

Table 3

*Customer Journey - Marijke Boer*

| Stages     | Awareness                                              | Seeking knowledge and motivation                            | Taking action                                                   | Seeking help                                         | Implementing changes                                         |
|------------|--------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------|
| Activities | Marijke became aware that her husband has some kind of | Marijke informs herself on the internet and uses a 'healthy | Once Marijke has gained some substantial knowledge about mental | After initial hesitations, Marijke sets up the first | After some weeks of therapy, Marijke supports her husband at |



|                 |                                                                                                                                                                                                                    |                                                                                                                                                                     |                                                                                                                                                                                                                                                   |                                                  |                                                                                                                                                  |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | <p>mental health issues several weeks ago. She tried to confront him about it, but as his reaction was further withdrawal, she did not bring it up again.</p>                                                      | <p>living' app where she finds trustful sources on how mental health problems arise and interventions as well as preventions. Her son aids her in this process.</p> | <p>health and mental illness herself, she awaits a good moment and talks to her husband again. He is very surprised by everything Marijke tells him, also about treatment opportunities, but still doesn't feel able to ask for help himself.</p> | <p>meeting with a therapist for her husband.</p> | <p>home to implement new changes towards a healthier lifestyle and to get rid of behaviours that are harmful to her husbands' mental health.</p> |
| Feeling & Needs | <p>She feels left alone and helpless, since she doesn't know much about mental health and pathology, as it was never brought close to her. She didn't receive any education on it in school or by her parents.</p> | <p>Hopeful</p>                                                                                                                                                      | <p>Marijke feels like walking on thin ice and is very careful with the interaction with her husband. But she also feels a small victory because her husband actually listened to her and did not immediately withdraw.</p>                        | <p>Hopeful</p>                                   | <p>Proud of herself and even more of her husband.</p>                                                                                            |
| Expectations    | <p>Marijke does not have high expectations on any kind</p>                                                                                                                                                         | <p>Her expectations rise as she encounters that there are</p>                                                                                                       | <p>She expects support and help from outside to</p>                                                                                                                                                                                               | <p>Marijke expects that the therapist will</p>   | <p>Marijke expects that her husband will receive the support</p>                                                                                 |

|                                                                                                                                                                                                                                              |                                                              |                      |                                                |                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| of change.<br>She remembers that her mother once suffered severe depression and wouldn't leave the bed for weeks but eventually she would do better, and it wasn't discussed anymore. That is why she hopes for the best and feels helpless. | various offers for people who suffer mental health problems. | support her husband. | convince her husband to try and start therapy. | that he needs as long as it is necessary, and that her husband will keep up the good work and further implements healthy behaviors and helpful strategies. |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|

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## Appendix C

## Prototype designs



Examples of recipe cards



*Example of a flyer or poster for the promotion of Mienskip Resepten*



*Logo of Mienskip Resepten*