"Hopeless in the Hospital":

How can we improve mental health through spatial transformation within the Groningen Hospital System?

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Figure 1. Google Street View. “Untitled”. Photograph. March, 2021.

1.1 Abstract

This study examines spatial trends in treatment facilities throughout the city of Groningen in The Netherlands. Specifically, this study focuses on two hospitals within the city, The UMCG and The Martini Ziekenhuis. The methods, results, and conclusions herein are aimed at enhancing the understanding of spatial techniques as tools in mitigating mental health issues. An effect of this process is suicide risk awareness within such vulnerable communities. This project is structured with the “Actor Consulting Model” in mind, a model that distinguishes between three contribution types.

An additional, unintended, but inherent effect of this work is an increased dialogue of mental health, as well as the destigmatization of both suicide and mental health issues within the hospital system. The research presented within is based on a foundation derived from large databases containing suicide statistics on a global scale, within the Netherlands and Groningen; on mental health concepts, spatial planning literature, community planning policies, international and local perspectives on mental health, as well as professional input.

Three surveys were conducted via personal networking and by “word of mouth” aimed at investigating local perceptions of the contributors to suicide and poor mental health in The City of Groningen. The surveys asked about particular locations, feelings of community belonging, and other factors believed to contribute heavily to one’s mental health such as environmental characteristics. From these surveys it was obtained that there are preferences for certain aspects of space that could be carried out in institutional environments where mental health is important in the treatment process.

As a result of the data analysis, it is hypothesized that spatial transformation can be used as a tool to decrease the effects of hospitalization on mental health when appropriate theories are applied. It must be made clear that poor planning or policy is not viewed as the direct cause of suicide and/or poor mental health, but rather that physical environments are associated with psychological issues. The theory that our environments can shape our health has been studied and supported from researchers in interdisciplinary perspectives.

The explicit conclusion reached as a result of this study is that there are areas in which hospitals are failing to adequately support the needs of their patient population in relation to spatial planning, and associated community policies. Such failings are grounds for spatial transformation to take place.

Further research opportunities for those interested in the fields of spatial planning, environmental psychology and mental health should focus on how spatial theories relate to mental health in other hospital settings as this paper has a rather narrow scope.

Keywords: Mental health, Socio-Spatial Planning, spatial transformation, social connection, suicide prevention, hospitalization

1.2 Introduction

Mental wellbeing is universal and when it is in a poor state, individuals across the globe suffer, situating mental health as an item of global concern. Spatial planning is a lens through which we can address such issues as poor mental wellbeing as well as the suicidal tendencies that are associated with such conditions. “The planning process offers the actors involved the opportunity for dialogue, through which risks and risk reduction measures can be addressed” (Neuvel, 2010). Specifically, it is interesting to dive into how hospitals use planning to account for these issues, which leads to the formulation of the question on which this research is based.

Through such a focus, I ask; **How can we improve mental health through spatial transformation within the Groningen Hospital System?** *I hypothesize that if theory is used as a fundamental component in socio-spatial perspectives used by the Martini Hospital and the UMCG, what would follow is spatial transformation and increased mental benefits for the patient population (alongside suicide risk reduction and awareness).*

This research attempts to address and rectify the issue of lack of connection between planners and health in the case of hospital patient mental health. This issue is analyzed alongside the ways hospitals attempt to mitigate the effects of hospitalization on overall mental health.

Said analysis hereby focuses in on two hospitals within the city of Groningen in the province of the same name. Importantly, restricting the spatial scope to the capital city provides more manageable parameters for analysis. Selecting the spatial context is of logical importance when discussing the relationship between mental health,

hospitalization, and the socio-spatial planning of such institutions. “Mair et al. (2008) recommended examining various spatial areas to better understand the spatial patterning of health outcomes and improve theory on the role of one’s immediate or broader spatial context on health” (Weisburd et al, 2018).

This research examines a specific spatial arena, however, uses international literature and examples to support arguments herein. The goal of this research is to evaluate the plans and policies of the UMCG (University Medical Center Groningen) and the Martini Hospital (Martini Ziekenhuis/ MZH) as they relate to mental health support through design and planning. This goal is addressed with the Actor Consulting Model in mind.

1.3 Framework: The Actor Consulting Model

Organized according to The Actor Consulting Model, the three elements, “desired contribution”, “present contribution” and “potential contribution” provide a framework for analysis (de Roo et. al., 2017). Desired contributions are those that stakeholders would like to see in an ideal world but are not feasible at this moment in time. An example of this is changing the mindset of the UMCG toward one where mental health is considered alongside physical health. This change requires significant restructuring and training which must take place over a long period of time. Present contribution highlights the current policies, standards and attributes held by each stakeholder. For example, the Martini Hospital uses specific design elements to decrease the stress caused by issues in wayfinding[1]. And finally, the potential contribution is indicative of future plans

[1] See Figure 20

and realistic contributions held by each stakeholder. Take for example, the plans for the Healthy Aging Campus at the UMCG.

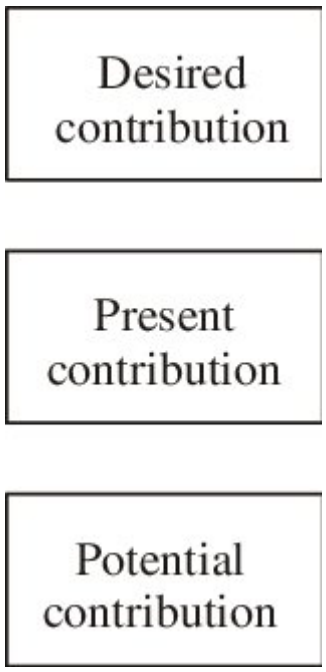

Figure 2. (de Roo et. al., 2017)

1.4 The Relevance of Mental Health in Relation to Hospitalization

The basis of this research begs the question of relevance. The connection between the mind and body has been studied many times over. In fact, the *salutogenic*[6] approach is highlighted by van der Ploeg in her 2021 interview where she states that mental wellbeing is a part of being healthy (van der Ploeg, 2021). In her interview, medical psychologist in the Oncology Department at UMCG, Karen van der Ploeg stated that people in the hospital are very sick. They tend to experience anxiety, depression and other changes associated with rapid health decline. These changes,

she states, are also associated with the patient's family members who are likely to experience grief throughout the process (van der Ploeg, 2021).

Furthermore, the devolution of mental health through to suicide usually occurs alongside life stressors such as relationship issues or, applicable here, trauma (Fuller, 2020). The issue of suicide is certainly present in The Province of Groningen as it was the province with the highest suicide rates in the country as of 2018 (CBS Staff).

Those who are members of the treatment populations of the UMCG and The Martini Hospital do experience such life stressors. In fact, “symptoms of [the most common types of cancer] cancers tend to be harsh, and can have a large impact on [that person’s] quality of life” (NCI Staff, 2021).

According to The Better Health Channel, “Health issues affect your mind and mood in hospital (Better Health Channel Staff, 2019). Additionally, the better a person’s mental wellbeing, the more likely one is to follow the rules of their treatment plan. The better the mental health of an individual who has been hospitalized, the more capable they are of remaining resilient throughout their treatment and recovery (van der Ploeg, 2021). Van der Ploeg asserts that good mental health can make a big difference, not simply through the treatment process, but also at the time of death (van der Ploeg, 2021).

We know that hospitalization can be a stressful time and that hospitalization can result in both short- and long-term mental health issues not just for patients, but for their loved ones as well (Better Health Channel Staff, 2019) (van der Ploeg, 2021). Van der Ploeg stated that patients and their families usually fear some aspects of the medical process (van der Ploeg, 2021). Said fears are not unique to the UMCG.

“Worrying about your health, feeling anxious or overwhelmed can be a common issue for many people in hospital, regardless of age. Some of this is normal. However, having problems such as feeling confused or very sad may be symptoms of other health issues” (Better Health Channel Staff, 2019). These problems might require further treatment even as the period of hospitalization concludes. There are three common problems, especially amongst older patients, that people who are ill could experience including “delirium, dementia and depression” (Better Health Channel Staff, 2019).

A. Depression in the Hospital Population

Good mental health can actually help a patient get out of the hospital faster than they would have otherwise (van der Ploeg, 2021). Therefore, poor mental health (i.e depression- a major risk factor for suicidal actions according to The American Foundation for Suicide Prevention) is a concern for the treatment program. “Depression is not a normal part of health or aging. It is a low mood, or loss of interest or pleasure, that lasts for more than two weeks” (Better Health Channel Staff, 2019). A diagnosis of depression is characterized by four of the following symptoms: major change in appetite or weight, loss of energy, trouble sleeping/ sleeping too much, feeling worthless, confusion/agitation, and/or often having thoughts of death or suicide. Depression, it is important to know, “is not general sadness or grief following the loss of a loved one. It is a serious condition, but it can be treated” (Better Health Channel Staff, 2019).

B. How Suicide Connects to Mental Health and Space

According to The American Foundation for Suicide Prevention, most people who consistently engage in mental health condition management are able to live engaging lives (American Foundation for Suicide Prevention). The promising nature of ongoing

psychiatric support alongside hospitalization would highlight the importance of access to mental health resources in suicide prevention specific to the patient experience. However, preventing suicide is made difficult if the information is unreliable or not present. In order for suicide prevention efforts to be effective, availability of suicide attempts and deaths from vital registration must be improved along with hospital-based systems and surveys (WHO, 2019). In my research, it was discovered that much of this information is missing. In fact, van der Ploeg emphasized that there is a lack of communication between the mental health staff and the doctors who treat physical symptoms (van der Ploeg, 2021). This is particularly concerning when discussion about individually tailored approaches ensues.

Figure 3. Google Street View. Martini Hospital Entrance. Photograph. 2021.

1.5 The Relevance of Green Space

What the World Health Organization asserts is important to mental health, they refer to as “nature” or “urban green space” in the context of environments such as that of The UMCG and The Martini Hospital. Regarding its impact on health and wellbeing, no universal definition of urban green space exists at present (WHO Staff, 2016). However, in this case included elements of “urban green space” defined by the WHO are areas with ‘natural surfaces’ or ‘natural settings’. More specifically, the elements of ‘urban green space’ in this definition are “specific types of urban greenery, such as street trees, and ‘blue space’ which represents water elements” (such as canals) (WHO Staff 2, 2016). Here, green space and nature are inherent components of what is ‘biophilia’, a theory which will be discussed later. Furthermore, these elements are reflected in the theory of stress recovery as interventions to counteract physiological effects of stress.

Figure 4. Google Street View. Green Space at UMCG. Photograph.

1.6 Defining the Scope

Research with similar themes to this has been conducted. Connellan (2013) states that the “architectural aspects of healing environments include those elements that create an optimally restful patient environment. These components include views to the outside or, if that is not possible, at least images of nature… and close attention paid to aesthetics” (Connellan, 2013).

In addition, Verderber (2010) reflects on the Kirkbride system which used the theories of biophilia and stress reduction, both discussed later in this paper, as ways to motivate the design of psychiatric treatment facilities. “The wings have been offset to the rear to allow a corridor open to sun and wind at both ends. A corridor of reasonable length, with bay windows in the middle, would permit the economic measure of locating rooms on both sides of it without detriment to light or ventilation. Sun and air are let into what is ordinarily the darkest corner of a hospital as freely as if the wards were separate buildings and with considerably greater convenience- one has here, an all-weather passageway” (Verderber 25, 2010). There were even regulations for isolation rooms to prevent the addition of beds in case of overcrowding.

In the 1950s, the same pieces of information supporting connection to nature were described as ways to counteract the social perception of psychiatric treatment centers as places of detriment instead of betterment. “The hospital should be light, spacious and connected to nature, [in contrast to one of] intense pessimism in the twentieth [century], with damning exposés and critical ethnographies of the mental hospital that used personal accounts and participant observation techniques to dramatic and disturbing effect” (Ramsden, 2018).

The scope of this paper involves many of these themes[2] which are notably in line with the theories presented herein. For instance, an emphasis on the value of aesthetics is the through line for the argument that spatial transformation is guided by the mental health of the individual. These values (i.e., connection to nature and restful environments) are important and key to successful spatial transformation as it pertains to the mental health of patient populations. They are, however, not reflected in the goals set by key stakeholders such as The Municipality of Groningen (Gemeente Groningen).

A. Municipality Goals

Gemeente Groningen (the municipality) has two goals for its future city plans. The first centers around emission logistics and is not relevant to the scope of this paper. However, their second goal is referred to as “Space for you” (Gemeente Groningen Staff, 2020). This second goal stems from the first, revolving around pollution and traffic. That being said, the “space for you” goal is indicative of an interest in the wellbeing of citizens and their ability to enjoy their space. The “space for you” policy extends to the hospital properties as the ability to enjoy space aligns with mental health themes presented in this research.

However, nowhere in the municipality planning goals is there a mention of the importance of supporting the needs of those who suffer from mental illness, nor is there discussion about what the future policies might be for large scale medical facilities within the municipal scope (e.g., The UMCG).

[2] Pertaining to Verderber (2010), Ramsden (2018) and Connellan (2013)

B. The UMCG Defined

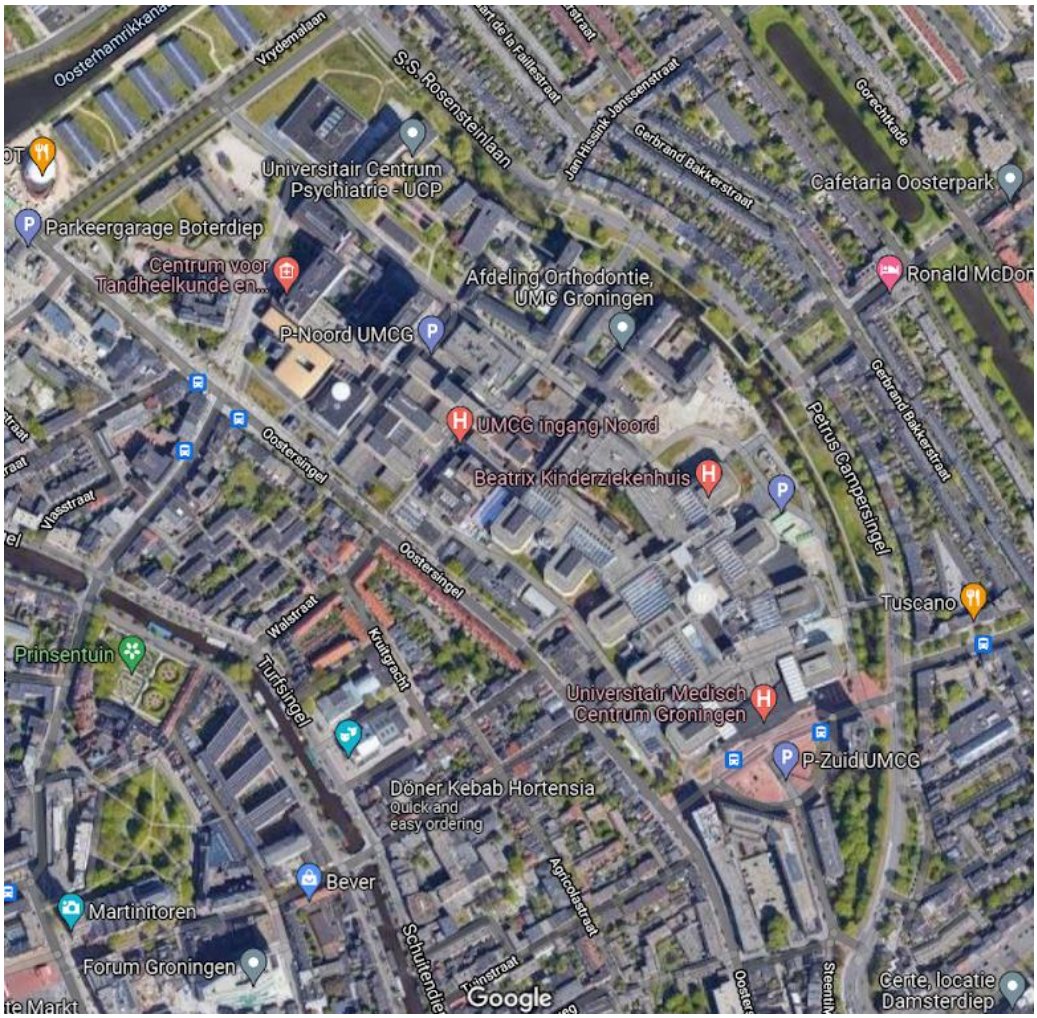

Figure 5. Google Maps. UMCG Grounds. Photograph. 2021.

The UMCG is a product of cooperation by two entities, those being the University of Groningen and the Academic Hospital Groningen (AZG) (UMCG Staff). The complex itself was established in 1903 (UMCG Staff). Established in 2005, UMCG as defined today, is advertised as “more than just a hospital” (UMCG Staff). Rather, it is a campus focused on the aging process known as “a city within the city” and referred to sometimes as The Healthy Aging Campus (UMCG Staff). Much like other areas of The City of Groningen, the UMCG is currently undergoing renovations in order to better

reflect its view of a future inclusive of the aging process. Currently, the development of UMCG is also being aided by the design team ‘Felixx’ (Team Felixx, 2020).

The Healthy Aging Campus (HAC) developed “with passageways, fragmented open spaces and enclosed courtyards.” It was designed with a “healthy urban fabric” in mind with future-proof structures being essential to its mission (Team Felixx, 2020). But what exactly is a healthy urban fabric? Team Felixx states that they use “urban building blocks” as components of said fabric. These building blocks include “parks and squares, streets and avenues, gardens and courtyards” (Team Felixx, 2020).

C. The Martini Hospital Defined

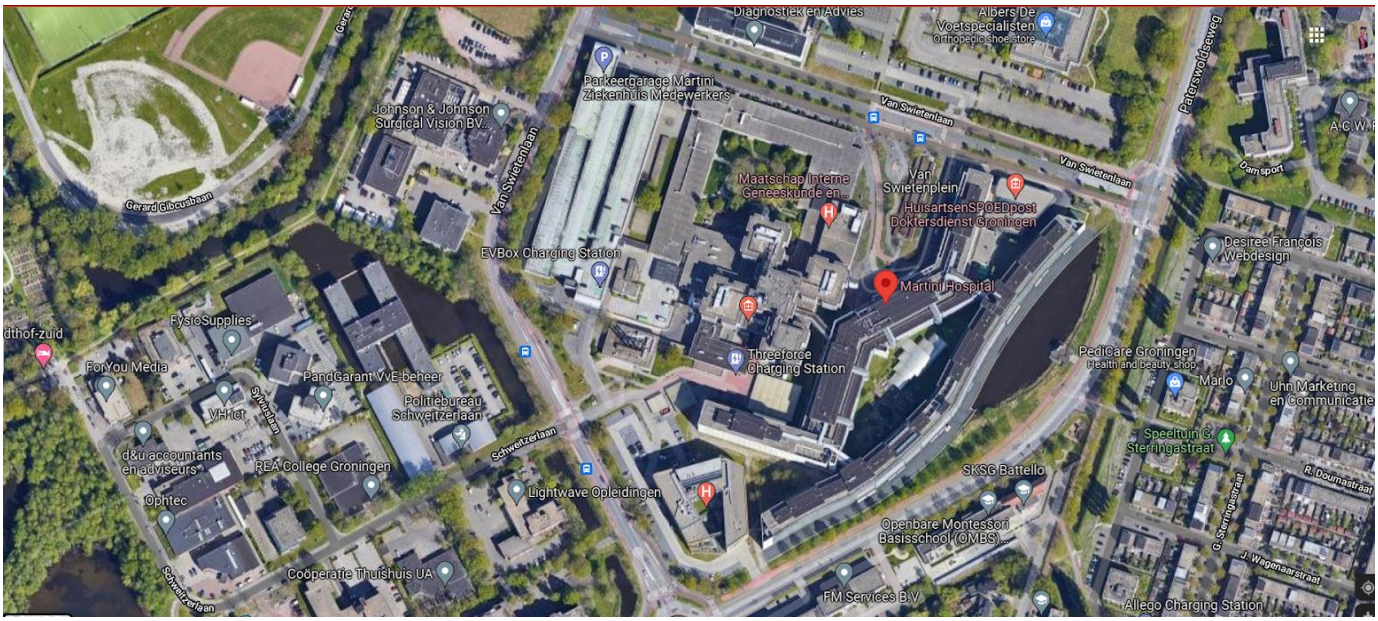

Figure 6. Google Maps. Martini Hospital. Satellite Image. 2021.

Also known as the Martini Ziekenhuis (sometimes referred to here as ‘MZH’), the Martini Hospital, constructed in 2007, is situated South of The City Center in close proximity to The Stadspark (Architizer Staff, 2013). It is the second of two large scale hospitals studied in this paper.

The location of the MZH seems to be well thought out in terms of biophilia vecause of its closeness to one of the larger parks in The City of Groningen. However, according to Verderber (2010), the site of the hospital was chosen not for this reason, but because it lies “within the city center” of Groningen (Verderber, 2010). Furthermore, the site “possesses excellent transportation connections, and is easily reached via walking or bike” (Verderber 46, 2010).

The architects of the Martini Hospital (Burger Grunstra Architects and Consultants) argue that what people need has remained constant for thousands of years. These needs include “natural light, a view, space, safety, orientation, length of escape routes, etc.” which will not change over the coming decades (Architizer Staff, 2013). These fundamental needs (seemingly aligning exactly with the theory of biophilia and with the texts of Ramsden (2018) and Connollen (2013)) were combined with flexibility in mind. For example, the inner “skin” of the MZH consists of moveable screens and panels. Extensions can be added which allows the hospital frame to grow outward by ten percent. The hospital indeed is built to evolve, with design aimed at accommodating future non-hospital uses (Verderber, 2010).

“Building for the care sector means looking into the future as far as possible, but a building’s lifecycle (40 years) is much too long for that” (Architizer Staff, 2013).

Flexibility is something that The Martini Hospital seems to do well as they have “been looking into the future of care from the outset of the project” (Architizer Staff, 2013).

As a result of their efforts in flexible design, “the Ministry of Public Health, Spatial Planning and the Environment, and the Ministry of Economic Affairs awarded the project with the IFD demonstration status (industrial, flexible, demountable building method)” (Architizer Staff, 2013).

The evolution and flexibility of the Martini Hospital is just one goal set in its development. The architects set three goals for the design of the Martini Hospital. Their goals were to use *“industrialized prefabricated building components, to provide adaptable interior spaces and to develop a demountable kit of parts to be used interchangeably as functional needs evolve over time”* (Verderber 46, 2010).

The physical design of the Martini Hospital consists of two chromosome shapes, where they touch being referred to as ‘*junction points*’[3] (Verderber, 2010). These junction points house “vertical circulation (elevators, stairs, conference rooms, support)” (Verderber 46, 2010). “The two bands are informally deployed on the site to allow for differing view orientations from within, and different perspectival vantage points when viewed from the exterior” (Verderber 46, 2010). The area around the hospital is made easily navigable by the curved facade facing the town as well as the combination of these two different bands. “The outer skin of this double layered membrane is made of *low-e glass*[3] and possesses supplemental sound absorbent properties” (Verderber 46).

The MZH certainly kept its goals in mind with the design of its building blocks. Each building block of the hospital is 16m which is different from traditional Dutch

[3] See figure 20

building design in that it allows increased amounts of exposure to natural light even in the staff environment (Architizer Staff, 2013). A matrix of 46 (“47” Molenaar, 2013) colors for “random” non-place-specific application was distributed throughout the interior (Verderber, 2010). These colors were selected and distributed by Dutch artist Peter Stuycken who specializes in color abstraction (Verderber, 2010).

On the site of The Martini Hospital, a “prominent man-made retention pond” can be found (Verderber 48, 2010). The retention pond extends the civic footprint of the medical center a little differently than if a new public park had been created onsite (Verderber, 2010). Contrarily, across from the main entrance curving walkways, and landscaping characterize a pocket park (Verderber, 2010). Both sides of the site provide locations to socialize, privately reflect and practice health -promoting physical exercise (Verderber, 2010). The presence of water and green space, it is hoped, will encourage staff and family members to take patients outdoors whenever feasible” (Verderber 48, 2010).

Ch. 2. Theory

Figure 7. Google Street View. Martini Hospital Grounds. Photograph. 2021.

2.1 The Basics of Theories

To begin with, we must discuss what *mental wellbeing*[4] (or mental health) is. Mental health and mental wellbeing are essentially indistinguishable. They are referred to in much the same way that we discuss physical health and physical wellbeing. That being said, mental health includes relaxation, functioning, general happiness and personal relationships as positive components rather than the absence of mental illness exclusively (Houlden, 2017).

Houlden (2017) defines mental wellbeing in two dimensions. The first dimension is referred to as *hedonic*[4B]. This dimension encompasses " Happiness, life satisfaction and pain avoidance" (Houlden 2, 2017). The second dimension includes "Self realization, purpose in life and psychological function" and is referred to as the *eudaimonic dimension*[4A] (Houlden, 2017). In both senses, poor mental wellbeing leads to an elevated risk of suicidal thoughts and or tendencies according to The American Foundation for Suicide Prevention.

The theoretical basis for this research that mental wellbeing is linked with (socio-) spatial planning and policy is backed by prior research. One specific contributor to the theory behind the connection between mental health and Socio-Spatial Planning is Barton 2005. Barton explains that "at each level of external influence on the individual there are factors that are amenable to planning policy" (Barton 344, 2005). Additionally, Barton goes on to remark that the behavior and lifestyle of individuals "is affected by the availability, safety and quality of routes and facilities (in this study, hospitals), by the density and shape of towns, by the distances which have to be travelled to reach

places” (Barton 344, 2005). However, Barton 2005 recognizes that those in the planning disciplines show a “lack of co-operation” with health agencies (Barton, 2005).

The collective perception is that responsibility lies on the individual, in many cases, to seek help. However, community support and policy through government and local action can prove immensely beneficial to the individual scale.

Secondly, the concept of socio-spatial planning must be understood as it is a vital part of the research question. *Socio-spatial planning* is characterized by physical intervention, policy making, and community focus, serving as a people-based approach to urban planning. In this research, socio-spatial planning refers to multiple scales, from the individual resources to the communities they are situated in, up through the scope of The City of Groningen as the analyzed spatial arena.

The individual scale of socio-spatial planning relates to spatial transformation in that the scale of intervention must keep the most vulnerable members of society in mind for a successful intervention to occur. Individualistic spatial transformation was advocated for in 1950s Saskatchewan through the inclusion of choice as an important factor in psychological needs of the patient population. “Osmond (1957) developed a set of guidelines based on the psychological and behavioural needs of patients which included privacy, choice, the reduction of uncertainty and beneficial social relationships” (Ramsden, 2018). Said excerpt indicates that individualized approaches to care are not exclusive to this paper.

The individualistic scope is a common thread that underlines the theories presented in this section in that each can be attributed to individual preference. Said theories are grouped by the major elements and attributes that were brought forward by

research conducted herein. The theories, most of which revolve around the physical aspects of space, are discussed in detail, then are critiqued to bring to light the issues with each theory. What follows is a comprehensive perspective of the theories used in this paper.

A. Theories Relating to Physical Aspects of Spatial Transformation

I. The Theory of Biophilia

Biophilia is one of the principal theories referenced in this paper. In general, biophilia is the theory that "people pursue connections to nature, humans evolved in a natural landscape, where green spaces would have offered shelter, potential sources of food and hence survival so we may still experience positive feelings in such environments" (Houlden 2, 2017).

Biophilic design differs from the general definition of biophilia. Biophilic design is defined by Verderber (2010) as the "expression of the deep-rooted human preference for involvement with nature" (Verderber 25, 2010). There are two ways that biophilic design is expressed. The first is *experience* which can be further dissected into subcategories. The first subcategory being *direct experience* which "refers to relatively unstructured contact with self-sustaining attributes of the natural non-human built environment such as daylight, plants, natural habits, and ecosystems" (Verderber 25, 2010).

Indirect engagement, the second subcategory, "requires human involvement in the sustenance or management of nature, be it a fountain in a courtyard, caring for

plants, trees or a vegetable garden. Another type of indirect engagement involves symbolic or surrogate contact" (i.e. a wall mural, video, painting, or projected image of a natural setting) (Verderber 25, 2010).

The second dimension of biophilic design is inclusive of the way landscape, its formal properties, built form and formal geometries symbolizing the intrinsic human affinity for nature play off each other. This 'interplay' is called "*place-based and vernacular*" (Verderber 25, 2010).

"Buildings and landscapes that express a local vernacular culture of a particular place or geographic region are at the heart of this interpretation of placemaking. Think for example, of the homes in the Dutch countryside that have thatched roofs. As stated earlier, the Martini Hospital departs from vernacular approaches by having blocks that are longer than traditional Dutch approaches.

Advocates for vernacular culture argue that landscapes and buildings expressive of these biophilic design principles become integral to their inhabitants' individual and collective social consciousness, and are capable, at their best, of being spiritual and transcendent" (Verderber 25, 2010). This aspect of biophilic design ties into the theory of topophilia, discussed later.

Figure 8. Google Street View. Petrus Campersingel at UMCG. 2020.

I.1 Biophilia and Site Planning

Techniques which reflect biophilic perspectives have practical uses. For instance, “trees planted along streets and roads may dampen noise and air pollution levels… mitigate adverse health effects of proximity to busy roads” (WHO Staff, 2016). Not only is this approach in keeping with the municipal goal “space for you”, but it impacts the mental health of the public. In fact, it is argued that simply adding trees as a buffer to sound also decreases strain on hospitals. These aspects “may form an important part of urban ecosystems, and there is some evidence of health and well-being benefit. Evidence includes experimental, laboratory studies which used 3D imagery of street scenes (indirect engagement). The laboratory studies suggested that urban trees may promote stress-recovery (self- reported) and positive impacts on stress (measured by *salivary cortisol*[5]) (Jiang et al., 2014a; Jiang et al., 2014b; WHO Staff, 2016). For example, one ecological study of London Boroughs found that those with higher street

tree density had lower rates of antidepressant prescriptions (Taylor et al., 2015)" (WHO Staff, 2016).

Biophilic theory also impacts decisions as to where a hospital might be placed. Kirkbride Center in Philadelphia, Pennsylvania was chosen with biophilia, specifically direct biophilic experience as an explicit motivator. "[Kirkbride was] placed in a rural botanical setting away from the ills of the city" (Verderber 25, 2010).

The operation of the hospital itself further denotes the importance of biophilia. The patient population of Kirkbride was separated according to how severe their illness was, similar to how general hospitals section their patient population by unit (e.g., Oncology vs. Cardiology). Throughout this process, the importance of direct biophilia-sunlight and ventilation was stressed, which informed the physical attributes of the center (Verderber, 2010).

With direct biophilia in mind, it could be assumed that most hospital sites are chosen for the availability of direct biophilic exposure (another example being Kings Park Psychiatric Center on Long Island, NY). However, this is not always the case. The Martini Hospital site, for example was chosen for its connection to public transit, in contrast with the Kirkbride Center. In some cases, like that of the UMCG, the motivation for the environmental situation is unclear. Even in these spaces, biophilic elements can be included. The physical design of spaces with biophilic elements in mind reflects the definition of biophilic design.

Biophilic design can of course be adapted to the site itself. An example of biophilic design adaptation in site planning is the Salmon Creek Medical Center. Here, sustainability and biophilia were connected in the creation of a 'healing garden'

composed of indigenous plant species as opposed to conventional turf (Verderber, 2010). Such elements are known to draw people in, bringing the comfort associated with the theory of biophilia.

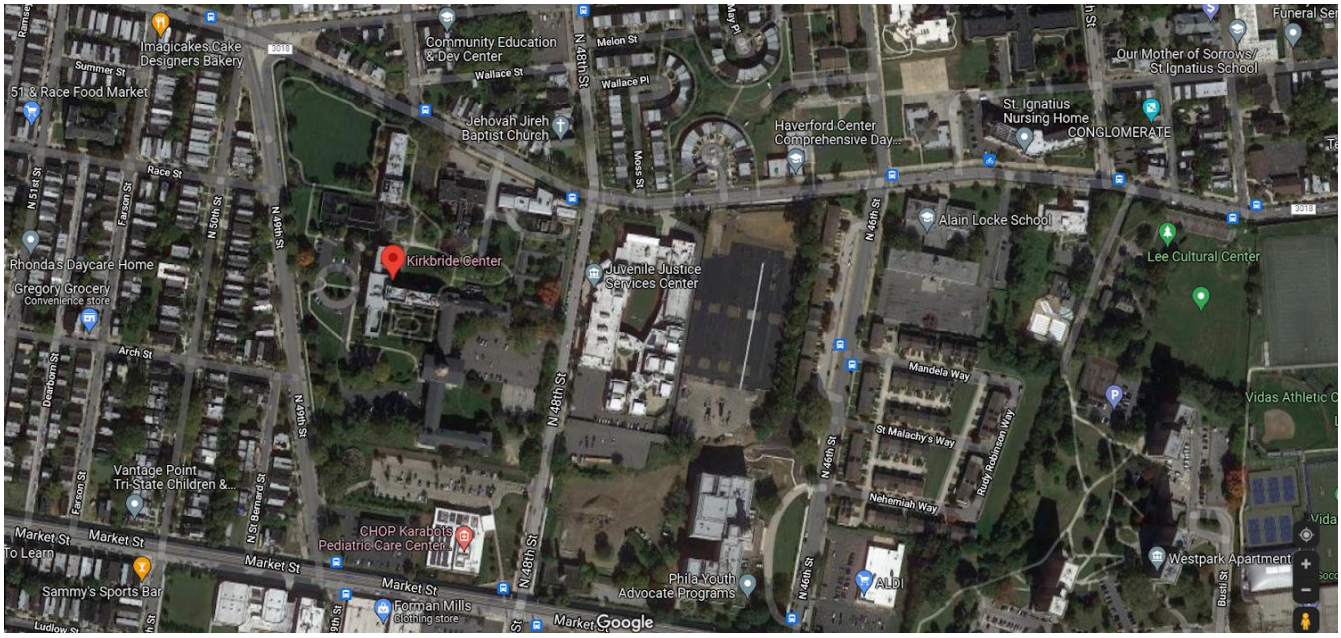

Figure 9. Google Maps. Kirkbride Center, Pennsylvania. Satellite Image. 2021.

Figure 10. DI Staff. Salmon Creek Medical Center ‘Healing Gardens’. Photograph. 2018.

I.2 Successful Integration of Biophilic Theory

Powerful effects of biophilic design can be found at The SARAH Network hospitals, which are praised for the quality of care that they offer their patients (Verderber 56, 2010). At the Rede SARAH in Salvador, Brazil (member of the SARAH Network), daylighting, natural ventilation and passive cooling systems are attuned to user preference (Verderber, 2010). Indeed, user preference (referenced as relating to the individual scale) is a theme that comes up repeatedly in this research and reflects comments made by van der Ploeg (2021).

Because of biophilic design strategy, Rede SARAH is able to promote “outside activities such as social gatherings that encourage leisure, culture and art; physical

fitness; gait and wheelchair skills” (Rede SARAH Staff, 2021).Rede SARAH also hosts a reflecting pool. Verderber compares the pool to the canal at the Martini Hospital. One difference being that the Rede SARAH pool is less urban, though they both reinforce therapeutic properties of water (Verderber, 2010). Rede SARAH is designed as a neurorehabilitation center, further emphasizing the importance of using biophilic design for health promotion and recovery.

Figure 11. Rede SARAH Network. “Untitled”. Photograph. 2021

I.3 How UMCG and MZH Incorporate Transparency, Indirect Exposure and Surrogacy

Both hospitals incorporate indirect biophilic elements and blur the lines of nature through transparency. These elements are inherent to design approaches to biophilia. In fact, they involve the indirect access to nature that was previously discussed.

According to Verderber (2010), this blurring technique is needed in order to reinvent the relationship between site, landscape and the healthcare building (Verderber, 2010). Verderber argues that “such barriers are counter-therapeutic and serve no purpose beyond a certain point” (Verderber 52, 2010). However, indirect biophilic elements are potentially not as effective as direct biophilic exposure according to criticism of biophilic design.

I.4 Criticism of the theory of Biophilic Design

“Evidence from many studies” indicates that “natural vs. human-made visual properties elicit different patterns of affective responses in unstressed individuals, and have a central role in influencing perception and categorization of outdoor settings (Kaplan et al., 1972; Wohlwill, 1983)” (Ulrich et al. 202, 1991). Indeed biophilic design does distinguish between “surrogate nature”, “indirect exposure” and what nature is in the natural environment. However, there is little consideration as to how a built fountain differs from a reservoir or natural body of water. Rather, they are chosen as emblematic representations of nature and not necessarily “nature itself”. With this in mind, it is unclear whether nature shaped by humans is as impactful in terms of recovery as actually being out in the natural world. In other words, it remains unclear whether “indirect exposure” has the same scope of impact as the non-built environment.

Furthermore, the quality of a biophilic intervention comes into question when evaluating the effects on populations. Said criticisms of biophilic design are being addressed in other studies. For example, one in The Netherlands “has investigated the quantity and quality of streetscape greenery based on a street audit, and found

associations with perceived general health, mental health, and acute health complaints (Devries et al., 2013) (WHO Staff, 2016).”

Finally, attitudes toward nature are quite nuanced and some individuals within cultures are more drawn to nature as a place of respite and healing. In fact, for those diagnosed with agoraphobia (fear of leaving the house) the mere thought of leaving the house brings on tremendous mental anguish. However, because of the complexities of mental health and suicide, especially from a socio-spatial perspective, accounting for these groups and exceptional individuals is not always possible.

That being said, biophilic elements provide a basis for general improvement in the mental health of communities with those individuals who might struggle with issues like agoraphobia as the exception (World Health Organization, 2016). Van der Ploeg (2021) would affirm that this is one of the cases where an individualized approach to treatment and support is needed. Such individualized approaches could also be applied to the theory of stress recovery.

II. The Theory of Stress Recovery

In order to understand stress recovery theory, we must first understand stress itself and the physiological effects it can have. “Stress is the process by which an individual responds psychologically, physiologically, and often with behaviors, to a situation that challenges or threatens well-being (Ulrich et al., 1991; Baum et al., 1985). The *psychological component* includes cognitive appraisal of the situation, emotions such as fear, anger and sadness and coping responses. The *physiological aspect* consists of activity responses in numerous bodily systems such as the cardiovascular, skeletomuscular and neuroendocrine that mobilize the individual for coping or dealing

with the situation. This mobilization uses resources or energy and, if prolonged, contributes to fatigue" (Ulrich et al. 202, 1991). Stress recovery, then, is the absence of these symptoms by way of "positive changes in psychological states. The term "stress recovery", according to Ulrich (1991) is synonymous with "restoration", though restoration can be indicative of a wider concept as it is a rather vague term. Restorative herein indicates a return to the psychological/ physiological state where stress is absent.

Stress recovery theory is compatible with the theory of biophilia. This is something that is echoed by Houlden (2017). "Views of nature are the most beneficial for restoration, by helping stressed individuals recover a relaxed emotional state" (Houlden 2, 2017). For example, patients who participated in a study on dental fear indicated that they experienced decreased stress levels "on days when a large mural depicting a natural scene was hung on a wall of the waiting room, in contrast to days when the wall was blank" (Ulrich et al. 202, 1991).

These theories (biophilia and stress recovery) have been corroborated by various studies according to Houlden (2017). Furthermore, they were touched on by Karen van der Ploeg in her 2021 interview.

II.1 Criticism of Stress Recovery Theory

Though there is mention of the beneficial aspects of nature on stress recovery, there is no mention of how much exposure to environments with stress reducing characteristics is needed for the recovery process to be impacted. Secondly, there is little mention in this theory about what exactly contributes to stress recovery aside from biophilic elements.

Additionally, the theory inherently points to stress as an unavoidable event that can impact health. That being said, stress recovery theory operates on the assumption that people experience stress and stress reduction in similar ways. This is contrary to the individualistic scope as pointed out by van der Ploeg (2021). Moreover, the theory of stress recovery is contingent upon the fact that one can exist within a state completely absent of stress. Is this, however, truly a realistic point of view?

Stress, however quantifiable through salivary cortisol, is still a broad term that can be interpreted by different people in different ways. It is also tied by Ulrich et al. (1991) to the theory of biophilia. Ulrich et al. (1991) essentially argues that stress recovery is dependent upon these biophilic elements. However, as stated previously, the impact of different types of biophilic exposure is unclear.

With impact in mind, we turn to topophilia, where the impact of space shapes the experience of the citizen.

III. The Theory of Topophilia

The term topophilia “is the affective bond between people and place, often becomes associated with the sense of cultural identity for certain groups” (Wolf, 2018). In this definition of topophilia, the echoes of vernacular concepts play out. This definition makes a distinction between *place* and *space*. Tally (2019) reflects on the definition of *place* as provided by Yi-Fu Tuan (2022) who describes place as the “effect of a chaotic increase of relations associated with space” (Tally 17, 2019). Place is additionally defined as space “imbued with value and meaning” (Tally 17, 2019).

Place being shaped by space and meaning plays into the individuality and group perceptions of spatial interpretation and thereby attachment to said environment. For

some individuals, the hospital might be where they spend most of their time. This is specifically the case for those in the oncology department, where chemoradiation alone consumes three or four hours of a given day (Cancer Care Northwest Staff Website). The same situation could apply to someone on dialysis. Furthermore, for terminal patients, their last moments with their loved ones or on earth in general might be spent in the hospital. It would then stand to reason that feelings of comfort and attachment to said institutions are important in the processes of treatment and/or grief.

Indeed, topophilic theory is also applicable to the theory of spatial anthropodysmorphy. Referring to the “change in the perception of space by people who are existentially physically or mentally ill”, it stands to reason that topophilia serves as a way to encourage positive spatial anthropodysmorphy (Kopvol, 2022).

Figure 12. Google Maps. UMCG Campus. Satellite Image. 2021.

III.1 Criticism of Topophilic Theory

Topophilia originates from a positive experience with space (Tally, 2019). However, because of complex factors, “it may be difficult to maintain a vision of place as essentially homey, familiar or loved” (Tally 20, 2019). The criticism of this theory extends to the perception of home as a place one feels an affinity towards. However, what of places where ‘home’ is or was a toxic or dangerous environment? Surely characteristics of said spaces would negatively impact one's mental health (e.g., *Post-Traumatic Stress Disorder*[9]). Additionally, individual preference in some cases is to spend time outside of the home environment. In fact, all three interviewees in the September 2021 interviews stated that they prefer spending time outside of their homes[4]. Furthermore, in the primary survey conducted in March 2020, a majority of the respondents indicated that they also felt the opportunity to get out of their home was important to their mental health[5]. In these cases, as well, the discussion must air toward elements of place that foster a sense of comfort and the opportunity to choose elements of the environment.

It cannot be said for certain that those in hospital wish to be attached to said physical environment. In fact, the goal of hospitalization is to get the patient to a place where they are no longer dependent upon such a level of medical attention. In cases where recovery is not possible, some individuals opt to live out the rest of their days in the comfort of their own homes as an alternative.

[4] These individuals were part of a preliminary canvasing of attitudes toward the spatial characteristics within the city of Groningen. Their experiences represent the public opinion, though they are coincidently all students. (See Appendix B)
[5] These individuals were part of a preliminary canvasing of attitudes toward the spatial characteristics within the city of Groningen. Their experiences represent the public opinion, though they are coincidently all students. (See Appendix D)

IV. Color Theory

One way to encourage feelings of comfort, even in one's final moments, is through the application of color theory. Also known as color psychology, color theory is integrated into many types of design, including spatial. "The psychology of colour has long been recognised as an important psychological factor in architecture and interior design" (McCay, 2017).

Just because something is tradition, does not indicate effectiveness. However, in a study conducted by Horsburgh in Mississippi, "each person surveyed wrote that they believe that color has the ability to have an effect on a person's mood" (Horsburgh 12, 1995. Similarly, the intensity of color can impact mood. Notably, colors with a high saturation or intensity promote feelings of stress (McCay, 2017).

Color theory is certainly based on aesthetic value and the effects such aesthetics can have on individuals. Additionally, roughly 80 percent of people surveyed mentioned that they noticed the aesthetic appeal of the approaches used in the Mississippi case (Horsburgh 12, 1995).

The Mississippi case is not unique. In other cases, color theory has been applied with the medical system in mind. For instance, "a wide range of experts were called upon to give evidence on various technical elements of design and equipment, such as colour and furnishings, to help humanise hospital architecture by making it 'more home-like'" (Ramsden, 2018).

Color theory can also be applied in terms of crafting an identity. At The Martini Hospital, color was one of the important components in creating the hospital's identity. "Colour is… an integral part of both the architectural design and structural concept of

the new hospital building, all because architect Arnold Burger of SEED architects, interior designer Bart Vos and colour artist Peter Struycken joined forces at an early stage" (Molenaar 3, 2013).

Such collaborations which focus on the impact of color also include The *Architectural Study Project (ASP)*[1].[6] The Architectural Study Project which began in the 1950s is indicative of a long-standing interest in color and its effects on human mental health. "Colour, long associated with emotion, was explored as a means of making the hospital atmosphere seem softer, less institutional and, where needed, as an 'attention-getting' measure. But ASP members were also concerned to influence the field of psychiatry, to encourage it to move beyond the mental hospital as the site for psychiatric care" (Ramsden, 2018).

IV.1 Criticism of Color Theory

Though "many studies describe how colors can influence performance and the experience of a space", color theory is not widely accepted (Bosch 15, 2012). "There is little scientific evidence that the various colour-based therapies can cure any particular diseases" (McCay, 2017). Furthermore, color theory is not explicitly mentioned in the interviews nor surveys that were conducted specifically for this research.

"Many color guidelines have been proposed for healthcare settings, but these only offer hypotheses suggesting that certain colors may be associated with the well-being of the users of those spaces" (Bosch 15, 2012). Research was conducted via an "analysis of several color guidelines and noted that there are considerable contradictions among guidelines and in the literature on color" (Bosch 15, 2012).

[6] Numbers in green, accompanying italicized words indicate a definition for this word can be found in the terms section which begins on page 116.

Color theory is complicated as colors do not seem to evoke one emotion. “The colour red is generally said to be associated with an increase in appetite, reduced depression and increased angry feelings, purple with boosting creativity and developing problem-solving skills, orange with optimism, blue with a sense of security and productivity, and green with a sense of harmony and effective decision-making” (McCay, 2017)

That being said, in a study on color, “all 68 subjects”[7] indicated “a preference for light colors for all objects such as ceiling, wall, floor, curtain, furniture, and linen” (Bosch 17, 2012). This indicates that while color theory might not yet be substantiated, individuals do have preference that could be adopted in spatial transformation processes focusing on mental health aid.

B. Mental Health and Scope of Mitigation

Mental health is rather abstract; most research states that it is nearly impossible to account for every factor in poor mental health. However, it is possible to account for and confront the main risk factors for poor mental wellbeing as presented by The World Health Organization and The American Foundation for Suicide Prevention. One way that this can be accomplished is using applicable theories discussed herein that are presented by professionals and academics based on experience, training and input from patients themselves.

[7] “Patients from a number of clinics” in a study conducted by Schuschke and Christiansen (1994)

Additionally, by investigating these theories and applying them on varying scales, policymakers will be able to aid hospitals in using spatial transformation or planning to better support mental wellbeing within patient populations.

The planner, the hospital staff and other stakeholders such as mental health care workers can use these theories as a way to bolster the positive effects of spatial transformation in renovations as well as future design plans.

Figure 13. Google Street View. Petrus Campersingel: UMCG. Photograph. 2021.

2.2 Models and Concepts

A. The Conceptual Model

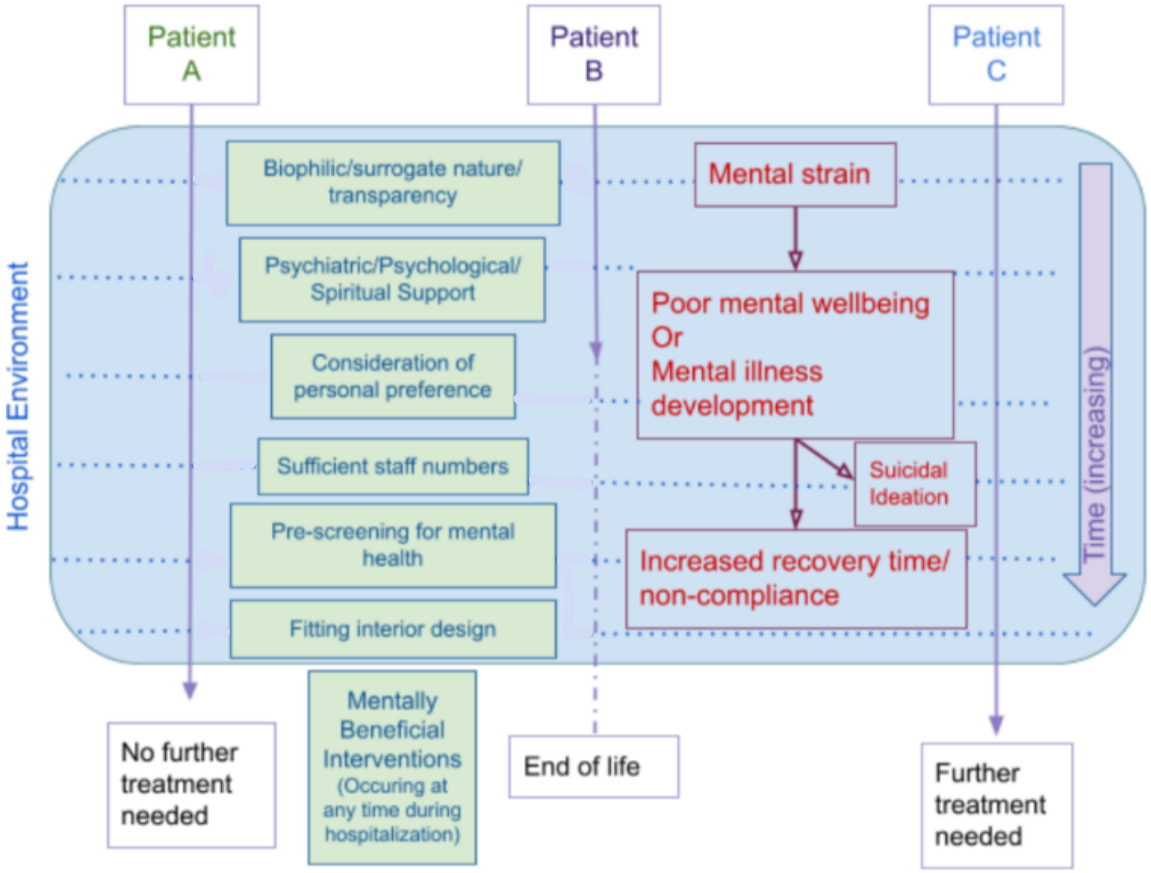

Figure 14. Vail, Jake. Model. 2021.

There are three types of patients in this model, representing three different scenarios. Every patient is initially diagnosed with an illness that requires hospitalization. In each case, they are likely to encounter mental strain (or psychological stressors) which results in poor mental well-being. Additionally, they may either develop a mental illness or experience a recurrence of a previously present mental illness. As a consequence, suicidal ideation (discussed earlier in this paper) is increasingly likely to

occur the more severe the illness is. Importantly, all patients differ in treatment effectiveness as well as gravity of said illness.

Within these situations exist opportunities for beneficial mental health design/ policy through spatial intervention. The mentally beneficial interventions can occur at any time during the hospitalization process. They are independent of the timeline that all other aspects of the model depend upon. This is why the dotted timelines do not intersect in this area. However, the interventions still exist within the hospital environment substantiating their inclusion within the blue area representing the hospital arena. The one exception to the interventions existing outside of the timeline is pre-screening for mental wellbeing which must occur first. These interventions are not independent of each other, therefore, having the ability to interact simultaneously. For example, fitting interior design is inclusive of elements from theories like stress reduction and color theory. Furthermore, biophilic elements might be incorporated in the consideration of personal preference in the hospital environment in order to boost feelings of topophilia. Alternatively, sufficient staff numbers are vital for psychiatric support.

The following are the theoretical scenarios present in this model, reflective of increasingly individualistic approaches to hospital experiences.

Scenario 1- Patient A

Patient A enters the hospital environment, receives treatment and completes their treatment successfully. It is likely that they will require psychological aid as their diagnosis and treatment process might still cause severe mental stress. While they

might require additional support psychologically, they do not require further physical treatment. Furthermore, they may have experienced trauma or significant mental strain as a result of their treatment, meaning that psychological support post treatment is favorable.

Scenario 2- Patient B

Patient B is admitted to the hospital and unfortunately reaches a place in their treatment where there are no more medical options to present. At the end of their life, they might require mental health aid, spiritual aid and/or grief counseling. The goal of this approach is to ease the patient into a state of mind where stress is as minimal as possible. While their physical treatment may have come to an end, it is likely that pain management would still be a part of their experience. Here psychological support still comes into play. In this case, support for Patient B's surviving loved ones is extremely important as they go through the grieving process.

Scenario 3- Patient C

Patient C begins their treatment in the hospital and they complete their treatment. The patient then goes on to require further physical treatment resulting from complications or the nature of their illness. For example, those with colorectal cancer may experience pain for much more of their life post cancer treatment. In fact, this is one of the cancer types with the highest rate of suicide because of suffering imposed by the illness (NCI Staff, 2021). In these situations, trauma is likely to have been experienced, further reinforcing the need for psychological support. For Patient C,

additional psychological support for their families or loved ones in addition to the patient themselves is important as they deal with the consequences of the illness.

I. Reflecting on The Patients

The three theoretical patient profiles are included in an effort to explain the multiple trajectories that exist within and following the treatment process. Each patient group represents an individual story. The groupings are indicative of how patient experiences can vary, reinforcing the need for spatial transformation on an individualized scale.

It is important to keep these profiles in mind moving forward. This attention is needed because different levels of attention and care are required for each grouping. Furthermore, spatial transformation can most effectively take place once we understand common threads that underline different patient groups, further bolstering the impact of interventions.

B. Barton's Model

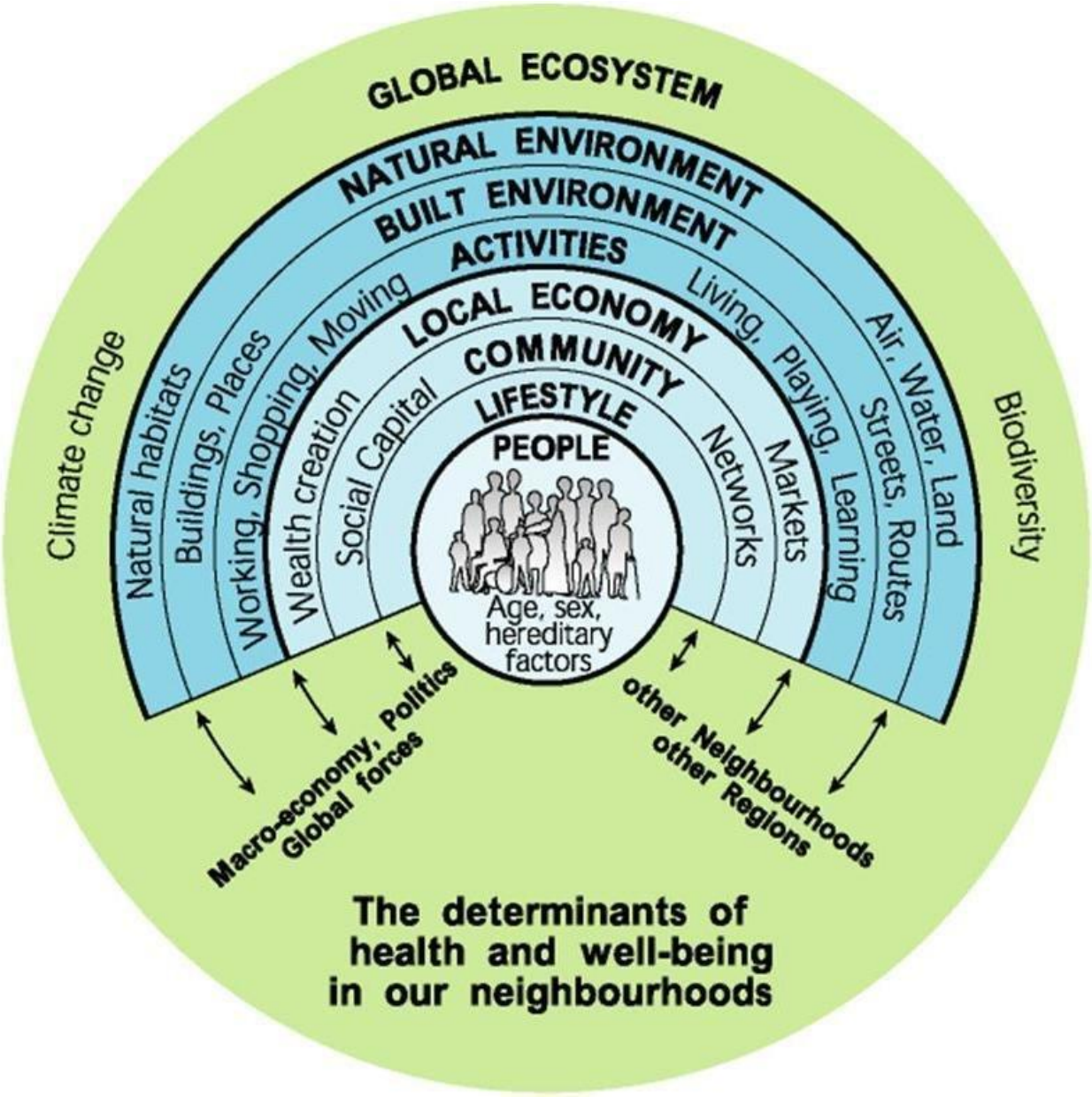

Figure 15. Verbeek, Tyler. "Barton's Healthy Settlement Model". Digital Rendering. 2012.

In Barton's model, the 'patient' does not exist. Rather, Barton views the individual outside the scope of the hospital environment. In Barton's model the socio-spatial arena is "viewed holistically, being not simply the physical place but the people that live there, their activities, their social networks, the economy they depend on, and the broader

base of environmental capital that supports them. It is the settlement as a living, breathing, changing thing - a local ecosystem within the global ecosystem" (Barton, 2005). The element of change within a local ecosystem is reflected in UMCG's Healthy Aging Campus. This model also aligns with salutogenic approaches which generally focus upon "holistic human wellbeing rather than disease cause and effect" (Kopvol, 2022).

Barton's ideas are mimicked in the ongoing renovation and concepts presented in the UMCG Healthy Aging Campus. These ideas exist in various conceptual models and theories including "The Shaping Neighborhoods Model" which distinguishes between certain aspects of the socio-spatial environment such as the built environment and the natural environment. "The Healthy Settlement Model" where the settlement (socio-spatial arena) is *framed as an ecosystem that treats the health of the individual as central to the functioning of the larger ecosystem* (Barton, 2005).

Indeed, how can a society function successfully if its citizens are unable to function within said system? To make this clearer, imagine working in a group setting. Each individual in the group has their own role and specific contributions to the group. When one group member is unable to perform, that would cause stress on the remaining group members.

C. UMCG's Model

The UMCG model reflects the circular nature of Barton's model. As a consequence of a lack of explanation of the UMCG model, this comparison should be confirmed by its developers. Furthermore, the lack of description leaves much of the

theory up to interpretation, making room for error and misunderstanding in theoretical evaluations.

The socio-spatial arena in the case of this research encompasses the same components of life, social networks, economy, and their support systems etc. It is important to understand that economic factors of course could contribute to the poor mental health experienced by those within the hospital system. Even so, economic status is not applicable to the scope of this research. This applies to what seems to be a food intake dimension and a sphere focusing on physical exercise as indicated by UMCG's model.

Figure 16. UMCG Staff. Conceptual Model. Digital Rendering. 2021.

D. The Martini Hospital: A Lack of Modeling and Theory

There seem to be no theoretical model or conceptual explanations offered by Martini Ziekenhuis. Rather, there are actionable pieces of the proverbial puzzle used to support the mental wellbeing of their patient population. “As the building is mostly based on human possibilities and needs, the environment may be considered as healing (Architizer Staff, 2013).” No explicit message about supporting the mental health of the patient population through spatial design was discovered during this research excluding the use of art as an intervention. The focus of design while supporting general healing, certainly seems to focus more on flexibility and the future of the built environment. Such flexibility is important as a theme for supporting individualized perceptions of space. However, that does not seem to be the focus of the MZH.

I. Reflecting on The Conceptual Models

The models included herein are indicative of the importance of the effect that space has on the mental health of the individual. The models provide a visual explanation for the important concepts that pull through this paper. They also show the differing ways these approaches can be used to better the inpatient population. Furthermore, the conceptual models (or rather the lack thereof) show us where theory is weak (in the case of UMCG and the lack of description of their model) or nonexistent (in the case of the Martini Hospital). They also provide us with the information that without an explanation of conceptual models, most of the imagery can be left up to interpretation. Perhaps most importantly, they reinforce the argument for spatial transformation on differing scales.

These concepts are vital in the following chapters as the concepts they present are throughlines that are echoed many times over.

Ch. 3. The Actor Consulting Model

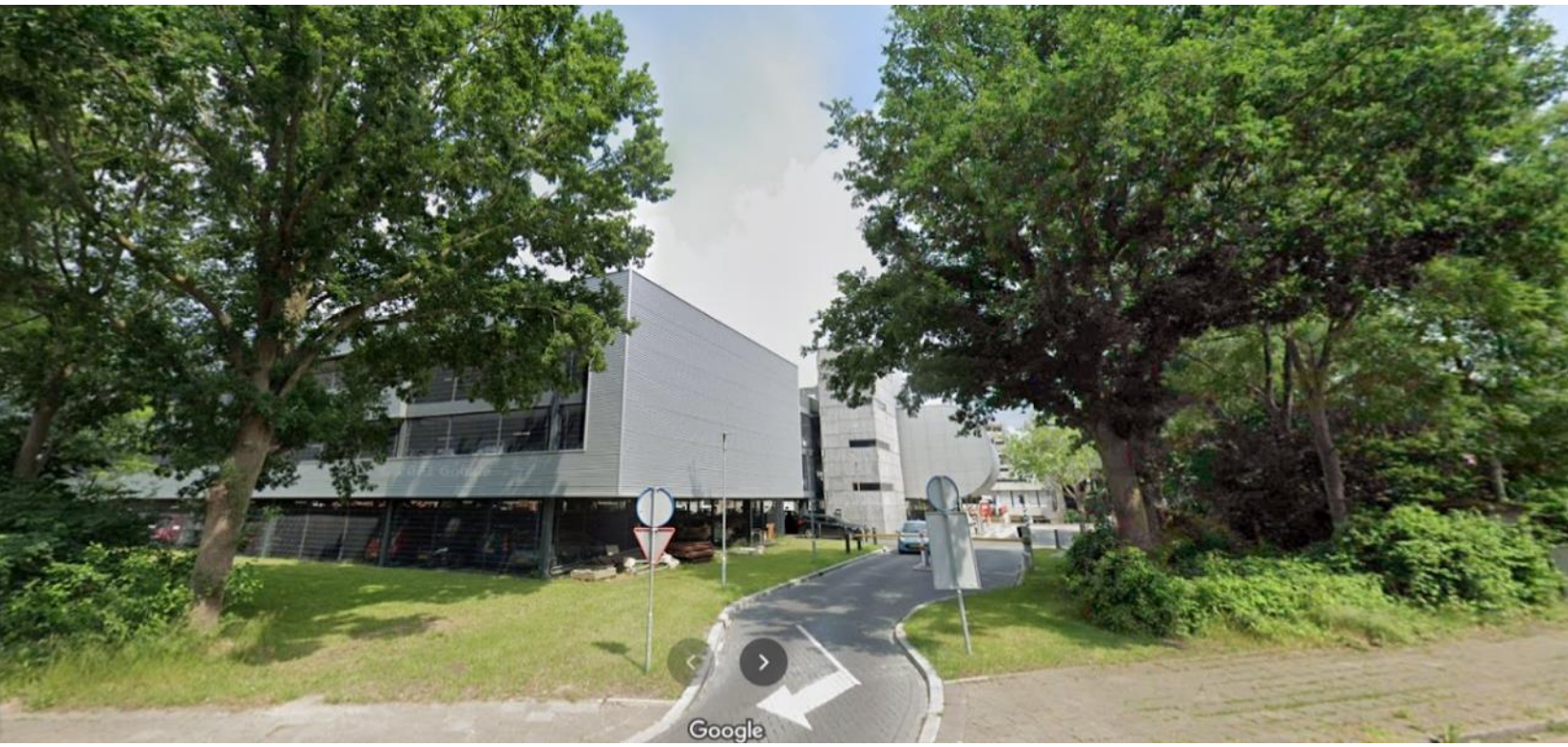

Figure 17. Google Street View. Employee Exit MZH. Photograph. 2021.

3.1 The Actor Consulting Model: A Reintroduction

Earlier in this paper, the actor consulting model was presented. It is composed of three dimensions, The Present Contribution, The Potential Contribution and the Desired Contribution. Each dimension will be discussed in this chapter.
The methodology behind this chapter was also introduced earlier in this paper. The result of this methodology evolved into the framework as it is presented herein.

Though the Actor Consulting Model is discussed, there is a focus on multiple developmental scales. Moreover, actors from outside the scope of the MZH and UMCG were included to bolster the lack of information resulting from the Covid-19 Pandemic. Furthermore, decision making is likewise scaled within the scope of this paper. These variances remain valid as they more adequately address the complexities which exist within the context of spatial transformation as it relates to mental health or mental wellbeing.

3.2 Present Contributions

I. Existing Plans and Policies

This section focuses on the policies that are already in place to combat mental health issues (and associated suicide rates) and serves to highlight where some of these policies are lacking.

Verderber indicates that “present-day architects and others who design environments for mental health treatment” draw on much of the same design principles

of “late-nineteenth century asylums” (Verderber 25, 2010). Nevertheless, progress in the field of mental health is being made. Policies are consistently being developed as conversations about mental health issues become increasingly common worldwide.

I.1 Worldwide

“In May 2013 the 66th World Health assembly adopted the first ever mental health action plan of the World Health Organization (WHO)” (World Health Organization, 2019). The Netherlands is among other countries that are attempting to integrate large scale policies in prevention of suicide by focusing on plans of action. As of 2019, according to the table provided by the World Health Organization in their Suicide Prevention Packet, there are promising national plans being introduced on a global scale.

	Number of countries with a national strategy or action plan	Number of countries where a national strategy or action plan is under development
African Region	0	3
Region of the Americas	8	2
Eastern Mediterranean Region	0	1
European Region	13	5
South-East Asia Region	2	0
Western Pacific Region	5	2
Total number of countries	28	13

Figure 18. The World Health Organization. Chart of Countries and Suicide Action Plans. 2019.

From worldwide policies, to national, regional and municipal efforts, protection against poor mental health seems to be on the proverbial agenda. However, with the rates of suicide still being at such a high rate, it stands to reason that more work and new approaches to risk prevention should be undertaken. Indeed, this view was echoed by van der Ploeg (van der Ploeg, 2021). A different approach to tackling these complex issues is by addressing them from a socio-spatial perspective.

I.2 Shortages and Solutions

Currently, there is a shortage of mental health professionals within The Netherlands. This is particularly worrisome for those with mental health issues. In fact, on occasion, mental health aid must be outsourced to local clinics to provide adequate care. In Amsterdam they have a psychosocial block where individuals are situated around the care centers. According to van der Ploeg, the shortage of staff within Groningen is of particular concern. This is an issue relevant to two of the main hospitals within Groningen as a spatial scope. The MZH and the Universitair Medisch Centrum Groningen, or the UMCG are presented as the environments through which the Actor Consulting Model operates.

A. The UMCG at Present

According to van der Ploeg (2021) there are efforts in place to increase the support to the mental health of their patients through hospital planning. This seems to be the case for newer sections of the hospital campus. Indeed, The UMCG is far more developed in terms of theoretical preparations for physical environments that focus on promoting health.

Notably, the oncology department at UMCG refers to its waiting room as ‘the stay’ where the focus is on a comforting and supportive environment. The goal of the stay is to encourage the population to feel that they have privacy. The patients, according to van der Ploeg (2021) say that the lighting in the stay increases the sense of comfort. Additionally, in her interview, van der Ploeg (2021) noted lighting as being an important contribution to the department's success in decreasing the effects of institutionalization on patients’ mental health (van der Ploeg, 2021).

The UMCG offers in addition to their psychosocial support team, the silence center. This center is mainly focused around quiet reflection and prayer, reflecting the spiritual nature of vernacular approaches previously mentioned. For example, visitors can “burn a candle, read and use prayer rugs”. “The space, open 24/7 is “arranged in such a way that people of all different faiths and beliefs can feel at home there” (UMCG Psychology Staff). According to Karen van der Ploeg, there is a lot of natural light in the room that enters through the large windows within the “Stilte Centrum”. She adds that though it is a valuable space, most people do not even know it exists (van der Ploeg, 2021). As a result, the center is mostly used as a quiet space for the staff, rather than for the patient population (van der Ploeg, 2021).

I. The Role of Psychosocial Support

In terms of oncology, a diagnosis can impact the life of the patient and their loved ones. The patient has “a lot to process” both physically and mentally (UMCG, 2017). Some of the feelings associated with a diagnosis and subsequent treatment include “fear, uncertainty, anger and sadness” (UMCG Department of Oncology Staff, 2017).

A diagnosis can also bring about questions for actors (here, patients and their loved ones) associated with medical crises. Such questions arise as “why me, what happens to my partner, my children, how should I proceed?” (UMCG Department of Oncology Staff, 2017). “Apart from the cancer, you may have psychological problems and these may have become worse due to your illness or treatment. It is also possible that you have mental health problems as a result of your cancer or its treatment. Talking to a *social worker*[7], psychologist, or chaplain can help you deal with your situation” (UMCG Department of Oncology Staff, 2017). Patients can also be individuals who are not in the hospital, yet experience the same anxiety, and are searching for meaning while dealing with the fact that their lives are shorter than they expected. “Contact with a medical social worker, medical psychologist or chaplain is free of charge for you” (UMCG Department of Oncology Staff, 2017).

I.1 Spiritual Counseling and The Silence Center

Belief in a higher power can influence community support systems, help seeking behavior as well as suicidality (The World Health Organization, 2019). The WHO goes on to state that this topic should be approached with caution as belief systems might provide feelings of belonging but can also promote feelings of exclusion. To put it simply, religious beliefs can either protect against suicide risk or increase suicide risk (The World Health Organization, 2019).

Indeed, in hospitalization, spiritual guidance is offered as a way to aid the patient and/or their family members through the process. In many terminal cases, spiritual rights or blessings may be offered (E.g., “Last Rights” in the Catholic Faith). The Martini Hospital goes beyond offering this service by providing a space for prayer and quiet

reflection needed in times of hospitalization, the Silence Center, something that also exists at the UMCG.

I.2 Long-Term Care Living Rooms

The UMCG accounts for differing lengths of treatment courses through spatial perspectives. “There is a special living room in the E3 nursing ward of the Internal Medicine especially for patients who are in hospital for a longer period of time. Here volunteers provide fun with a chat, a game and a cup of coffee” (UMCG Staff). This space is different from “the stay” however there are no pictures of the Long-Term Care Living Rooms. Therefore, it is hard to craft an intervention for said environment. Second, the presence of the Long-Term Care Living Room points toward comfort care and separation from the hospital environment. Actually, it’s existence is also indicative of topophilic theory because it provides an opportunity for patients and staff to create meaning and attachment in their environment.

I.3 Biophilic Theory and Action at the UMCG

Apart from comfort as an approach to decreasing mental stress caused by hospitalization, the UMCG seems to make a concerted effort in attention to indirect biophilic exposure. In the cancer unit, some of the walls depict biophilic elements. Moreover, the ceiling at ‘the stay’ (the waiting room for the oncology department) is glass, allowing for natural light to flow through the space. This is indicative of therarealization, the transparency between nature and the built environment (Verderber, 2010).

However, in other areas (i.e the silence center) biophilic elements are missing. The UMCG lacks indirect exposure to biophilic themes such as water features, the

value of which was previously mentioned, within the walls of the property. This includes the main entrance to the hospital.

Figure 19. Unknown. “UMCG Treatment Room”. Photograph.

I.4 Combatting Issues in Accessing Mental Health Resources

Based on the findings included herein, a concerning aspect of policy is the amount of staff that is needed to support the needs of patients struggling with their mental health. Indeed, van der Ploeg stated that there is a serious need for more psychological care workers within the UMCG. She further explains that some psychological care will be outsourced in an attempt to account for lack of communication within the hospital (van der Ploeg, 2021). Furthermore, those who will recover can no longer count on the same hospital staff for psychological support. They must find help elsewhere (van der Ploeg, 2021).

Virtual Support: How the Patient Can Make the Most of Mental Health Resources

The UMCG offers, in addition to psychiatric care, training in mental health dimensions. The online course offered spans 45 minutes per topic and deals with mental health, eating disorders, depression, anxiety, autism, ADHD, substance use and addiction, antisocial behavior, psychosis and “Resilience: how to boost your mental health”. The target audience is young people of about 14 years old, teachers and parents interested in the mental health of young people. This resource is especially useful for the young population that tends to end up in the oncology unit at UMCG (van der Ploeg, 2021).

Furthermore, the existence of this kind of information is indicative of the preventative measures deemed important by van der Ploeg (2021).

B. The Martini Ziekenhuis at Present

The ability to navigate is important in terms of mental health as feeling disoriented can cause further mental stress. The ability to navigate from point ‘A’ to point ‘B’ is known as ‘wayfinding’. The MZH uses its layout in prevention of disorientation (see figure 20). Spatial transformation in the context of hospital layout is not a major concern for the MZH. The footprint of the martini Hospital was created with mental health in mind, though its physical location was not. Further aspects of the outer areas of the space include blue space, green space, and easy navigation from the hospital property to the city center.

However, spatial transformation within the walls of the development is helpful in counteracting the negative psychiatric effects of hospitalization. Within the hospital walls

exists different resources as spatial contributions of mental health support. One such contribution is the Silence Center.

Figure 20. Studio DVO. “Untitled”. Artist's Rendering.

I. The Silence Center at the Martini Hospital

“If you follow route 0.7, you will find the Stiltecentrum to the left of the Martini Restaurant” (Martini Hospital Website Staff). The website stresses that all are welcome in The Silence Center at the MZH on a daily basis. “[The Silence Center is] a place to think for a while, write something or light a candle. You can also read quietly here or listen to music” (Martini Hospital Website Staff). The Silence Center is considered the resting place of the hospital. It is specially decorated with light as an essential consideration in its design. There is also a Memorial Tree and the Butterfly Cloth in the Silence Center (Martini Hospital Website Staff). The Butterfly Cloth serves specifically

as a reminder of children lost during hospitalization (Martini Hospital Website Staff). The memorial tree offers the opportunity to hang a memorial card for those they wish to remember (Martini Hospital Website Staff). The Department of Mental care also organizes an Anniversary in The Silence Center as a day of remembrance. “This is a day for relatives and caregivers to remember the deceased and to find comfort and encouragement” (Martini Hospital Website Staff).

The Silence Center at MZH contrasts from the UMCG’s in that it includes indirect elements of biophilic exposure, accents of mentally supportive colors according to theory as well as words on the walls that help provide a sense of meaning to the room. The silence center also reflects the spiritual characteristics that were mentioned by advocates for vernacular design (Verderber, 2010). It uses topophilic theory as reflected by the recurring events held there and the opportunity for users of the space to add personal elements such as remembrance cards. Furthermore, the use of remembrance days (including Butterfly Day for children who died in treatment or at birth) circle around biophilic themes.

Figure 21. Martini Hospital Website Staff. “Untitled”. Photograph.

II. Color Theory and The Martini Hospital

The Silence Center at MZH uses color in a different way according to color theory. At The Martini Ziekenhuis, walls have different colours, so that it will always be possible to create rooms with different colour schemes, i.e. with a different atmosphere (Molenaar 4, 2013).

The variance in color is beneficial according to theory. Single colors tend to be monotonous. A monotonous color scheme is associated with “irritability and negative

ruminations" (McCay, 2017). By using varying colors, the MZH is able to aid in the reduction of mental stress as a result of institutionalization.

At Martini Hospital, a color ambiance has thus been created that departs from the clinical image of hospitals. Due to the changing colors, the relatively long corridors provide constantly changing stimuli, making the building exciting without evoking restlessness. The colors provide a focal point for visitors and staff and have a positive effect on the healing process. Research has shown that this is not a hypothetical situation- patients and staff react positively to the colors, and they are less likely to feel they are in a hospital (Molenaar 4, 2013). Moreover, "environmental color specialists Frank Mahnke and Rudolf Mahnke argue that predominantly white, brightly lit interior environments contribute to eye fatigue and psychological discomfort" (Horsburgh 18, 1995). These thoughts were echoed by van der Ploeg (2021).

The Martini Hospital also had the opportunity to factor color theory into its construction. The palette chosen for the hospital consists of 47 colors selected by Dutch artist Peter Struycken. Yet, there was no notable discussion about how color choice impacts the mental health of patients within the hospital. As an example, in Horsburghs study, "over half of the survey participants chose the color blue when describing rest" (Horsburgh 18, 1995). On one hand, The MZH uses color on almost every surface. That being said, there is not always attention to color intensity, which we know to shape mood. In addition, looking at patient rooms, there still exists that stark white that environmental specialists argue against.

Figure 22. Molenaar 4. Peter Struycken Color Palette. Digital Rendering. 2013.

Figure 23. Architizer Staff. “Untitled”. Photograph. 2013.

Figure 24. Google Street View. Martini Hospital Treatment Room. Photograph.

III. Art as an Intervention

The MZH offers another element of spatial characteristic that is helpful in terms of mental wellbeing. What they point to is the effect of art on the hospital environment. They explicitly state benefits for stress reduction. “Art gives color to life. When you come to the hospital, a warm, friendly environment is so pleasant. Artworks can provide distraction and *comfort* and help reduce stress. For example, by offering a different view of things. Art can also inspire or be a source of recognition [i.e., wayfinding- See figure 20]. *Art is therefore an important part of the hospital*” (Martini Hospital Website Staff). Particularly, the MZH is interested in large format art. It is possible that large format art can be imposing and may contribute to increased feelings of stress or dread on the patient population. In this context, the characteristics of the art also matter.

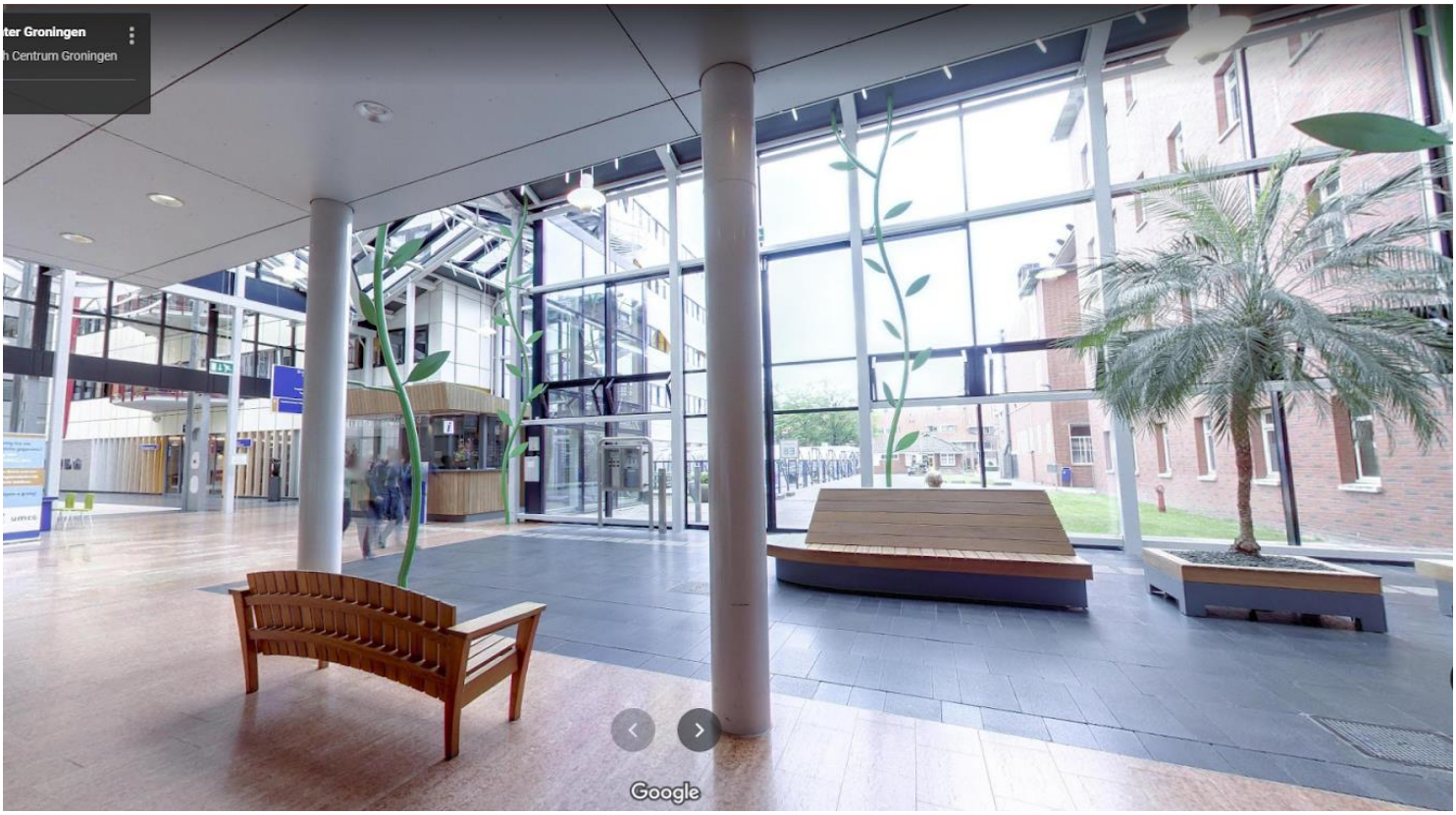

Figure 25. Google Street View. UMCG and Transparency. 2021.

IV. Biophilia in the Context of The City of Groningen

Moving toward the city of Groningen as a whole is effective in discussing and accounting for the types of individuals who might find themselves in treatment within one of the city's hospitals. Furthermore, it echoes the information provided by Team Felixx and The UMCG in that the hospital itself is part of and deeply connected to The City of Groningen.

In terms of the impact of biophilic design on these individuals (i.e., the public within the city of Groningen), groups at risk for high mental stress and mental illness such as "economically deprived communities, pregnant women" and senior citizens, green spaces tend to provide more benefits than disadvantages (World Health Organization, 2016).

According to the theory of biophilia, individuals are likely to experience positive feelings associated with said spaces (also reflective of the theory of stress reduction as well as biophilia). Sure enough, by using a heat map, participants in the March 2021 survey[8] on which the heat map is based, indicated an affinity for spaces such as the Noorderplantsoen and The Stadspark of Groningen. Based on this information, the public within the city of Groningen seem to show an overall affinity for the natural spaces referenced by Houlden (2017). However, this is speculative, because other factors such as social capital could have an impact on these findings. Furthermore, quite a bit of data came from the city center of Groningen. In this spatial context there are not so many biophilic elements and affinity was indicated due to the possibilities for social

[8] See Appendix C

interaction over biophilic exposure. Simultaneously, the respondents who represent the public seem to show an aversion to spaces absent of green space which reinforces the importance of biophilic exposure. The complexities of this type of feedback add to the argument that individualistic approaches could be useful in spatial transformative practices. Furthermore, these perspectives indicate that public actors do in fact value biophilic elements.

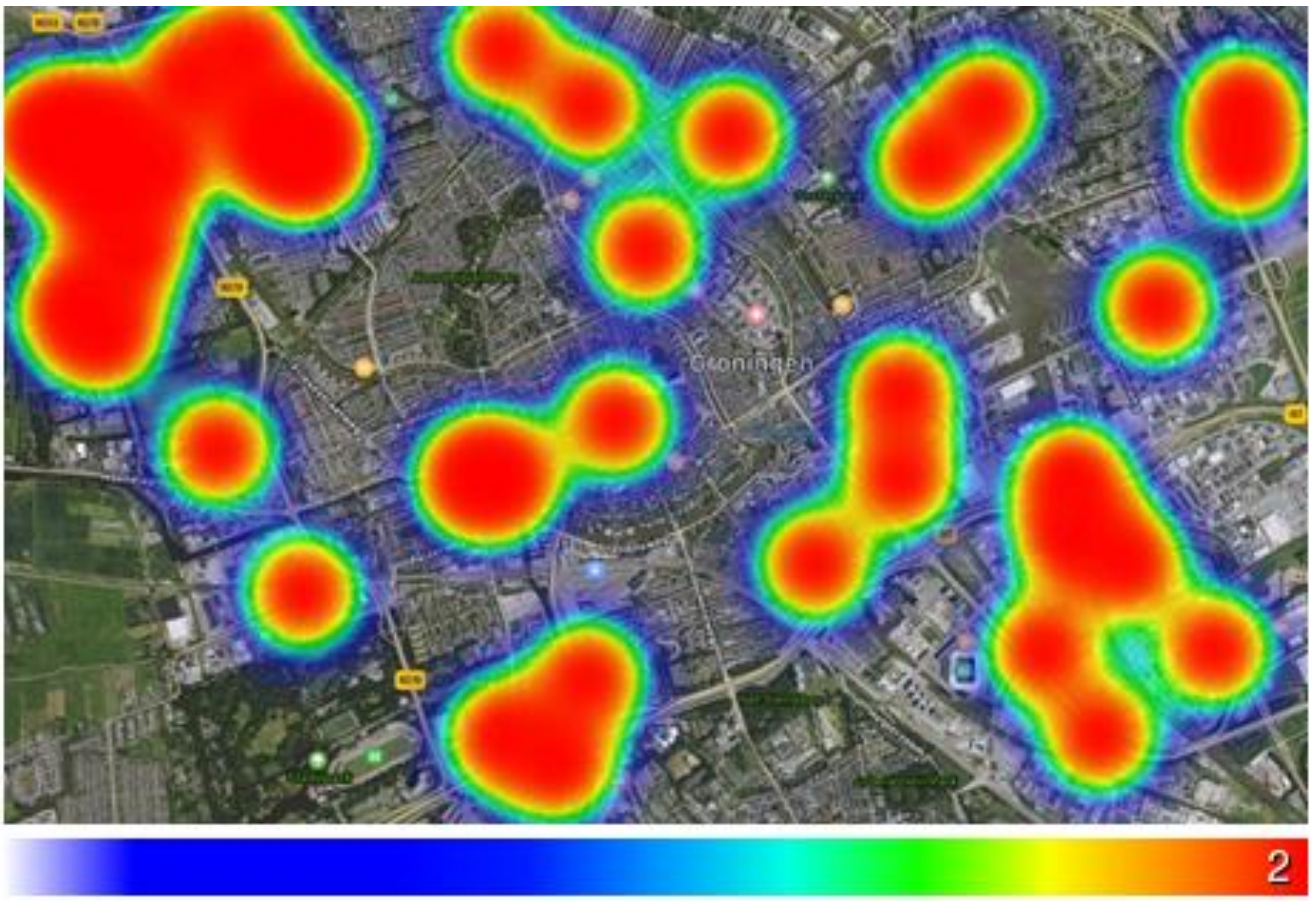

Figure 26. Vail. “Spaces of aversion”. Digital heat map. 2021.

3.3 Desired Contributions

A. Constraints

The primary difference between potential and desired contributions are the existence of constraints. Constraints are also referred to in other fields as ‘limiting factors’. That is essentially what they do, limit the action that can be taken. Constraints consist herein of three main factors: Social, Institutional and Organizational. These three constraints represent categories of limiting factors for spatial transformation. Other constraints such as financial constraints do matter, however, they add a level of complexity that is perhaps outside the main scope of this paper. For example, financial constraints can be applied to both the institutional constraints (e.g., the budget for spatial transformation) as well as organizational constraints (e.g., adequate pay for staff).

This section focuses on contributions advised by hospital staff, research on mental health and spatial characteristics. The advice can serve as a jumping off point for potential contributions (section 3.4), no matter the feasibility of adaptation. By this I mean that unrealistic approaches due to constraints have fundamentally workable pieces and ideas behind them. These pieces can start from a large scope and be scaled back to fit within the constraints of the environment and resources available. They can then be incorporated into the spatial transformation of the hospital. The following are the three main types of constraints that are discussed in more detail.

I. Social Constraints

The first factor is social, otherwise known as ‘the who’. These are the stakeholders within the system. Social constraints are influenced by societal norms and can affect attitudes toward transformation. Furthermore, social constraints include taboos that exist outside the individual that puts pressure on them to act in a certain way. *Stigma*[8] is a good example of such a factor.

I.1 Stigma

According to The American Psychiatric Association, “More than half of people with mental illness don't receive help for their disorders. Often, people avoid or delay seeking treatment due to concerns about being treated differently or fears of losing their jobs and livelihood. That's because stigma, prejudice and discrimination against people with mental illness is still very much a problem” (Borenstein, 2020). Stigma is so impactful, that it has actually been referenced as a component of security (Connellan, 2013). Stigma in communities can lead to lack of trust between members, an intolerant environment where mental health is shrouded in taboo and decreased feelings of belonging in community members.

A social climate in which help seeking for poor mental health is no longer taboo and public dialogue on the issue is encouraged is helpful in stigma reduction as well as promotion of help seeking behaviors (The World Health Organization, 2019).

Indeed, work is being done to combat stigma. In the 1950s the members of the ASP (Architectural Study Project) were tasked with the role of “working to dispel the fog of ‘ignorance and prejudice’ surrounding mental hospitals in the minds of architects who, through design, ended up making ‘many of the major decisions on the subject’.

Patient sensitivities were described, and design implications suggested, such as countering the common tendency to withdraw by means of environmental innovations that could 'draw and hold human interest'" (Ramsden, 2018). That being said, stigma remains a social constraint at present. This is reinforced in Survey 2[9] wherein 25% of the respondents indicated that stigma surrounding mental health issues in Groningen definitely exists. An additional 38% of respondents indicated that stigma surrounding mental health issues within the city of Groningen probably exists.

II. Institutional Constraints

The second factor is institutional. Unfortunately, information surrounding institutional constraints is limited. Throughout this research, it was found that definitions (and examples) of institutional constraints were sparse.

This factor of constraint, however, is also known as the 'what'. The institutional constraint is composed of the hospitals themselves. This factor cannot be "alleviated through administrative procedures" (Law Insider Website). Such constraints include the laws, rules and regulations that shape the institution. As an example, serious workforce shortages impact the amount of care that a patient can receive (e.g., psychiatric staff shortage in Groningen leads to outpatient referral and up to 26 week waiting periods for counseling appointments).

III. Organizational Constraints

The third and final factor is that of organization. Similarly, to institutional constraints, applicable definitions and information was not bountiful. That being said, the

[9] See Appendix C, Q14

organizational constraints reflect the ‘how’. “Organizational constraints are situations or things that interfere with task performance at work” (Spector et al., 2021). An example of such a constraint is incomplete information. Furthermore, faulty equipment or poor working conditions can be significant examples of organizational constraints. Perhaps most applicably, organizational constraints could come into play during the process of spatial transformation. The indication herein is that organizational characteristics be adapted throughout such processes.

Each constraint is a factor that must be considered when fostering spatial transformation.

B. Desired Contributions Applied to The City of Groningen: Spatial Transformation Within Hospital Redesign

Here, hospital redesign references two specific cases within both of Groningen’s hospitals. This is ‘spatial transformation’ on a micro-scale, and touches on the physical aspects of spatial transformation, the motivation for which is therapeutic milieu. “*Therapeutic milieu* is a term that is also interchangeable with patient-centered design and healing environments. Consequently, the subthemes included here are both numerous and varied; they include rehabilitation, best practice considerations, ambient features, social features, nursing stations, staff perceptions, program evaluation, the Planetree approach, positive design, multidisciplinary input, architectural change, and psychiatric intensive care units” (Connellan, 2013). Granted, this is a wealth of information, and not all subthemes will be discussed herein.

The potential for redesign in this scope is based on the theories of biophilia, psychological color theory, topophilia, stress reduction theory, input from medical psychologist Karen van der Ploeg and on strategies proposed by Verderber (2010).

Five innovative strategies to break down the natural environment are proposed by Verderber (2010). They include water, roofscaping[10], surrogates, therapeutic gardens (healing) and transparency between the interior and exterior- giving rise to a new term “theraserialization” (Verderber, 2010). Verderber’s five strategies are inclusive of what we here refer to as desired contributions.

As reported by van der Ploeg, daylight and rooms with windows (reflective of Verderber’s strategy of transparency) are important for the mental health of patients, especially those experiencing depression (van der Ploeg, 2021). Indeed, such a focus is evident in the design of the Martini Hospital. Conversely, rooms with windows or access to daylight are not always available at least in the UMCG case (van der Ploeg, 2021). Increasing the number of rooms with natural light access is important step toward mitigating the negative effects of institutionalization on the mental health of patients. Theoretically, this advancement requires the renovation of UMCG, specifically in patient rooms. Here, van der Ploeg is echoing the advocacy of the value of blurred edges as presented by Verderber (2010) and reflects staff perceptions deemed important by Connellan (2013).

Increasing therarealization through spatial design could also be applied to the Silence Center at UMCG. Though no high-quality pictures of the silence center at The

[10] Roof scaping does not apply to the scope of this paper.

UMCG exist, there are still images available. What they show makes it is clear that color theory nor biophilic theories were taken into account when considering the design of this space, though van der Ploeg (2021) did indicate that natural light does flow through the space. Positively, it is recognized that the existence of this space is beneficial to the spiritual and mental wellbeing of those involved with The Universitair Medisch Centrum Groningen. However, the silence center simply does not align with a majority of the spatially relevant theories which promote mental wellbeing.

The silence center is dark with red floors and curtains that distances the space from the desired elements of space that are echoed by Verderber (2010), van der Ploeg (2021) and Schuschke et al. (1994)[11]. Though, there are white walls which contrast from the deep red, reinforcing the importance of contrast as advocated for by color theory. Furthermore, the access to the Silence Center incorporates natural light and indirect exposure to biophilia[12]. According to the theory of stress reduction by way of biophilia, the silence center should be integrating elements of nature to provide a more calming atmosphere. Furthermore, Schuschke's (et al., 1994) study of 68 patients found that "light colors were consistently preferred for all objects such as ceiling, walls, floor, curtains, furniture and bed linen" (Schuschke et al., 1994). Notably, the silence center could also use psychological color theory to transform the space by integrating the mentally beneficial color schemes that were advocated for by patients in the Schuschke et al. (1994) case.

[11] See Figure 27A
[12] See Figure 27A

Potential improvements include a screen paneled ceiling that offers an opportunity to bring surrogate nature into the space. Additionally, different settings for the screen makes the room adaptable to the individual. This adaptive focus, once more, is something deemed important by van der Ploeg (2021).

Surrogate nature can be incorporated in furnishings like carpeting that resembles natural landscapes, a focus of The Martini Hospital's Silence Center. Dimmed lighting can offer respite from the standard lights found inside the hospital environment. Keep in mind that the UMCG references design aimed toward creating spaces that make the patient forget that they are in the hospital in the first place[13]. Open, flexible spaces offer patients the ability to shape their own environment. Semi-transparent curtains offer privacy while still allowing for natural light to enter the space. There should also be a "blackout" option for those who favor a dark space to recover in. The mood board below[14] provides a visual representation of the desired themes presented by Verderber (2010) and Schuschke (et al., 1994) and how they could be used to revamp the silence

[13] See P83
[14] See Figure 27B

center. This is an effort to create a silence center with maximum benefits for those who use it (including care providers like nursing staff).

Figure 27A. UMCG Website Staff. Collage. 2017.

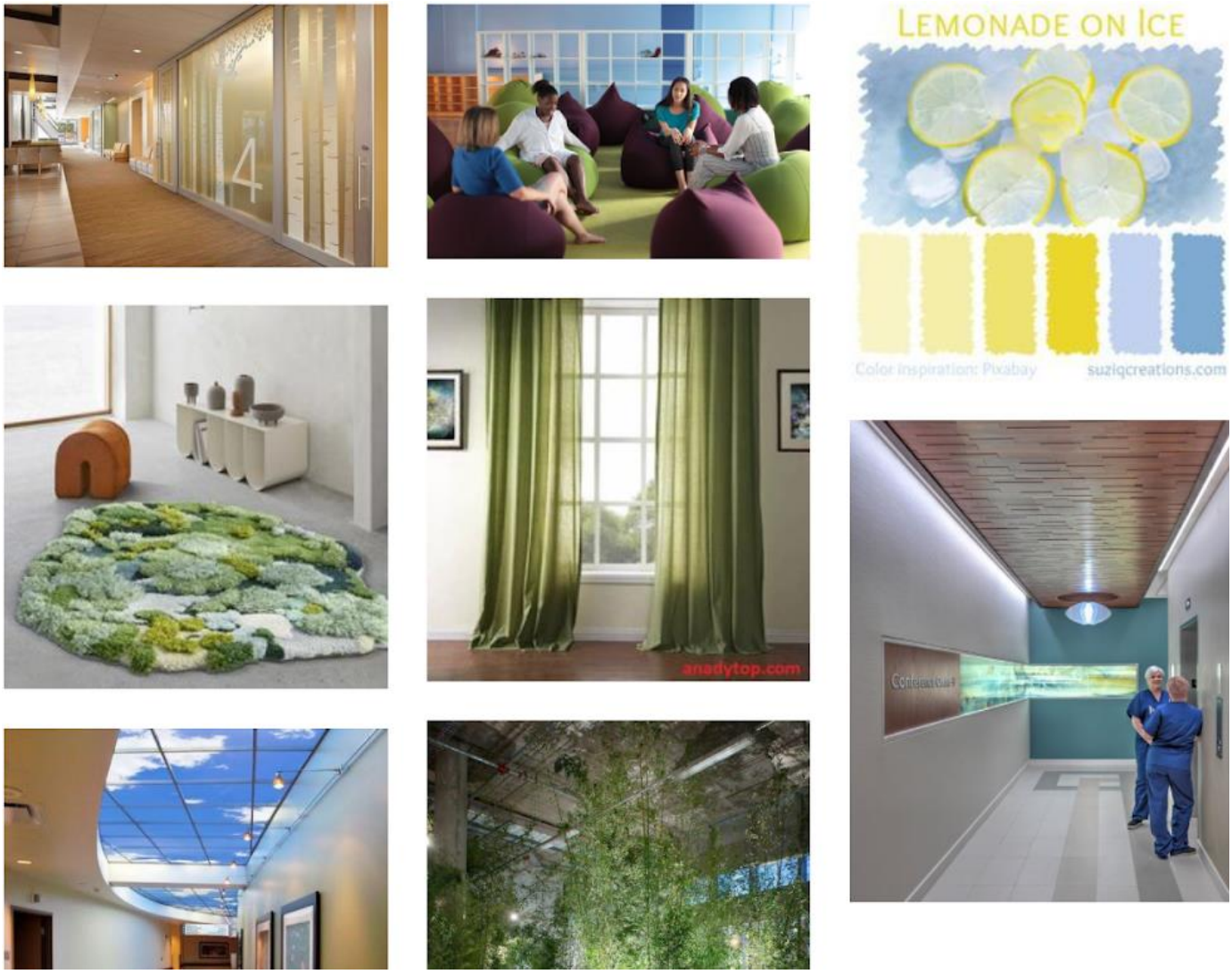

Figure 27B. Vail, Jake. Mood Board. Digital Rendering. 2022.

I. Zooming In: Desired Contribution and The Martini Hospital Case

Unfortunately, due to the lack of availability of staff at the Martini Hospital, much of the information surrounding desired contributions of the patients and staff is lacking. Therefore, theory was applied to craft recommendations based on the desires of the public as well as the desires of individuals in other cases. Even so, much of the available information points to the necessity for the patient to customize their space. As

an example, Schuschke et al., (1994) states that “the patients’ wish should be given priority over decreed recommendations by experts when basic considerations of illumination…are allowed for in the particular overall colour design project”.

Based on theory and these desires, the MZH should be integrating more greens, blues and yellows into its palette. For a deeper impact on hospital patients, these three color groups should include variations in saturation and hue. This would support the prevention of the monotony that could occur from using such a narrow palette.

The patient population advocates for color theory. But, the public within Groningen indicates an attraction to biophilic elements, reinforcing the importance of said elements in the transformation of spaces such as the MZH.

Additionally, biophilic arguments were supported by the public within Groningen in the surveys that were conducted in March 2020[15] and March 2021[16]. In an effort to combine theories of biophilia, with the therapy provided by the presence of ongoing art exhibitions, the MZH would do well to focus on natural themes in commissioned art. The encouragement for therarealization to occur as a part of spatial transformation is conditional on the ability for individuals to shape their own spaces in line with information provided by van der Ploeg (2021).

In terms of spatial transformation, color theory is a powerful tool. However, the rooms at The Martini Ziekenhuis seem to be mostly devoid of color or biophilic elements (i.e, murals of landscapes, flowers, water). Though, in this particular room, there is a view that looks out over some trees in a courtyard (therarealization and the blurred lines indicated by Verderber (2010)). This effect can be enhanced through design. Here,

[15] See Appendix D
[16] See Appendix C

indirect exposure to biological nature occurs through art, reflective of the approaches MZH already uses in their hospital (and that the staff highlights as important to the 'warm, welcoming' characteristics of the hospital[17]). Considered for this instance of spatial transformation is the specifics surrounding psychological color theory. Firstly, the effect of a monotone color palette. Secondly, the effects of highly saturated colors. And lastly, the colors themselves which are all theorized to promote healing. The following is a rudimentary rendering of spatial transformation. Figure 28 is emblematic of what a patient room at The MZH could look like when color theory, stress reduction and the theory of indirect exposure to biophilic elements are taken into account. Additionally, each section of the room would have lighting that is adjustable by the patient in order to support the individual through spatial transformation, indicated as a desired output (van der Ploeg, 2021).

Figure 28. Vail, Jake & Google Street View. Art Intervention. Digital Rendering and Photograph. 2022.

[17] See P66

I.1 The Challenge with the Martini Hospital

Much of the lack of information from the MZH could be circumvented by accessing Google images of treatment areas and websites for the architectural basis of the hospital's design. Unfortunately, due to the lack of response by Martini Ziekenhuis, the culture within the hospital is difficult to assess. It is not possible to say for certain whether the communication between doctors is in need of improvement as advocated for in the UMCG case because the Martini Hospital advocates for connection between staff on their website, but this might be lacking in practice. Moreover, important information that could be used as a basis for improvement is lacking due to the unwillingness of the hospital to partake in this research. It is for this reason that this section on ways the MZH can improve is shorter than that of the UMCG.

Figure 29. Google Street View. Petrus Campersingel. Photograph. 2021.

II. Zooming In: Desired Contributions in the UMCG Case

Before a patient even steps foot on hospital property, medical psychologist Karen van der Ploeg (2021) of UMCG recommends that individuals are first screened for mental illness risk and evaluated accordingly[18] (van der Ploeg, 2021). The reasoning behind the importance of pre-treatment screenings is echoed by the UMCG psychological staff. They state that “previous psychological complaints come back or are aggravated by the illness, for example depressive complaints or mourning complaints in connection with a previous loss” (UMCG Psychology Staff). A realistic step towards bettering the mental health of the patient community throughout the treatment process was proposed by van der Ploeg (2021). She stressed the importance of doctors getting to know their patients. This ranges from investigating how much about their condition the patient wants to know to what kind of room the patient would prefer.

Only in some of their rooms does the UMCG employ therarealization. Rooms without windows as an option of connection to biophilic elements would ideally be exposed to surrogate contact. Perhaps by creating such an environment based on biophilia and therarealization, topophilic experiences would arise.

Though, the UMCG does not seem to mention much about place attachment, save for the existence of their Long-Term Care Living Room. Once more, based on existing information, an adaptive individual focused approach should be crafted in order to support the topophilic needs of hospitalized persons.

[18] Reflected in figure 14

The advice from van der Ploeg ranges in scope. On one hand, improving the staffing of an entire hospital is no easy feat. Moreover, changing the mindset of the hospital system could be just as challenging.

Some elements of spatial transformation are relatively minor, packing a big impact. Notedly, Karen van der Ploeg suggested the removal or replacement of “imposing posters on the walls” as a desired aspect of spatial transformation. She stated that they potentially contribute more to mental stress than alleviation of said stress. For instance, a poster asking “worried about your child’s weight?” has the potential to increase stress for a visitor whereas an alternative poster showing “The Basics of Healthy Living” has a more positive overtone. This is an example of how stress reductive practices can be applied in spatial transformation while circumventing large scale constraints.

Perhaps another goal presented by van der Ploeg (2021), increasing awareness of the Silence Center, could be combined with the ‘poster problem’. Aptly, creating a poster that informs about the Silence Center as a place of recovery, reflection and separation from the hospital environment (again, emphasizing stress reduction).

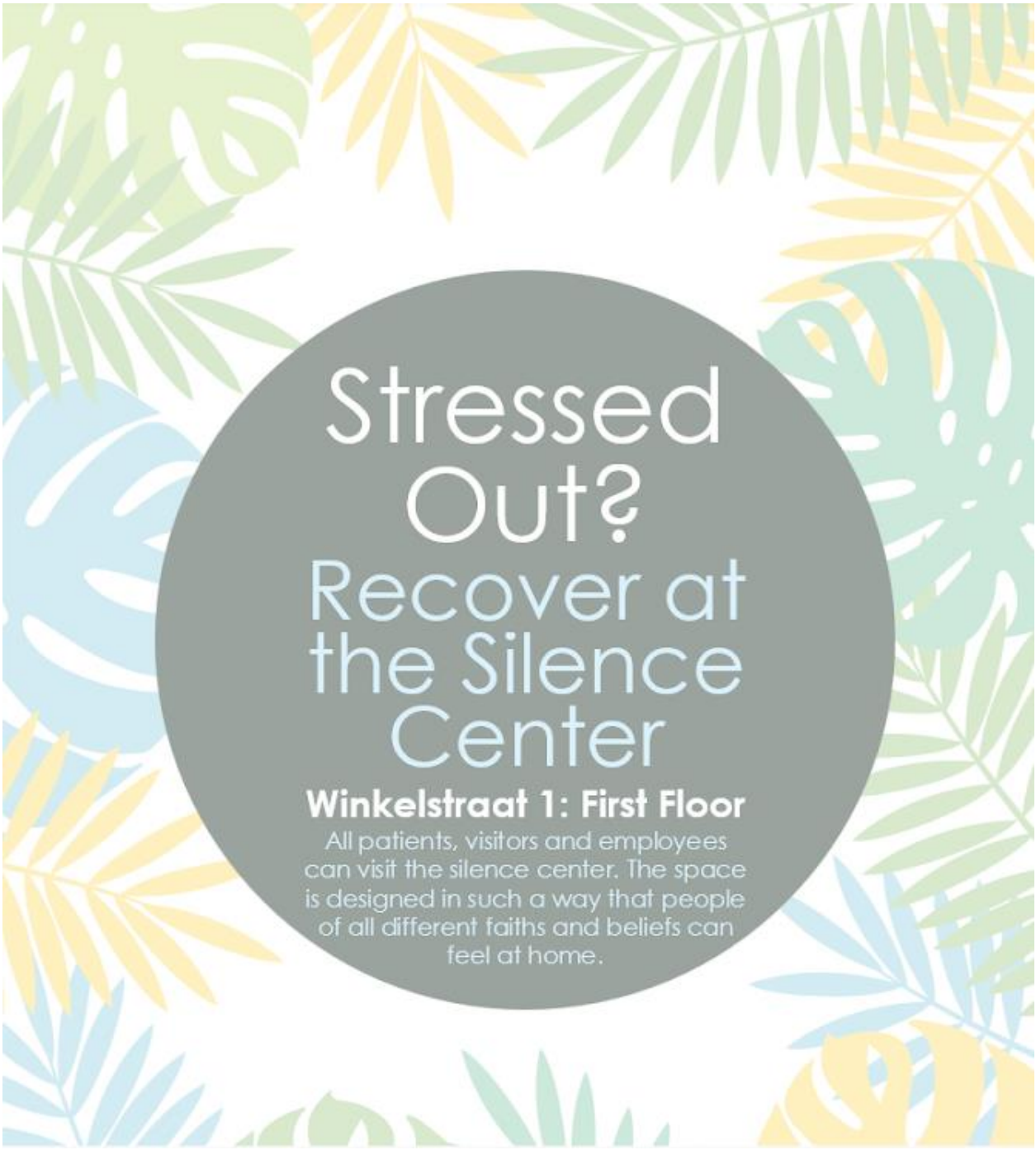

Figure 30. Vail, Jake. “Silence Center Poster”. Rendering. 2022.

The UMCG makes no mention of color use theory within its policy. The lack of focus on said theory is certainly evident in the building’s design. With design and the generality of spatial transformation in mind, color theory could be used alongside

biophilic theory to boost mental wellbeing within the hospital systems. In addition, the combination of any number of these theories as applied to desired contributions will serve as guidance in the spatial transformation of the UMCG.

3.4 Potential Contributions

The UMCG is focusing on the potential for a campus that fosters a healthy lifestyle. As a result of the focus on a healthy lifestyle, they aim to preemptively reduce care demands (Team Felixx, 2020). It is planning to use components of spatial planning (i.e., parks, fragmented open spaces and passageways) to inform what they call a “Healthy Aging Environment” (Team Felixx, 2020). “The campus will be an example and testing ground, a catalyst for the healthy city of Groningen” (Team Felixx, 2020). This is a specific mention of the spatial “transformation” of the UMCG in an adaptable way that can “permanently optimize the readability and cohesion of the campus” (Team Felixx, 2020).

The UMCG explicitly states further, intentions to create a comfortable environment that does not reflect institutionalization. “The roofed-in streets which house the nursing units and outpatient clinics are such that you can easily forget you are in fact in a hospital[19] (UMCG Staff).” Such concepts are also present in the themes presented by van der Ploeg (2021) (i.e., “the stay”) and are aimed at a topophilic expression of space.

[19] Referenced in chapter 3.3- Desired Contributions

Team Felixx (2020) argues on behalf of The UMCG that the scope of care provision is further expanded due to a shift toward general health support in planning practices, outside the walls of the hospital complex (Team Felixx, 2020). “The Healthy Aging Campus offers a physical stage for this: an interactive environment that visibly contributes to our mental and physical health” (Team Felixx, 2020). The carrier for this transformative plan is the use of landscape and spatial techniques. While Team Felixx (2020) cites mental health support here, there is little mention of explicit mental health in the remainder of their plans. Rather, the focus is on “anchoring the campus in the city”, improving the campus itself and supporting health as it relates to ageing (Team Felixx, 2020).

A. Cultural Perspective Shift

Based on the input provided by Karen van der Ploeg (2021), there needs to be a shift toward the consideration of mental and physical wellbeing as components of the same ‘story’. The process can be actualized through, for example, mental health intake screenings. Part of the conversation that needs to happen in terms of a mindset shift is a definition of health that includes what is needed for a person to cope.

As it stands, the mindset is that mental health and physical health are different, this is not the case (van der Ploeg, 2021). Van der Ploeg (2021) is arguing not simply for a spatial transformation, but a cultural one, one which has the possibility to be accounted for via the integration of steering committees.

I. Integrating Steering Committees

“It was decided that the fundamental cause of the failure of hospitals was the ‘lack of mutual understanding between doctors and designers of each other’s needs and

problems'" (Ramsden, 2018). In line with the information provided by van der Ploeg (which highlights a lack of communication between doctors), a suggested solution to better address hospital policy as it relates to mental wellbeing and spatial planning is the establishment of a steering committee (Van Der Ploeg, 2021). Steering committees are community groups that help to develop policies or projects from outset to completion. They are usually composed of interested community members and serve as advisors and monitors in project development (Law and Justice Foundation of New South Wales).

The perspective from which steering committees are viewed herein is that they are a potential solution to the 'fundamental failure of hospitals'. However, they could also be viewed as the entities which "set up" a potential understanding (de Roo, 2022).

No matter how they are viewed, steering committees would be useful in transforming space in a way that aids mental wellbeing. They serve as the "central agency where hospital planners, administrators, architects, engineers and psychiatrists could contribute ideas and access the latest information, criteria and standards" (Ramsden, 2018). The committees are a solution to frustration experienced by architects who never received an explanation around "the function of a ward or treatment" and who face "the absence of a comprehensive source of reliable answers to a wide range of questions" (Ramsden, 2018).

The groups in question would be most effective if they included representatives within and between each hospital as well as from the municipality. These individuals would report trends in their patient needs as well as provide insights from their specialties. In this way, a sort of 'network' of stakeholders would be formed fostering the

‘humanization of hospitals’ (Ramsden, 2018). This network is represented by Figure 31. Said figure shows how communication (represented by black lines) between the different stakeholders connects them within the scope of a steering committee. It would also be helpful for psychologists and psychiatrists across the city to take part in such a conversation alongside spatial planners and architects within the municipality. The benefit of their inclusion is a wider breadth of understanding of mental health trends throughout patient populations. The steering committee should ensure that all necessary stakeholders are included with knowledge that group composition is likely to change over time as different needs come into focus. Focus is likely to develop toward action as the start of this process can be difficult.

The starting point for action is often unclear because of the sensitive nature and associated stigma of issues in mental health and suicide. However, throughout the process, participants in steering committees should consider the needs of the hospital staff and its patients. Then, accessibility, features, and identified service quality can be discussed (The World Health Organization, 2014).

In the primary phases of conversations, current suicide, and mental health trends as well as community beliefs should be openly conversed over (The World Health Organization, 2014). These beliefs reflect not only community wide beliefs, but attitudes of smaller groups within the community. These smaller community groups and connections are here referred to as social circles. Social circles can provide social support while fostering a sense of community, enhancing resilience, recognizing risk factors and effectively intervening when community members are in crisis (The World Health Organization, 2019).

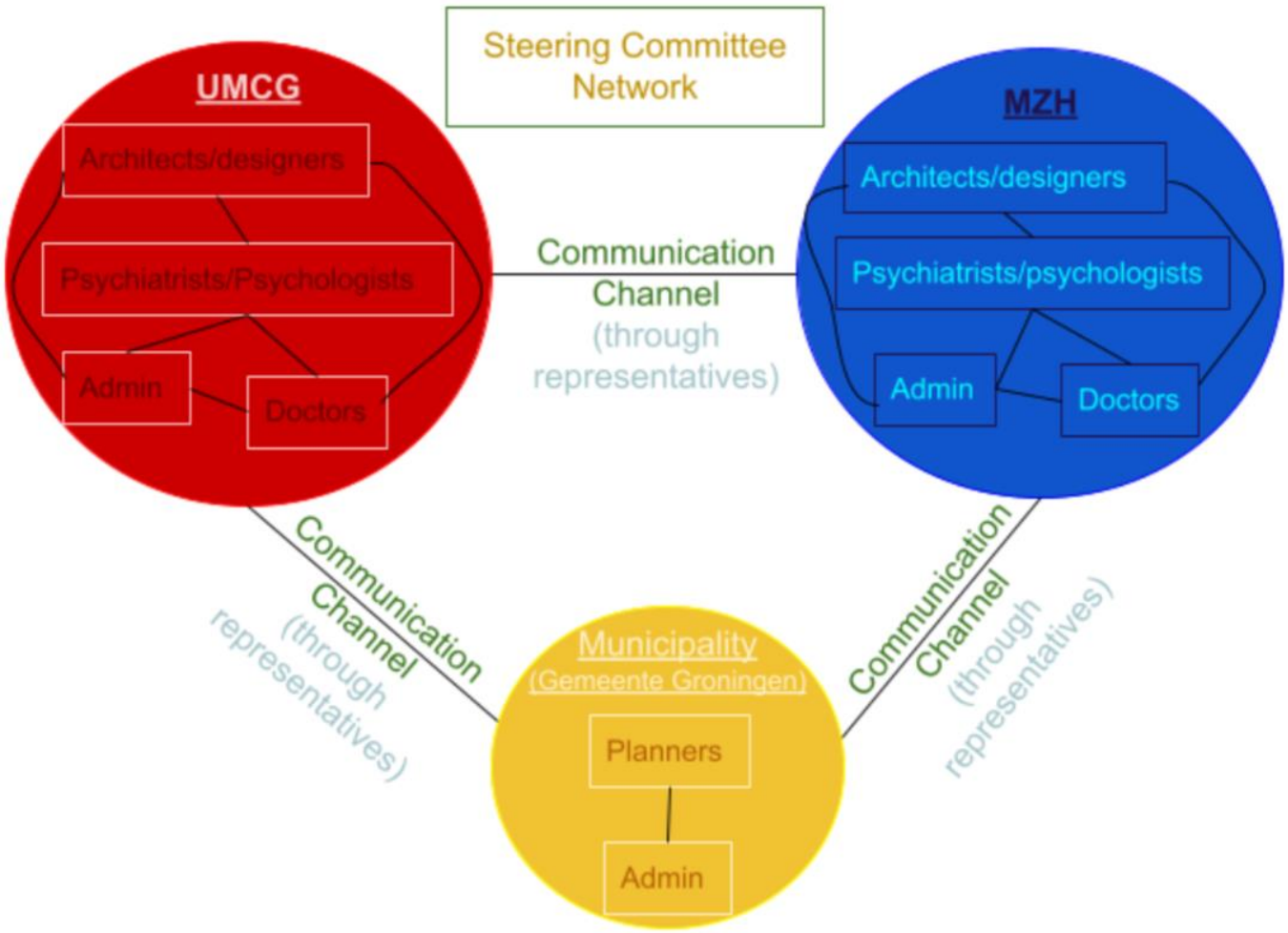

Figure 31. Vail, Jake. Steering Committee Representation. Digital Rendering. 2021.

II. Fostering Support: The Actors and Mental Health

What is referred to as a “sphere” by Barton in 2005[20] is inclusive of social networks (Barton, 2005). However, Barton agrees that communities are more than just social-networks (Barton, 2005). They provide alleviation from social constraints by supporting vulnerable individuals (the actors or patients herein) and aiding in follow-up care while fighting stigma and supporting the bereaved (World Health Organization, 2014). This level of support is especially important for those undergoing hospital

[20] Discussed in Chapter 2: Theory. See P46

treatment. These individuals are indeed vulnerable, and their families may very well be grieving (van der Ploeg, 2021). This section focuses on the different ways that communities and their cultures could potentially support the desires and mental health needs of the patient population.

II.1 Community in Hospitals

To understand the importance of community in hospital settings, it is first important to define community. In this scope the community references the patient and their relation to the community. The ‘activity’ of community is defined in two parts. The first part of this definition is of the community itself. The World Health Organization refers to ‘community’ as “groups of people that may or may not be spatially connected, but who share common interests, concerns or identities” (World Health Organization, 2021). The second part of this definition is the word ‘belonging’ which is defined by a feeling of ‘affinity’ (Collins Dictionaries, 2021). Combining these two definitions provides a definition along the lines of “feeling connected to the groups of people with whom we share common identities”.

According to Karen van der Ploeg (2021), indeed being surrounded by people who might be going through the same struggles could benefit the mental health of the patient. In fact, in the oncology department, patients could be placed in a room with three other people. “There are some people who love the four person rooms” (van der Ploeg, 2021). However, she also states that not everyone finds this type of arrangement helpful (advocating for a more individualized approach to spatial planning within the hospital environment). Patients do not usually have the opportunity to choose which environment would suit them best.

Communities can help instill a sense of belonging and feeling of connectedness through community involvement. They can additionally implement specific strategies relevant to their situation (key in spatial transformation relating to the individual), also helpful in suicide prevention (World Health Organization, 2014).

Community engagement is an active and bottom-up process by which communities can influence and shape policy and service availability. However, community engagement practices must be adequately applied to effectively tackle mental health issues (World Health Organization, 2014). If projects are applied in such a way, community-based efforts can be used to bolster community belonging at a low price point. The process of community engagement is well suited to hospital budgets because of this association.

Community belonging and engagement are important in the treatment process. Trust in people is especially important in terms of patients' mental health. In order for support to be effective, trust in care providers is vital because in many cases patients rely on doctors to make life altering decisions. This is part of what makes up community belonging in general (Dzhambov, 2018). Further aspects of community belonging that are applicable include attachment to neighborhood (topophilia), tolerance and respect all of which play into social constraints (Dzhambov, 2018).

There are two perspectives in community belonging during treatment. Both were highlighted by van der Ploeg in her 2021 interview. The first perspective is an affinity for community. This is the concept that "other people might be able to talk to me in the room because we are going through the same thing". The second perspective somewhat argues against community belonging. This is summed up in the following

statement: “I want to be alone for peace and quiet” (van der Ploeg, 2021). These responses echo the need for individual and adaptive approaches to spatial transformation in that social or community needs are not universal. In fact, they are likely to vary through time. “From a psychiatric point of view, the salutogenic perspective is that the relationship between a patient and environment is understood as being transactional and not fixed” (Kopvol, 2022).

II.2 Cultural Attitudes Toward Mental Health and Suicide in The Hospitals of Groningen

In conversations of stigma, or taboo, it is advantageous to investigate cultural roles at play in perceptions of mental health and suicide. These types of conversations are vital in the crafting of spatially transformative techniques to avoid bias or stigma that could impact the transformation process. It is common knowledge in The Netherlands that there is a policy referred to as ‘euthanasia’ where an individual in poor health, with the consultation of varying parties, can opt for medically assisted death. Sometimes, the policy of euthanasia is referred to as “The Groningen Protocol”. This practice is illegal in many other countries and from a foreign perspective could be equated with suicide.

The American Association of Suicidology differentiates between suicide and euthanasia (The Groningen Protocol) by “arguing that, even though there may be significant overlap between the two [i.e., why from a foreign perspective they might be viewed in a similar way], ‘the practice of physician aid in dying is distinct from the behavior that has been traditionally and ordinarily described as ‘suicide,’ the tragic event our organization works so hard to prevent” and that, as a result, the term “physician-assisted suicide” should be “deleted from use’” (Friesen, 2020). From an international

perspective, the distinction between the two is not always made. In essence, this distinction could be important in mitigating social constraints associated with mental health issues and discussions on suicide. Such discussions are needed in steering committees that will ultimately aid in the creation of healing environments through spatial transformation.

B. Creating A Healing Environment

"A healing environment is an environment in which people can feel comfortable. This environment benefits the healing process and people's sense of wellbeing, and it lessens stress. The creation of a 'healing environment' is meant to extend treatment outside of the hospital room and to the surrounding areas on which the hospital property stands" (Team Felixx, 2020). Indeed, the goal of spatial transformation in this case is to aid in the creation of an environment that better supports healing.

Characteristics of a healing environment are the use of (a lot of) "daylight, colour, and natural elements. This gives the hospital a warm and humane feel" (Molenaar 4, 2013). The elements of a healing environment, according to this definition, strongly reflect those evident in the theories of color, stress reduction as well as topophilia and biophilia.

What could be potentially implemented in spatial transformation to further boost the mental health of the patient population is water. This potential tool does not come from speculation, but is included as a component of biophilic design. Water is used as a biophilic approach that contributes to a healing environment. Water is important in establishing a hospital's *'genius loci'*[2] (Verderber, 2010). Fountains, ponds, and waterfalls provide soothing sounds that are becoming increasingly evident in hospital

lobbies and outdoor courtyards (Verderber, 2010). Qualities of water are hygienic, aesthetic, spiritual, life sustaining and symbolic. Its calming properties come from its movement, motion, force, directionality and as previously stated, sound (Verderber, 2010). Water features such as canals can be found both at UMCG and MZH[21] as well as the Rede SARAH in Brazil[22]. The use of water in healing environment creation can also be accomplished through therarealization.

Furthermore, “designs that [emphasize] flexibility, choice and freedom, and so too in the case of the mental hospital where architects and psychiatrists came together to provide creative solutions for a system under severe pressure” are ways that historical architects approach healing environments through design (Connellan, 2013). Overall, the goal of spatial transformation in this paper is to create a more healing environment at the hospital level.

C. Reflecting on the Actor Consulting Approach

The issue with theory in spatial transformation is that theory itself cannot transform a space. Rather, it must be adapted to actionable procedures. Therefore, the actor consulting model is useful because it lends insight into the practicalities of spatial transformation. It highlights the constraints, be they social, organizational, institutional or otherwise that might be encountered while adapting these theories in spatial transformation.

The importance of the actor consulting method is to show what should be done, what could be achieved in spatial transformation and the constraints that hinder spatial

[21] See Figures 5,8,13 & 12
[22] See P31

transformation of the hospital environment. What follows are the methods used in this approach.

Ch. 4. Methods

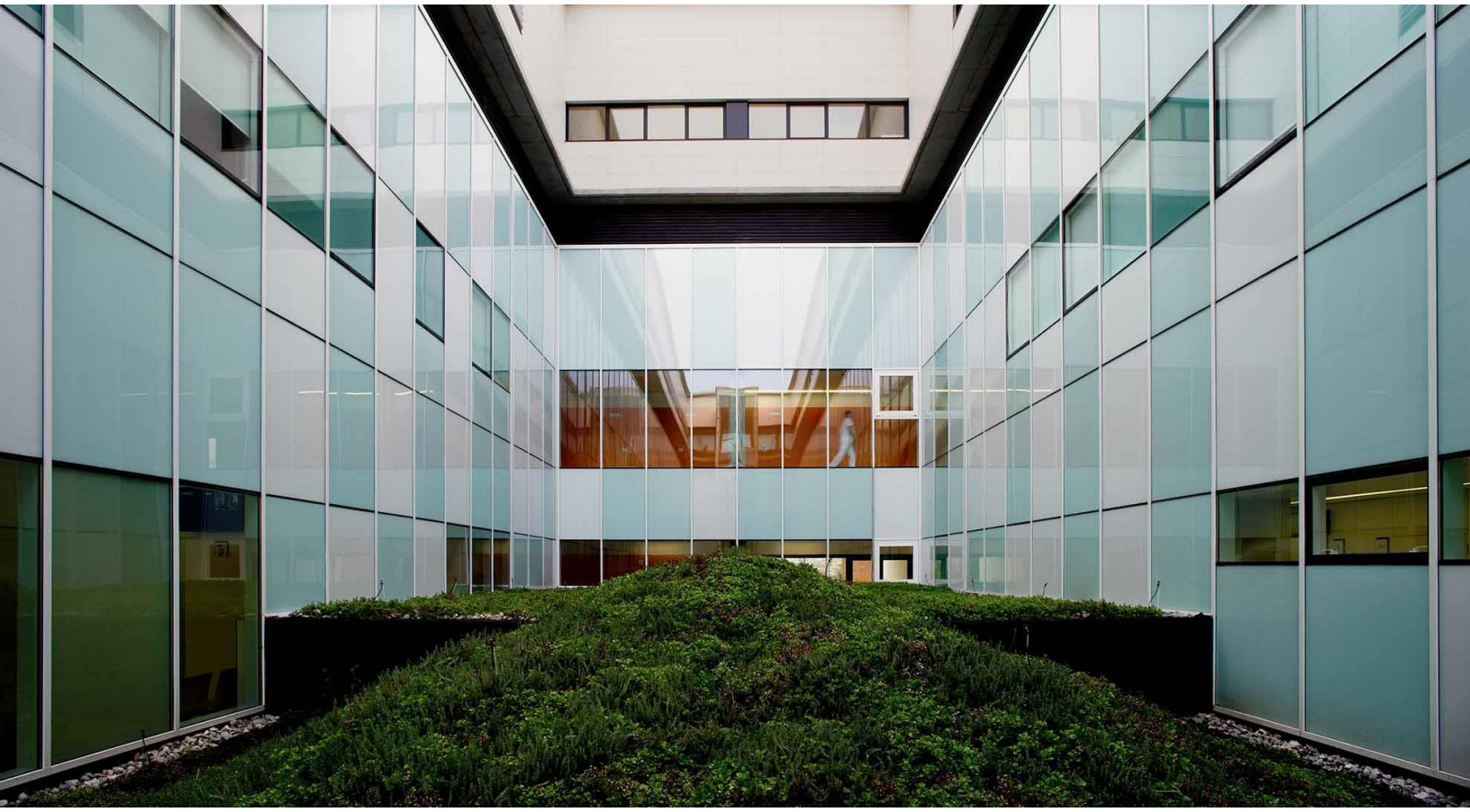

Figure 32. ROCA Gallery Staff. Untitled. Photograph. 2019.

4.1 Methodological Approach

The first step in this research was to uncover what exactly I as the researcher (from a socio-spatial planning point of view) wanted to know. The importance of mental wellbeing in hospital settings is addressed previously and informed the formulation of the research question herein. Part of the reasoning behind investigating the ability for space to impact mental health is that when mental health is in a poor state, it can lead to suicidal thoughts and/or action. Moreover, risk is compounded by illness and furthermore, by varying degrees of illness.

A. Approaching the Research

Research of this scope requires a multidisciplinary approach as it sits at the junction of socio-spatial planning, medicine, environmental planning, psychology and infrastructure planning. Qualitative methods are well suited to this type of research which focuses on “meaning, patterns of action [informed by the spatial environment] and associated processes” (Borcsa et al., 2). Furthermore, qualitative methods are consistently utilized in the field of mental health (Borcsa et al., 2021). For instance, biennial conferences for qualitative research in mental health have grown in recent years (Borcsa et al., 2021). In addition, “qualitative methods are an important complement to biomedical models and methodologies, which can be considered as mainstream in mental health research these days” (Borcsa et al., 3). The research herein uses qualitative methods also in line with information provided by the World Health Organization’s suicide prevention packet to craft the concepts within this study (The World Health Organization, 2019).

The World Health Organization (WHO) was just one source used in the mosaic of research that forms the foundation of this paper. In keeping with the diverse research collection needed to address the complexities of mental wellbeing as it relates to space, other sources were used. Scholarly articles (i.e. by Verderber and The University of Washington) and first hand interviews were incorporated in this research. Including such sources resulted in support for the basis of this investigation.

Throughout the process, physical aspects of the hospital properties were in part noted as a result of observations made while walking through Groningen (e.g. taking note of blue space on The UMCG campus). “It is helpful to realize that any reasonable intervention needs to be based on observations that happen in the minds of human beings” (Hurrelmann et al., 24, 2014). By utilizing observational methods, increased depth of the investigation occurred. For instance, validating statements provided by hospital staff.

Staff at the Martini Hospital, UMCG and other hospitals were contacted and asked to contribute to this research. Environmental psychologists were also asked to participate. However, the environmental psychologists at The University of Groningen focus more on the relationship between climate and psychology rather than how space affects the psychological dimension. Secondly, staff at The Martini Hospital refused to participate or never responded to research inquiries.

A semi-structured interview[23] was conducted on November 9th, 2021 with Karen Van der Ploeg, a medical psychologist in the oncology department at the UMCG. The interview lasted around thirty minutes and took place over the phone.

[23] See Appendix A

Moreover, feedback from data in two surveys administered by me one year apart was implemented in order to gain insight from The City of Groningen and its socio-cultural factors. The two surveys, representing the “public opinion” were distributed via a shareable link. The link to both surveys was distributed via social media groups and Whatsapp, though, there was no differentiation made as to where the survey link was accessed. This survey approach is useful because it also provides insight into where those who live in the city of Groningen feel most aligned with the theories presented herein (i.e biophilia)[24].

Over 40 responses were received for the second survey distributed in March, 2021[25]. It should be noted that these results only account for a small sample of the population in The City of Groningen within a narrow age distribution of 17-31 years old. Furthermore, none of the interviewees in the primary survey phases were asked about their experience with the hospital systems in Groningen. The reason for this is that these surveys were conducted as part of a previous research project. However, their inclusion in this paper is still useful in accounting for the public opinion. Furthermore, it is likely based on the composition of the population within the City of Groningen that individuals from this age group will also find themselves in one of the two hospitals discussed in this paper. That being said, their input is not as useful as explicit patient feedback would have been.

Implementing feedback from two surveys was unintentional as both surveys were collected as a precursor to the finalized topic of this research. Moreover, an

[24] See Appendix C- Q22 & Q23
[25] See Appendix C

additional third survey was conducted[26] and similarly, does not entirely apply to this research as it stands. However, results from these preliminary surveys were useful in terms of collecting data as appropriate for research on such complex topics as mental wellbeing and suicide. “The time-varying characteristics of large information flows represent a special case of the complexity and the dynamic multi-scale nature of ...data” (Dinov, 2018). This third and final survey was conducted in September 2021. It was conducted in a structured interview style and involved three respondents who reflect some of the information gleaned as a result of this research[27]. Their input also contributed to and represents the public opinion discussed earlier in this research. Of their responses, only questions three, five and seven applied.

There is furthermore, a gap in the data within both surveys and the September 2021 interview conducted for the age group in the Netherlands with the highest incidence of suicide, 50+ year olds (Cijfers, 2018). This age group comprises a large portion of deaths by suicide and lack of survey response is problematic as research should be conducted on groups most at risk (i.e., how many of these individuals were hospitalized with a chronic illness?). Nevertheless, survey data was still included as it enables researchers to glean important information regarding mental health and suicide within specific settings. Namely, information surrounding community perceptions of mental health[28] and reinforcement of theories such as biophilic attitudes was provided by survey one[29] and survey two.

[26] See Appendix B (Survey 3)
[27] See Appendix B
[28] See Appendices C&D
[29] Appendix D: Q2+3,6-10,13,15+16,18+19&22

Each socio-spatial context is different and holds different cultural views toward mental health and suicide prevention which is why focusing on hospitals within Groningen and socio-cultural attitudes thereof is important to the context of this research. That being said, research from an international scope was included throughout this research to stress the importance of a global perspective in linking spatial properties of hospitals to mental health. This was accomplished by incorporating cases (i.e., The SARAH Network Hospital in Brazil) and resources from around the globe (i.e., The American Foundation for Suicide Prevention & Patient data from Germany by Schuschke (1994)) into this paper. These cases also illustrate successful integration of the theories discussed earlier in this paper such as that of biophilia.

B. Stigma and Data Collection

It is imperative, as previously stated, to recognize the role that stigma plays in data collection. As a reminder, stigma is tied to community attitudes towards mental health and suicide. Stigma can influence data collection as individuals are likely to have trouble talking about this sensitive topic, thereby withholding information. As an attempt to account for this, participants were informed that their personal statements would remain anonymous.

Stigma exists in terms of reading and writing this paper itself. When informing peers of the theory behind this research, some troubling pushback was received. Classmates said in response that “suicide is not an issue here,” referring to Groningen, The Netherlands. Providing anecdotal evidence in informal conversations such as these directly affects data collection and the probability of individuals with poor mental health seeking help. Conversations illustrate a lack of awareness within the socio-spatial

context of Groningen as a city where mental health issues and, as a result, suicide are indeed “problems”. Therefore, mental health staff are needed within the hospital system in Groningen. One such staff member is the medical psychologist.

C. The Medical Psychologist

It is also key to take note of the guiding participants in this research. The medical psychologist is responsible for treating patients and/or their relatives if they are experiencing psychological distress. They are one of the most vital stakeholders in terms of driving mental health support. The role of the medical psychologist in the oncology department extends to post-cancer life (UMCG Psychology Staff Webpage). They might treat individuals for “anxiety, depression, relationship problems or a traumatic experience after treatment” (UMCG Psychology Staff Webpage). According to the psychology website, these complaints can impact wellbeing, as well as elements of daily life (UMCG Psychology Staff Webpage).

When the patient resonates with any of these symptoms, that is when they have the opportunity to request an appointment with a medical psychologist (UMCG Department of Oncology Staff, 2017). From this step, information provided by the psychologist would be provided. At this meeting, the patient can expect to learn about the processes “associated with cancer” and how to process the course of treatment (UMCG Department of Oncology Staff, 2017). “After consultation with your doctor, nurse or social worker, you can request a 2-year-round meeting with a medical psychologist” (UMCG Website Staff, 2017).

When needed, psychological assistance in the form of treatment and or counseling is offered (UMCG Website Staff, 2017). Treatment begins in the

psychological sense, with making the patients goals and complaints clear (UMCG Website Staff, 2017). Based on this feedback, it is the medical psychologist's job to propose "a suitable method (therapy) to work with" the patient in the pursuit of their goal (UMCG Website Staff, 2017). At some point, the psychologist may provide a reference for care outside of the hospital (UMCG Website Staff, 2017). In this case, the medical psychologist provided valuable information that helped form the basis of this research. Their role is supportive to the theories presented herein and provides explicit recommendations on which this research is based.

D. The Interviewees and Their Data

All interviewees who took part in the preliminary 'public opinion' section of this study were students studying within The City of Groningen. This was not the group that was intended to be studied. However, because this research was conducted during the Covid-19 Pandemic, many hospitals were too busy to participate in this research. Moreover, the preferred interviewees and research participants would have been a sampling of patients from both the UMCG and MZH, however, it was difficult to be connected to such individuals. However, I was able to retrieve information from the hospital systems in other ways (i.e., reading through hospital websites for information on design, how hospitals propose that their patient populations are supported in their mental health etc.).

In order to gain the information that is specific to Groningen, data was collected from the most reachable group, the student population. Through word of mouth and link sharing (via WhatsApp) the survey respondents happened to represent the student population of Groningen.

Being a student is a stressful life event which is likely to uncover some sort of underlying health condition, which is also why their inclusion in this study is useful (Dzhambov, 2018). Each participant was ensured that their identity would be kept confidential and that participation in the study was voluntary.

Discussing mental wellbeing makes data collection and research difficult because mental health issues and suicidal behavior are often due to a confluence of factors (e.g., chronic health conditions, stress levels and family history) (The American Foundation for Suicide Prevention).

E. Relating Psychiatric Centers to General Hospitals

Researching the relationship between mental health and hospital design often leads to findings based on psychiatric institutions. These usually refer to long term inpatient care facilities. Notably, psychiatric institutions are quite different from hospitals which treat a variety of conditions and illnesses. However, information gleaned from psychiatric treatment environments can be extrapolated to general hospitals as the basis of mental health support is a common thread.

The use of the psychiatric hospital as a site for design principle generation is further substantiated when one sees the world from the perspective that it is “a multitude of comparable spaces” (Ramsden, 2018). Furthermore, that even the city can be “broken into a series of settings to which the methods and concepts for understanding the spatial behaviour of the psychiatric patient could be usefully transferred” (Ramsden, 2018). Environmental psychologists declared, “a large part of our lives is spent in institutional settings of one kind or another, and the qualities that make a setting institutional imply some common effects on behavior” (Ramsden, 2018).

F. The Importance of Imagery in Spatial Analysis

I.1 Access During a Pandemic

In light of the current pandemic, access to hospital environments is restricted. Therefore, alternative methods of research had to be introduced where observation was not possible. One pertinent example of this was accessing images of the hospital interiors.

Planning in terms of space is perhaps best understood when the audience has a visual representation of the area of study. It is also important to be aware of the geographic scope as spatial transformation takes place within this context. Visual representation in terms of space is considered through the provision of mapping material and photographs.

Figure 33. Google Street View. Martini Hospital Property. Photograph. 2021.

I.2 The Geographic Scope and Mapping

One such use of photographic and mapping as a tool can be found in the delineation of geographic scope. The base map was sourced from Google Earth and provides imagery of the area researched herein[30]. The second map[31] is intended to provide the audience with an idea of the scope of this research and shows the locations of The UMCG (red) as well as the Martini Ziekenhuis (blue).

As one can tell, Groningen is surrounded by natural environments which might safeguard against some mood disorders and other mental illnesses in line with the theory of biophilia (Litman, 2020). This is a good example of the importance of understanding said geographic scope.

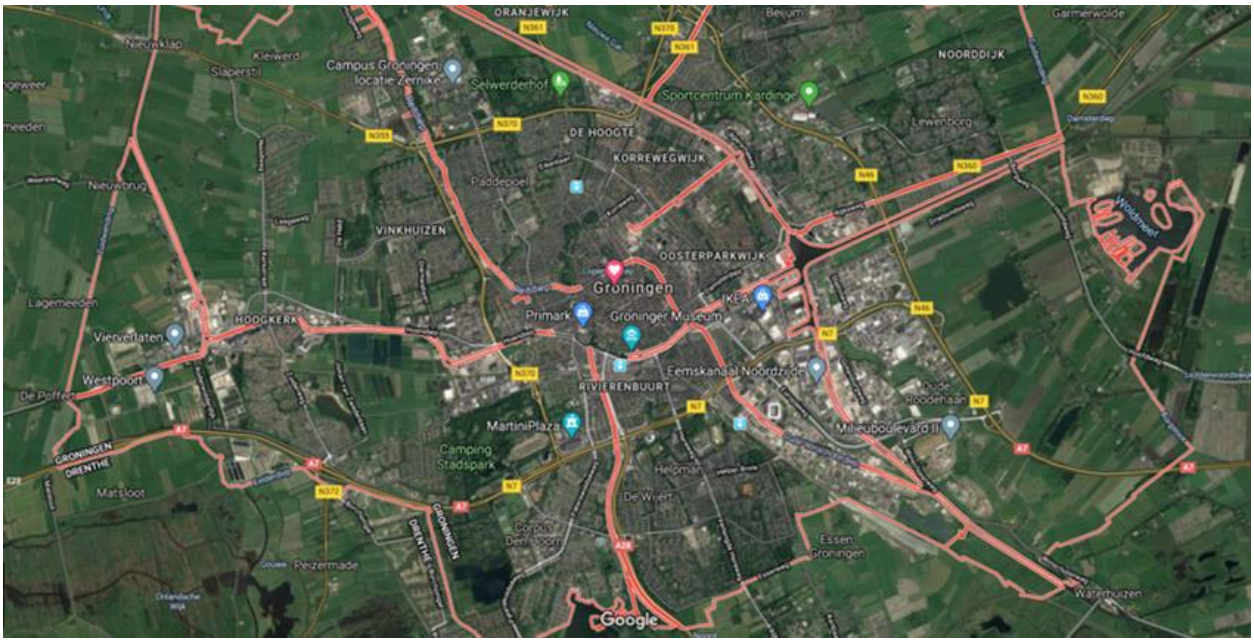

Figure 34. Google Maps. The City of Groningen. Satellite Image. 2021.

[30] See Figure 34
[31] See Figure 35

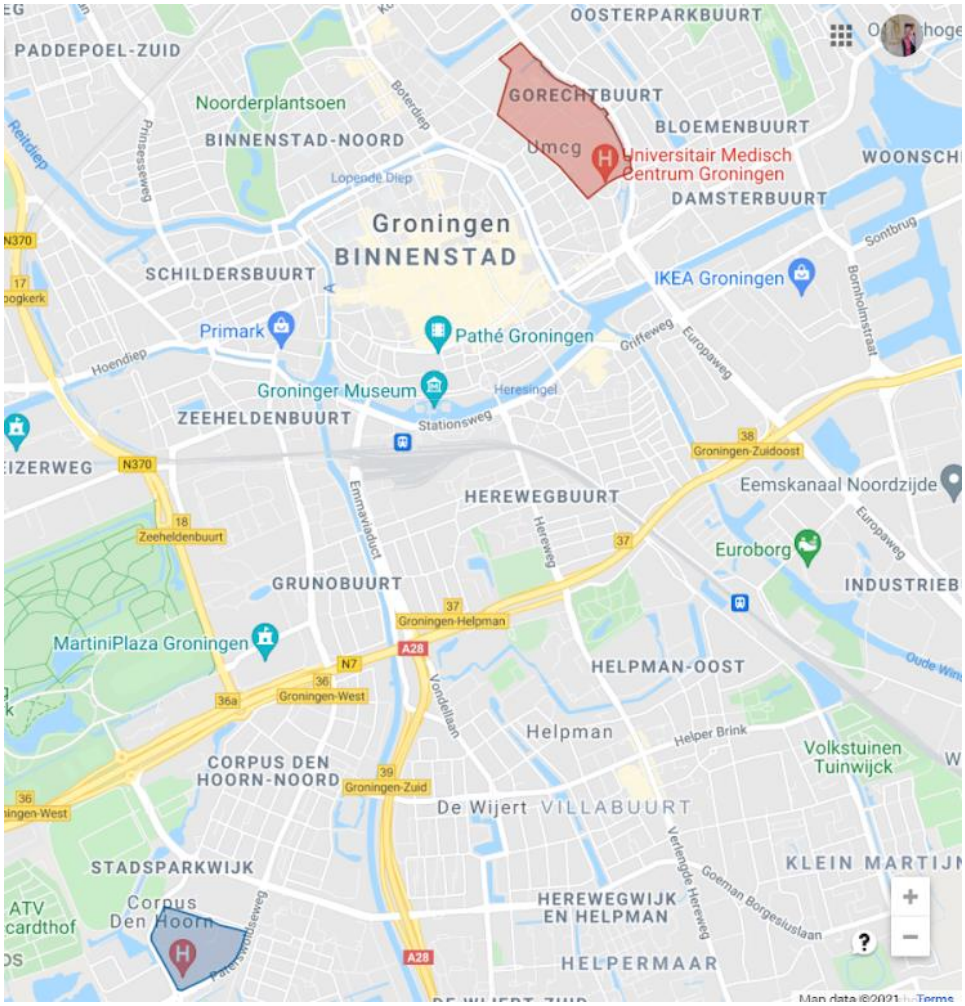

Figure 35. MyMaps by Google. Distribution of Spaces in Question. Digital Rendering. 2021.

These methods involve primary research such as the survey distribution and in person interviews as well as secondary research where references were made to academic literature (e.g. The Journal of Urban Affairs) which is essential to the outcome of this project. These methods provide insight into the planning of hospital grounds in their attempt to mitigate issues in mental wellbeing**.** The goal of the set of methods above is to foster an understanding of how multiple types of data and approaches were used to tackle concepts as complex as mental health.

G. The Relevance of Individual Scale Approaches

The individual scale and accompanying flexibility come up quite a bit in research. Individual approaches to spatial transformation matters are supported by Connellan (2013). “The idea of a ‘manual’ or ‘textbook’ of standards and plans was being displaced by a more flexible and universal series of ‘principles’ of design [the theories presented herein such as color theory and topophilia] that could travel across these increasingly varied sites of psychiatric treatment and satisfy concerns with both hospital improvement and more diverse psychiatric services” (Connellan, 2013).

Said principles are inherent to the needs of the individual. ‘Form Follows Needs’ is an approach coined by Vollmer and Koppen (2022). It is emblematic of individualistic spatial design and references an “architectural approach that subordinates the functional requirements of a building to the needs of the users or derives the former from the latter” (Vollmer and Koppen, 2022). “Exercising the Form Follows Needs architectural approach is not always without complications, as needs change or even contradict each other in the course of life.” (Vollmer and Koppen, 2022).

H. Reflecting on the Methods

The methods discussed in this chapter are not without their flaws. However, they make use of the tools and information available for this research. While the methods may be flawed in some ways, they also correspond to much of the literature on how to see spatial planning, health and spatial transformation as interacting, complex concepts. Furthermore, they are intended to provide additional information to some of the most vulnerable within the City of Groningen.

Ch. 5. Conclusion

Figure 36. Herzog & de Meuron. “Untitled”. Digital Rendering. 2014.

5.1 Results

The results from this investigation lead us to believe that there is a need for spatial transformation on multiple scales in order to further benefit the mental health of the patient population within hospitals. Results do not focus explicitly on the time spent in the hospital. However, they do show that spatial transformation goes beyond impacting the patient population. For instance by transforming the silence center at the UMCG, which not only serves patients, but nursing staff and patient families.

Results introduced various constraints that give stakeholders an idea of what obstacles need tackling for goal achievement. Moreover, results from interviews, surveys and secondary research reinforce the value of topophilic, biophilic, stress reduction and color theory elements in medical environments.

5.2. Comparing The Hospitals

The UMCG is much more focused on the role of space in its planning than the Martini Hospital seems to be. Though, there are notable exceptions to this (for instance, the MZH's focus on art as a way to reduce stress). The UMCG is currently undergoing construction to better reflect the values associated with holistic care, including attempts to make the hospital property feel less 'institutional'[32]. Said renovations and adjustments to site planning are encouraging signs of spatial transformation. While the MZH also speaks to the same values, it is inherent that from the outset, patient mental wellbeing was not an explicit goal. Take, for instance, that the hospital site was chosen more for convenience than for the theory of biophilia[33].

[32] Discussed in previous chapters. See Ps73&84
[33] Discussed in previous chapters. See P28

Where the MZH falls short in terms of physical spatial characteristics (though it does have many characteristics working in its favor), the societal factor contributes to the type of individual care that was recommended by van der Ploeg (2021). The website for Martini Ziekenhuis states that team cooperation is important to a successful treatment process (Martini Hospital Website Staff). Part of that team includes the patient themselves, something that is not evident at UMCG as indicated by van der Ploeg (2021).

5.3. General Recommendations

Groningen as a city or as a province is not an exception to the trend that when mental health is poor, it can lead to suicidal tendencies. However, mental health is complicated and can be impacted by many more components such as personality traits, trauma, stress levels, and even relationship status on the individual level. This complexity makes beneficial spatial transformation through the lens of mental health issues difficult.

Most of this research leans into the argument that the individual level should be the focus of spatial transformation. Themes such as adaptation and flexibility frequently show up in terms of moving forward with spatial transformation.

Based on the issues that exist within The City of Groningen, it is recommended that cooperation between local hospitals, the steering committees, local action and interest groups, Gemeente Groningen health care providers, and local universities takes place. All the while, these groups would do well to keep the needs of individual patients in mind. They should focus on the quality of the space provided within the UMCG and MZH and keep up with spatially adaptive-transformative trends and ideas (e.g.,

reflecting topophilic theory by integrating immersive rooms outfitted with LED screens that can be adjusted to show landscapes and scenes congruent with individual preference and comfort). Longitudinal studies are specifically useful in the health field, which could make accounting for individual preference difficult. In order for this research to be longitudinal and effective, it should be revisited with a focus on adaptive spatial transformation in mind.

5.4. Conclusion

Mental health and suicide overlap with the patient experience in this research. There are also overlapping qualities in terms of discussing suicide because mental health issues are very likely present in situations where one dies in such a manner (American Foundation for Suicide Prevention). A place-based approach to mental health aid means linking important stakeholders together to support the most vulnerable. In this context, factors that impact mental health within the scope of the patient experience are able to be highlighted as a result.

The methods used in this investigation, however, were not ideal. For instance, the inability to get in touch with patients of the MZH and/or UMCG as well as the unavailability of hospital staff to participate in interviews was detrimental to the potential success of this study. The application of these methods in terms of a place-based approach would better highlight the needs of those stakeholders within the hospital environment. However, research conducted herein is nonetheless useful as it provides information specific to the city of Groningen which has (as far as research into existing and past studies goes) been nonexistent up to this point.

The included solutions that emerge from this study compose the desired and potential actions in present characteristics of both hospitals as highlighted by the actor consulting model. What the actor consulting model shows is that there is room for improvement in policy. Furthermore, it provides a basis for the evaluation of how the hospitals compare to each other in terms of theoretical application (Represented in figure 37[34]).

Unfortunately, due to societal, organizational and institutional constraints, supporting the mental health of the patient population is too often low on the list of priorities for governments and policy makers as made evident at both The UMCG and The MZH. Awareness of mental health as a public health issue needs to be raised through a multidimensional approach that takes the social, psychological and cultural impacts of communities [and individuals (van der Ploeg, 2021)] into account (The World Health Organization, 2014).

By researching the links between mental health, hospitalization and the spatial planning discipline, beneficial spatial transformation can occur. We might be able to witness a reduction in the number of cases where patient mental health is neglected as a result of such progress. Subsequently, with contributions to what hopefully leads to reduced suicide rates as a result of hospitalization.

[34] Intended to provide the reader with a visual representation of the evaluation conducted herein.

Actualizing spatial transformation in a way that is beneficial to mental health uses elements of biophilia, topophilia and color and stress reduction theories. It can be accomplished through the use of smaller scale interventions which are more resistant to constraints than large scale interventions that could take years to incorporate (i.e., changing the mindset of the hospital system as indicated by van der Ploeg). Though, it is imperative that these interventions be flexible and cater to individual preference.

In the end, the argument for the importance of spatial transformation aligns with the goal of the medical psychologist; To lessen a patient's stress levels and make sure that their treatment isn't blocked by mental health issues (van der Ploeg, 2021).

Hospital	Use of Color Theory	Theoretically Aware Silence Center	Adequate Staff Communication	Biophilic Elements	*Reachable for Interview*	Stress Reductive Elements		Key
UMCG								Yes
MZH								No
								Unclear

Figure 37. Vail, Jake. Comparative Assessment of the Hospitals. Chart. 2022.

5.5. Discussion

The theories presented within this research are an interesting way to evaluate the nature of spatial transformation as it applies to mental health. I set out with this paper originally to boost mental health and thereby decrease suicide rates through spatial transformation. However, as the research developed, my focus was much more

on the aspects of spatial transformation and its relation to mental wellbeing, the individual and their community.

The population studied within the scope of this research is rather narrow. It is one of the larger constraints that surrounds the research presented herein. Moreover, there were some pieces of information from surveys that got lost during the transfer of documents between Google Docs and Word. However, the loss of this information had no major impact on the outcome of this paper. In order to account for the lack of focus present in surveys conducted, further information was needed.

One such addition was made in the section on desired contributions (see section 3.3). The patients in the case presented by Schuschke et al. (1994) were added in order to illustrate the aspect of color theory that was not able to be included due to lack of availability of desired respondents (i.e., the desire for certain colors in a healing environment). The input provided by Schuschke et al. (1994) does not necessarily reflect the present-day perception of mentally beneficial color theory by those in the MZH or UMCG environment. It is for this reason that the patient population within the city of Groningen should be consulted as to how this study reflects their needs. Additionally, this could be applied to the individual case by either placing the patient in a room of their color choice or by having adaptive spatial characteristics present in each room (i.e., screens which individual patients can control in order to display the spatial characteristics that make them comfortable).

The emergence of individualistically centered patterns of spatial transformation was unintentional, but perhaps the most surprising conclusion is the importance of individual perspectives in spatial transformation. Another realization made through this

research is that academic discussion is half the battle. The real shift in spatial characteristics will occur likely with theory as part of the process of physical spatial transformation.

Further research is needed in order to ensure that interventions in spatial transformation are the most effective for those who suffer with mental illness. This also applies to the research conducted herein.

A. Opportunities for Further Research

In terms of further research, environmental scientists, socio spatial planners and those who create mental health policies, along with doctors and psychiatric staff should attempt to extrapolate the findings herein, applying similar approaches to cities all over the world. As a result, a better, global picture of how we can address mental health issues within hospital systems through a spatial transformative perspective will be gained. Additionally, valuable information on types of delivery structures that are most effective in mental illness and suicide mitigation can be gleaned by factoring in different theories surrounding place based mental health support into preliminary plans for new medical centers as well as those planning to renovate. Along with their integration, it would be useful to ask respondents about the perceived issues surrounding their mental health within the hospital systems. As per Karen van der Ploeg, it is important to gain individual perspectives and preferences in this case (van der Ploeg, 2021). Gaining a deeper perspective of individualized attitudes is vital in crafting effective plans for mental health support through properties of space in hospitals.

Additional studies should canvas those who have been hospitalized, are currently in hospital and those who will be going into treatment. This is important in the case of

Groningen in order to gain insight into what these members of the population want to see or experience during their time in hospital as well as what can be improved. A distinction should be made between long term and short term patient stays (something that is not addressed herein). Furthermore, in line with research provided by Dzhambov (2018), the quality of the space itself should be evaluated.

Research could look, in the future, to gain a deeper understanding of the issues that contribute to poor mental health in Groningen's hospital systems by using the theories discussed in this paper as they come directly from those who participate in the applicable spaces.

Increased research is needed in the case of Groningen as the connection between mental health, hospitalization and socio-spatial planning does not seem to be adequately addressed. Though there is research being done to confront the issues existing within the spatial bounds of the hospital systems, concerns from staff still arise. Moreover, in the case of Groningen, there is still a need for spatial transformation. Ideally, cooperation between local and municipal stakeholders (including input from the steering committee members and hospital staff) would be integrated into provincial policy and the *CANS Committee*[10] as a step towards including Groningen as a whole in national mental wellbeing (and suicide prevention) efforts.

B. The Perception of Mental Health Issues Relating to Space

The popular perception of mental health issues and suicide rates is that they are urban problems. However, it is claimed that living in urban environments can be associated with increased access to lifesaving psychiatric services for those who are

particularly vulnerable to suicidal ideation and actions (Qin, 2005). Furthermore, parameters for being admitted to a psychiatric program do not differ between the urban and rural contexts.

Regarding sex, urban areas are more closely associated with having positive effects on men (Qin, 2005). Regardless, those who seek treatment at UMCG and MZH come from both urban and rural environments. This is part of the patient profile that doctors should investigate in order to tailor treatment to their needs. Individualized mental health support approaches according to van der Ploeg (2021) are needed and should be adapted through spatially transformative practices.

I. Terms

Architectural Study Project[1]**:** Established in 1953 by the American Psychiatric Association in collaboration with the American Institute of Architects with attention to "various aspects of the hospital environment, such as light, colour and the creation of spaces for privacy and social contact, in ways that would go on to influence theories, methods and designs far beyond the walls of the institution" (Ramsden, 2018).

Comorbidity: Two or more conditions present at one time that affect the individual (usually in a medical context) (The Oxford Dictionary).

CANS Committee[10]**:** Dutch committee consisting of police, the transportation companies prorail and NS, The Forensic Medicine Registry Network, the Dutch mental health care, 113.nl, national network of hospitals, IGJ , initiative group Zero Suicide, FARR , GGD Brabant-Southeast, Supranet GGZ. The committee, "CANS" does not include hospitals in The North or in Groningen, but does include the Department of Forensic Medicine GGD GHOR NL, LOT-C (NL Times, 2022).

Genius Loci[2]**:** "The prevailing character or atmosphere of a place" (The Oxford Dictionary).

Low-e Glass[3]**:** "(Low-emissivity Glass) was created to minimize the amount of infrared and ultraviolet light that comes through your glass, without minimizing the amount of light that enters your home" (Stanek Windows Staff, 2017).

Mental Wellbeing[4]**:** Composed of two dimensions;

A. The Eudaimonic Dimension[4A]**:** "Self realization, purpose in life and psychological function.

Mental wellbeing then, here synonymous with mental health as they are essentially indistinguishable, is more than simply the absence of mental illness, but also includes positive aspects such as relaxation, functioning, general happiness and personal relationships." (Houlden 2, 2017)

B. **The Hedonic Dimension[4B]:** "Happiness, life satisfaction and pain avoidance." (Houlden 2, 2017)

Post-Traumatic Stress Disorder [9]: "A disorder that develops in some people who have experienced a shocking, scary, or dangerous event". It is characterized by "Flashbacks—reliving the trauma over and over, including physical symptoms like a racing heart or sweating, Bad dreams" and/ or "Frightening thoughts (NIMH Website Staff, 2019).

Salivary Cortisol[5]: Biologic marker used for stress measurement.

Salutogenic[6]: An approach which "focuses on factors that support health and wellbeing, beyond a more traditional, 'pathogenic' focus on risk and problems.
This approach is widely used around the world – in health, education, workplaces and architectural design" (DTA Staff, 2014).

Social Worker[7]: A social worker can guide you and your loved ones in the processing of your illness and in any emotional and practical problems associated with your illness or treatment. You can contact a medical social worker on your own initiative or after consultation with your practitioner (UMCG Psychology Staff).

Stigma[8]**:** Disapproval of those who suffer from mental health issues. “Stigma, prejudice and discrimination against people with mental illness can be subtle or it can be obvious—but no matter the magnitude, it can lead to harm. People with mental illness are marginalized and discriminated against in various ways.” (Borenstein, 2020)

II. Stakeholders

- UMCG (Universitair Medisch Centrum Groningen)- Also known as The University Medical Center Groningen, is one of two large hospitals in the city of Groningen

- The staff at UMCG

- Martini Hospital (Martini Ziekenhuis)- The second of two large hospitals in the city of Groningen

- The staff at MZH

- Those who have been, are currently or will become patients within the hospital system
- Designers and architects
- Urban and institutional planners
- Psychologists and other mental health professionals
- Gatekeepers, educators, and emergency response teams
- Local population and those affected by mental health issues and/or suicide
- Researchers interested in mental health, suicide, or spatial planning
- Local government- Municipality of Groningen, policy-makers within the city

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IV. Appendices

These appendices are organized with the most recent references presented first. This presents a timeline of primary data collection with the most present and applicable findings coming first. In total, there are four appendices to consider, each corresponding to the first four letters of the alphabet.

Appendix A.

Interviewing Karen van der Ploeg (UMCG)

Appendix A is a summary of the questions for Karen van der Ploeg and the answers she provided. These notes were taken during the course of the interview, however the questions were prepared beforehand.

Karen van der Ploeg Interview Questions. 9 November,2021

1. **Question: What are some of the most common issues you see on a daily basis as a medical psychologist in the oncology department?**

- *Two sides: Visit patients in the hospital and people who come to visit*
- *People in the hospital are very sick- Anxiety, depression and the changes associated with rapid health decline, also their family members: Grief/ fear of some aspects of the medical process: To lessen their stress and make sure that their treatment isn't blocked by the mental health issues*
- *Patients can also be people who are not in the hospital, anxiety, searching for meaning, dealing with the fact that their lives are shorter than they expected*
- *Some referrals are because the doctors find it difficult to communicate to each other (outpatient)*

2. **Question: What are some reasons, if you know of any, that people choose UMCG as their care provider? Specifically, are there services that your department offers that are unique to UMCG?**

- *Specialized care: Because it is also a university, they only see patients who need specialized care, rare cancers*
- *More researchers and clinical trials because it is a teaching hospital*
- *More young people, no standard of care: More young caseload*
- *Medical psychologists have an organization (they all learn the same but see different types of patients)*
- *More about young people being sick- In the rural areas more elderly*
- *Women with breast cancer, specific gene that requires testing and UMCG is one of the only hospitals*

3. **Question: Are you aware of or can you tell me about what policies the UMCG has in place to care for their patients mental well being?**

- *No standardized care, not preventing problems, but addressing problems*
- *The hospital is not trained to look at it this way, not enough people to help make the progress*
- *They want to make this the other way around*
- *What makes people vulnerable? A pre-screening is ideal*
- *Health care is designed to be reactive, except for the women with the breast cancer gene or young adults, they will always be seen (hospital wide)*
- *Trying to do the same for people who have leukemia*
- *They have to be really strict with care allocation*
- *Groningen seems to be particularly bad with the shortage: In Amsterdam they have a psychosocial block, people are situated around the care centers.*
- *Health is seen as the absence of complaints rather than what gives you strength to cope.*

4. Question: What, in your professional opinion, are physical qualities of space that are most helpful to supporting patient mental wellbeing and why?

- *Patient rooms can be four in one room and not everyone finds this helpful*
- *There are some people who love the four person rooms, not always an opportunity to choose*

****Included community in hospitals*

- *Some patients are admitted for a day and the chairs are very close to each other, lack of space makes things difficult*
- *Patients that are getting depressed needs daylight and room with a window which is not available*
- *Doctors and nurses should become "patients" themselves*
- *You see all of this advice and graphics on waiting areas that can seem imposing, makes you more and more scared*
- *The oncology part is a waiting room called "the stay" and it is made to support comfort, makes you feel like you have privacy, nice lighting- This is what patients say*

5. Question: Why is psychological care and mental wellbeing important for patients?

- *It's part of being healthy, mind-body connection: Make you be more relaxed and have a shorter stay*
- *More prone to follow the rules of medical care*
- *More capable of being strong in medical care has implications for recovery*
- *In oncology, it makes a big difference being at peace upon death- Supports the*
- *patients loved ones too, implications for grief*
- *Making sure the young loved ones feel supported, a lot of the oncology patients pass away*

- *Somewhere someone decided that mental health is different from physical health: We can't find a physical explanation, we look for a mental one, shouldn't be divided*

6. Question: What can the UMCG do better to support the needs of its patient population?

- *The main part is needing to be in a different mindset, focus needs to be on health in general, and that isn't happening*
- *Screening patients beforehand would be helpful*
- *Departments have different protocols, some are more supportive on intake than others*
- *MINDSET ABOUT HEALTH AND WHAT THE PATIENT NEEDS MENTALLY*
- *How much do people want to know?- Get to know your patients*

7. Question: Can you tell me anything about the silence room? Why was the silence room made a part of the psychological support options available to patients in your care? Is this used often by patients?

- *Got to know about it during covid, helped intensive care nurses, not so much visited by psychologists because usually people in there can't speak*
- *Really helpful for mental rest, there is some music, a lot of windows, open space, you don't have to talk to anyone*
- *More aimed at the staff, but patients can use it*
- *Once you've visited, you might be more inclined to do so, not a lot of people know it is there*

8. Question: Is there anything else that you can add that contributes to this topic of research?

- *More psychologists in the hospital are needed, everything is so separate, doctors and psychologists need to meet up more often*
- *Lighting or waiting rooms- oncology is one of the newest parts of the hospital, already seeing an effort, type of doctor is inclined to focus on mental health more than others*

- *More research on this topic can help change the mindset*

9. Question: Are there any of your colleagues you could recommend who would also contribute to this research?

- *(Het behouden huys for oncology) in collaboration with martini hospital, in Groningen*
- *Developed psychiatric problems: referred to Lentis or UCP*
- *Praktijk van der Zwaag referral*

Appendix B.

Survey 3.

This appendix was conducted in brief during the thesis topic selection process and finalization. Though some of the input is still applicable, a majority of the data collected is unusable in terms of the final outcome of this paper. It was intended to have a larger sample size with an even distribution of males to females and Dutch to foreign participants. However, because the final topic of this research was chosen midway through data collection for this interview session, the remainder of the process was canceled as it no longer applied to the intended final product. In order to keep track of who responded with which answer and to preserve anonymity, responses were color coded by respondent.

Interviewing Peers: The Public Opinion

Conducted September 2021

Disclosure

In order to ensure that participants were aware of what the process of the interview would look like, they were briefed via a disclosure. Said disclosure was conducted as a script and can be found here:

- You will remain anonymous and there will be no compensation for taking part in this interview.
- Would you be comfortable sharing your address anonymously for the purposes of mapping?
- This interview discusses themes of mental health and diagnoses associated with mental illness. Knowing this, would you still consent to the interview?

Interviewee Composition

- **Dutch (Female) Interviewee #1**
- **Dutch (Male) Interviewee #2**
- **International (Female) Interviewee #3**

Questions

- **Q1: How old are you?**
- 19
- 20
- 21
- **Q2: What type of transportation do you use within the city?**
- By foot
- By bike
- Walking
- **Q3: Have you been diagnosed with depression, PTSD (PTSS) or anxiety?**
- N/A
- Depressive disorder
- Panic Disorder
    - Q3B: If yes, how does your living situation impact your symptoms?
      *** *There seems to be data missing here. I recall receiving answers for this question. It is possible that they were inadvertently left out, however,*

this has little effect on the final product that is the paper as it currently stands.

- **Q4: How many hours on an average day would you say you spend inside your home?**
- 13
- 14
- 14
- **Q5: Do you prefer to spend time inside your home rather than outside?**
- Dependant on the weather, but outside
- Outside, parks around the UMCG
- No, likes going out- weather dependent
- **Q6: Where would you be most likely to access a resource from? Activity space or your home?**
- From home: More realistic to my day
- From home: Prevent awareness of others

  **** There seems to be data missing here. I recall receiving an additional answer for this question. It is possible that the response was inadvertently left out, however, this has little to no effect on the final product that is the paper as it currently stands.*
- **Q7: How would you describe your experience living in Groningen?**
  - Q7 Cont: Mostly positive? Mostly negative? Why?

    **** There seems to be data missing here. I recall receiving answers for this question. It is possible that they were inadvertently left out, however, this has little to no effect on the final product that is the paper as it currently stands.*

Each respondent presented an answer along these lines:

Mostly Positive: Friendly roommates, convenient shops, relationship and nice view from window.

Appendix C.

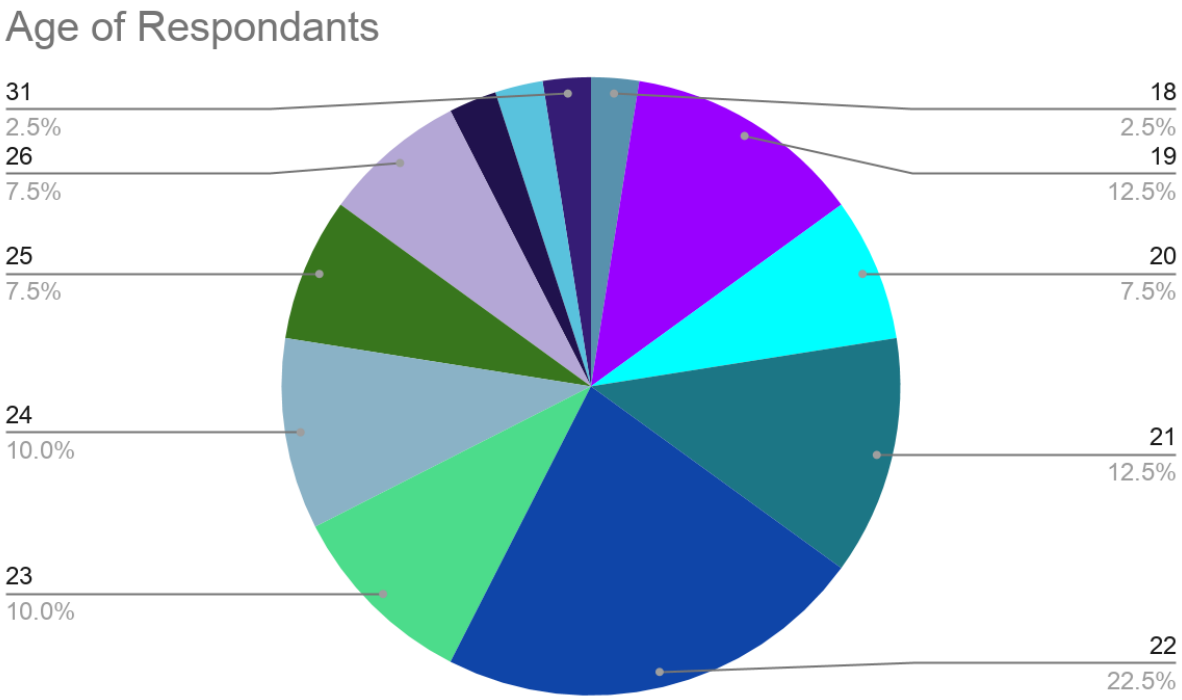
Survey 2.

Secondary Survey: The Public Perception

Conducted March, 2021

Data for survey two was collected on a voluntary basis through personal networking and by Whatsapp groups that extended from these first contacts. 100% of the 40 respondents indicated consent in their use of data. This appendix is included despite some elements of its data not being applicable to the final product that is this paper as it currently stands. More of this data was useable when compared to the March 2020 survey. It is important to note that the numbering of these questions is inconsistent as the first 'question' was related to disclosure. There seems to be a missing question, however, this was not included then in the final project that is this paper as it currently stands.

Q1



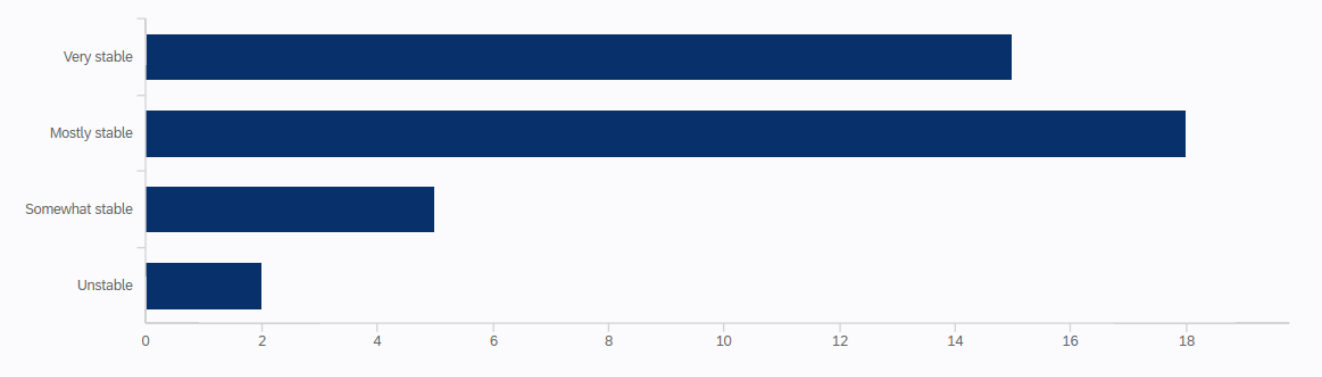
Q2

I asked respondents to tell me how long they had lived in Groningen. The average amount of time was 45.95 months, rounded to nearest tenth, where the longest amount of time spent living in Groningen was 6 months and the longest was 300 months. This question was included in an effort to uncover bias relating to local vs. international experiences.

Country of Origin	Number of Respondants
Poland	2
The Netherlands	23
Netherlands/Philippeans	1
Thailand/Ireland	1
Italy	3
Romania	2
United States	2
Germany	2
China	3
Finland	1

Q3

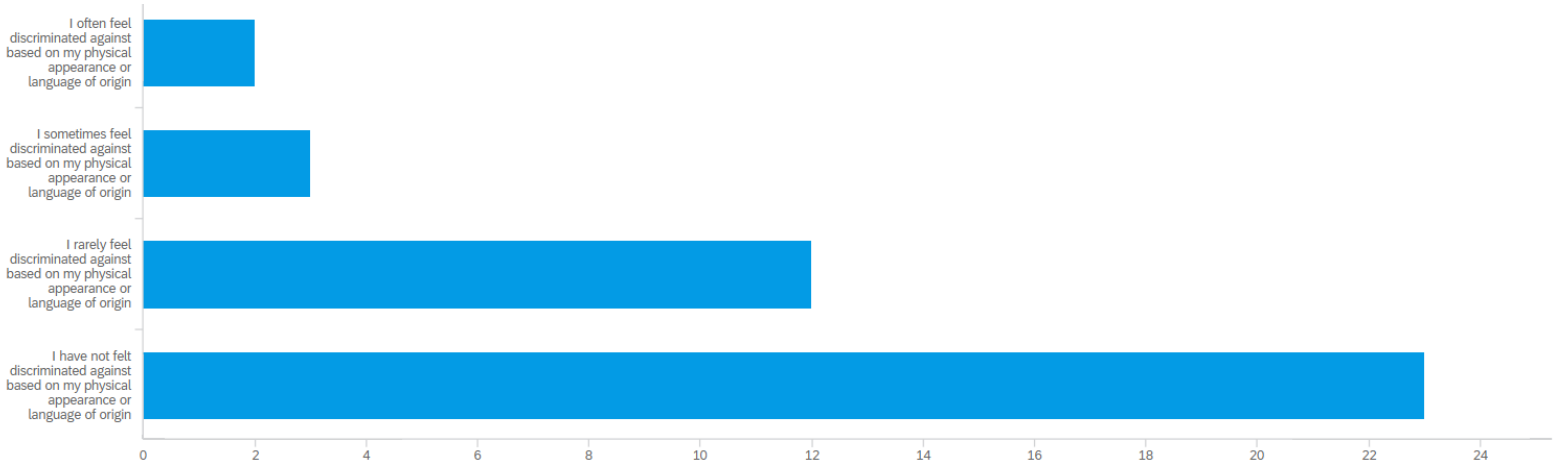
Question three inquires about the stability of ones living environment as it was deemed an important element of mental health during preliminary research conduction.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How would you rate your current living situation in terms of stability? (In other words, do you fear eviction, do you plan to move out, do you know where you will move next, etc.)	1.00	4.00	1.85	0.82	0.68	40

Q4

Question four highlights the perception of the public on discrimination by asking them to reflect on their own experiences.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Reflecting on your time in Groningen so far...	1.00	4.00	3.40	0.83	0.69	40

Q5

Question five was included in conjunction with the need to understand the perception of the public of the barriers to inclusion in Dutch culture.

How much does language use in The Netherlands influence your daily activity?

#	Field		Choice Count
1	A great deal (language is a significant personal barrier)	2.50%	1
2	A lot (It is difficult for me to communicate with native speakers)	10.00%	4
3	A moderate amount (I am able to figure out what someone is saying)	15.00%	6
4	A little (I feel that the international language use is adequate for me)	15.00%	6
5	None at all (I am native Dutch or fluent in Dutch)	57.50%	23
			40

Showing rows 1 - 6 of 6

Q6

I asked non-Dutch speakers to tell me about a time when they were not included in the community. *This was done to illustrate public perceptions of inclusion in Dutch culture as we know that exclusion is a risk factor for suicide.*

At my gymnastics club, I walked in and said hello, but nobody answered. Our group meetings are conducted in Dutch with the knowledge that there are international students.

When I try to find a job here :(

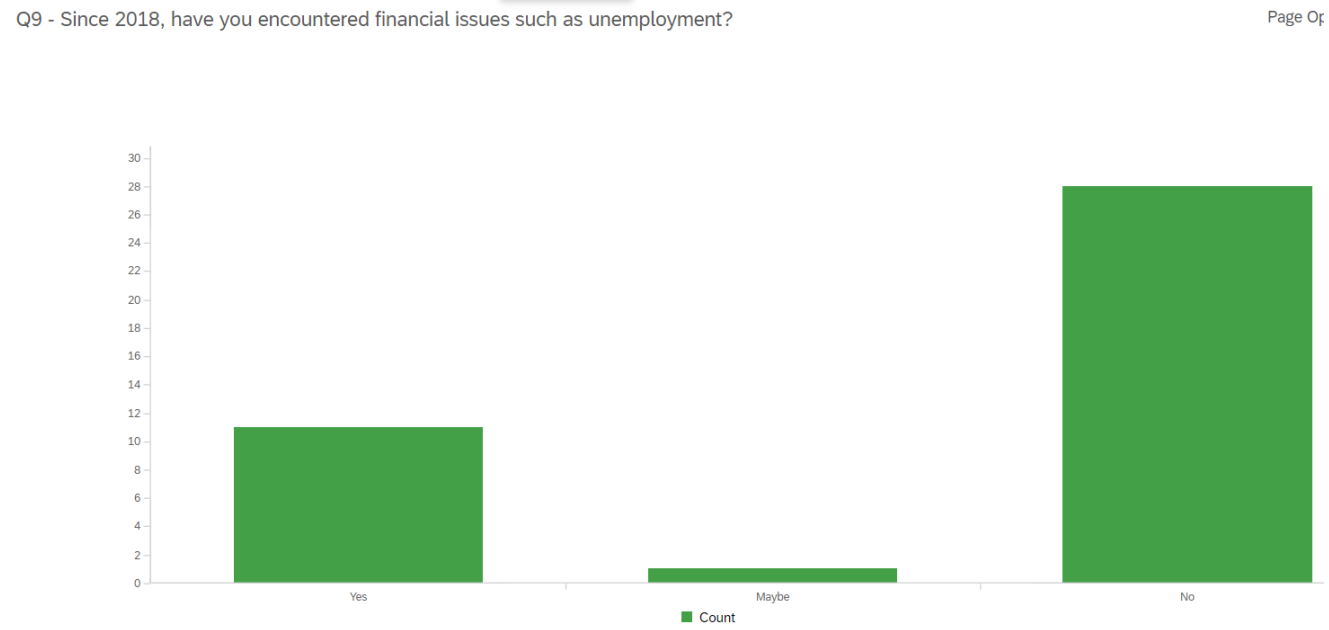
When attending the practice for the sport I play, I'm the only international player and the other players are used to talk Dutch during practise which means that I feel excluded all the time.

When i was at a family event of my dutch boyfriend almost noone tried to talk to me because i could not speak dutch.

At work. I am surrounded by co-workers speaking Frisian who are not always willing to try to speak English with me. Seeing them laughing at their jokes while I haven't got a word is quite frustrating.
In the supermarket or train or some public areas, all the things are written in Dutch.
When Dutch people in a group with non-dutch speaking people start speaking dutch.
In my track I am the only person who does not speak Dutch at least on a conversational level and sometimes people switch to Dutch even though I am still there.
When I go to parties or events with Dutch people I sometimes feel excluded from the conversation because I do not know the language, and at times they forget to switch to English for me so even if I am next to them I feel excluded.
Whenever I am with a majority of Dutch people, they always switch to speaking Dutch excluding internationals from the conversation. Also during school-related group projects.
When I was trying to open a bank account and they did not have people speaking English or forms in English even though they were meant for international students.
When taking a sports lesson and everyone including the teacher was speaking Dutch.
Almost every social interaction at work and school i feel excluded. Though I have been learning dutch and try very hard, it is still a barrier.
Everytime when in a group of mostly Dutch speakers.
Students were speaking dutch in class and i couldn't understand so i felt excluded.
This one time back in first year of uni I was on a walk with two friends and a Dutch kid was following us on a tricycle-sized whatever it was and screaming "go home"

Q7

This question asked about one of the risk factors for suicide and mental health issues- Financial stress. *It is important to note that this survey was conducted during the covid-19 pandemic, where economic stress is unusually high according to the WHO.*



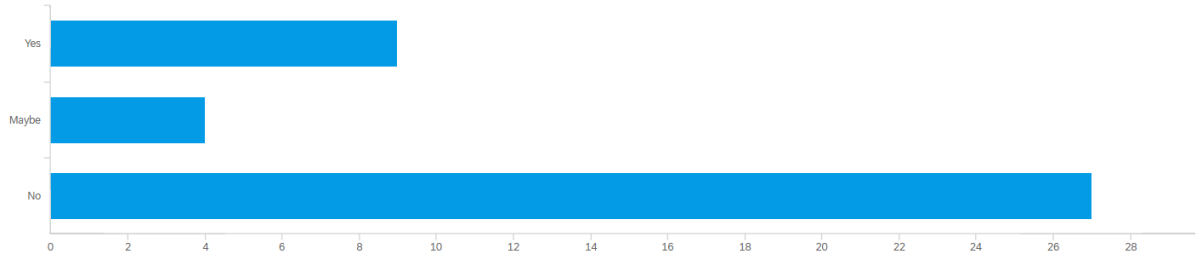
Q8 (Labeled 26)

This was a control question to ensure that participants were engaging actively with the survey. *All 40 participants correctly answered this question.*

Q9

In accordance with research findings, I asked respondents to disclose mental health status. *This, it is important to know, may be biased because it is often difficult for people to share their personal experiences. Furthermore, some mental health issues can go undiagnosed.*

Q11 - Have you ever been diagnosed with a mental health issue like bipolar disorder or anorexia for example? Page Options

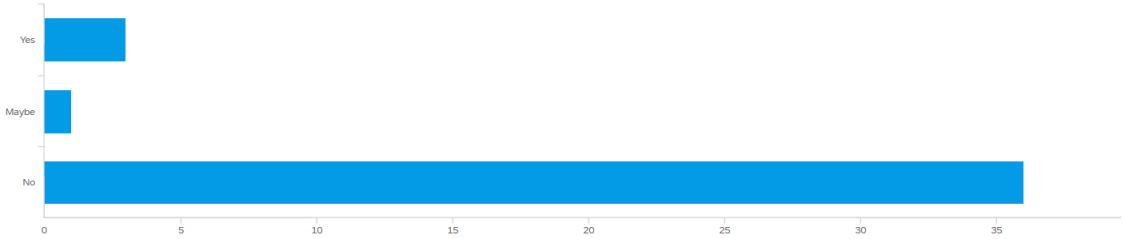


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Coun
1	Have you ever been diagnosed with a mental health issue like bipolar disorder or anorexia for example?	1.00	3.00	2.45	0.84	0.70	40

Q10

In accordance with research findings, I asked the respondents to disclose if they have ever been diagnosed with a chronic pain condition or diabetes which are both risk factors for mental health issues.

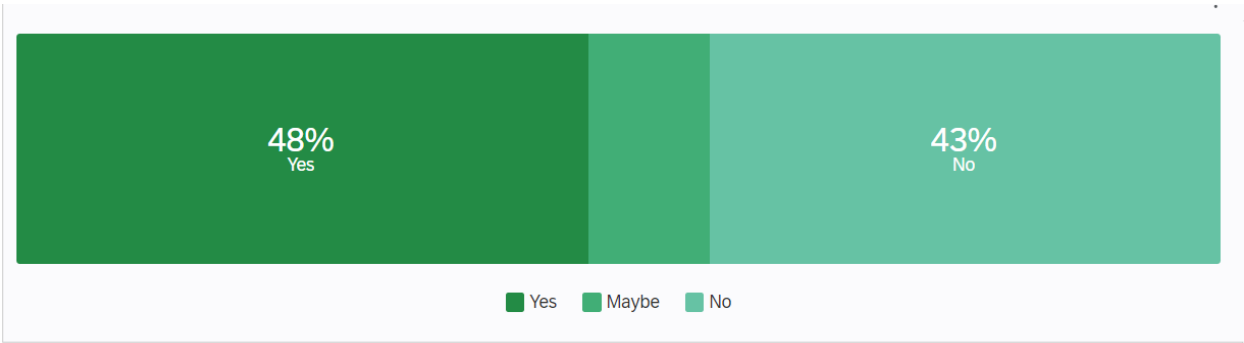
Q12 - Have you ever been diagnosed with a chronic physical health issue such as chronic pain or diabetes? Page Options



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you ever been diagnosed with a chronic physical health issue such as chronic pain or diabetes?	1.00	3.00	2.83	0.54	0.29	40

Q11

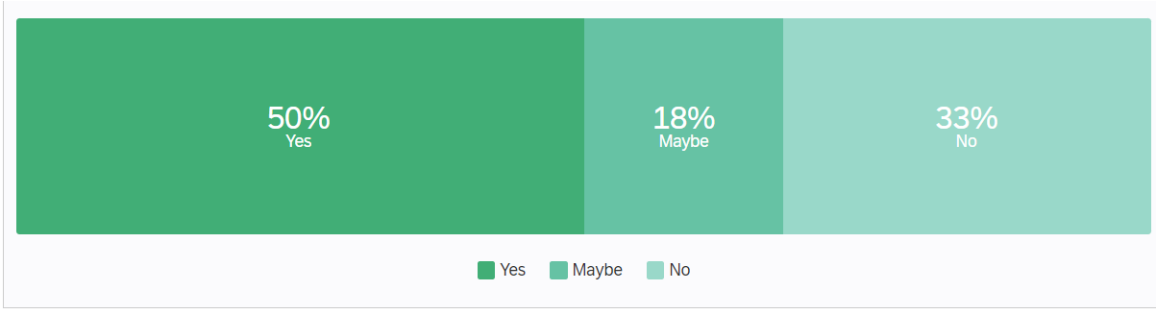
Another risk factor for suicide is knowing someone who has died by suicide. This lead to the following question for respondents;



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you ever known someone who has died by suicide?	1.00	3.00	1.95	0.95	0.90	40

Q12

Question twelve asks about suicide attempts, which are in this case in line with trends that attempts are higher than deaths by suicide.
Stigma plays a role in responding to both questions.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you ever known someone who has ATTEMPTED suicide?	1.00	3.00	1.82	0.89	0.79	40

Q13

This question focused on the signs of a struggle with mental health experienced by individuals. I wanted to see if those living in Groningen had a general awareness of the risk factors that lead to suicide.

Can you tell me any risk factors for suicide risk?

"cold" upbringing

Unstable home, no routine, unemployed, no school, less contact with the outside world

Social environment, love-issues, home-situation, parental education, social media,

burnout, stress, loneliness, sadness, feeling excluded

N/A

Mental health? Loneliness Exclusion

Loneliness, hopelessness, financial insecurities

Mental health issues, loneliness, "sick of" living, not knowing what else to do, certain types of drugs/medication

Unstable mental health (anxiety, depression), unstable home situation or trauma.

Stress, anxiety, loneliness

- Very unhappy - No money - ill -Lonely

Depression, substance use, previous attempts

Loneliness, mental disorder

Long term stress and minimal social support are main factors I believe, and loneliness.

Depression, social isolation, schizofrenia, drugs, addiction

social support

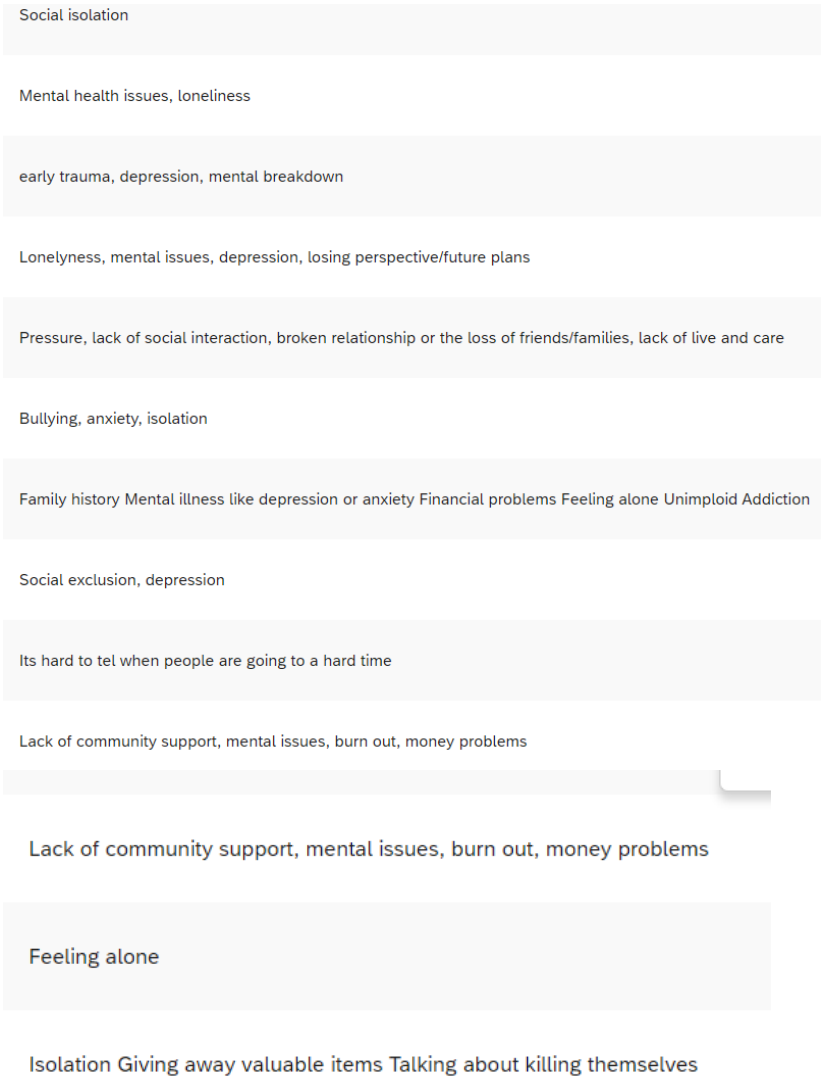
Suffering from depression, being bullied

Depression

Isolation, anxiety, stress, unstable surroundings,

Depression, hurting themselves, loneliness

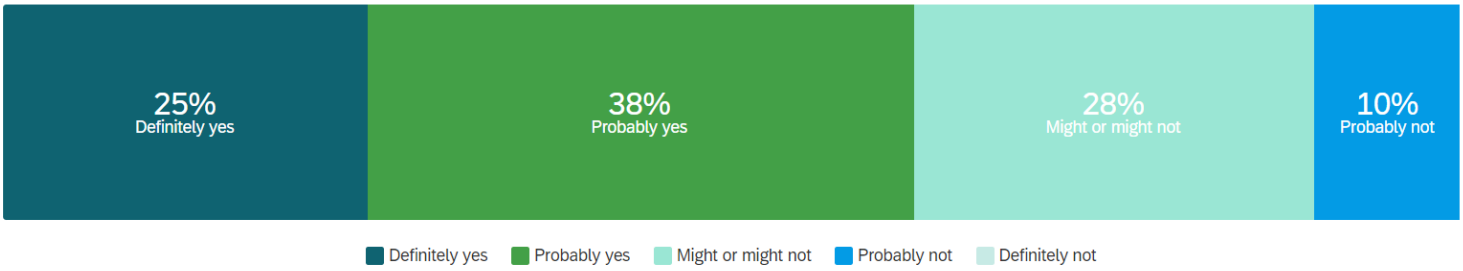
Mental health issues



The following word cloud was generated as a result of the input provided by the 40 respondents. It illustrates the words associated with suicide and mental illness in a way that is interesting for the audience.

Q14

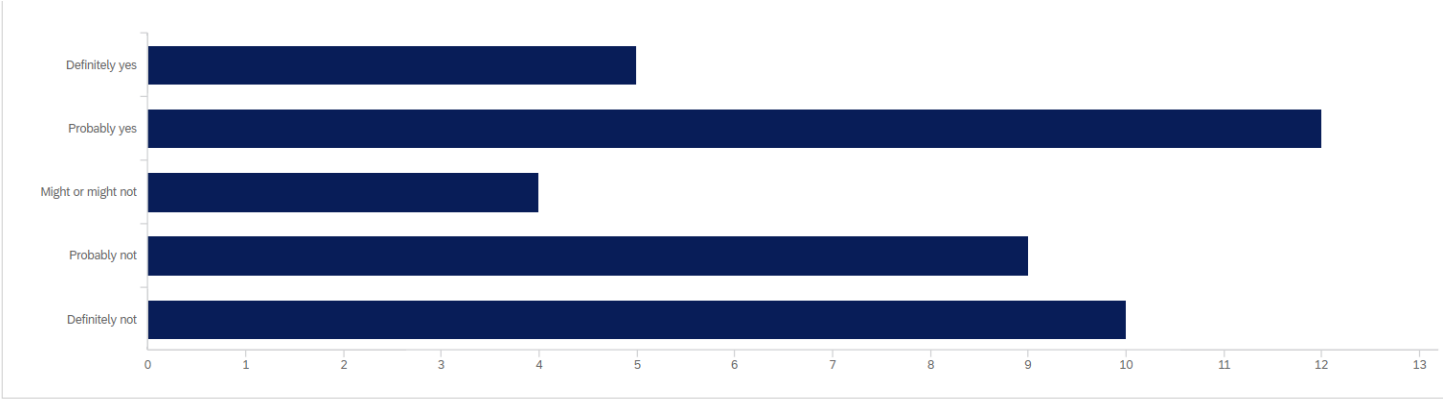
This question canvases the public in their perception of stigma as an issue in The Netherlands from the perspective of someone living in Groningen.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you believe that there is stigma surrounding mental health issues in The Netherlands?	1.00	4.00	2.23	0.94	0.87	40

Q15

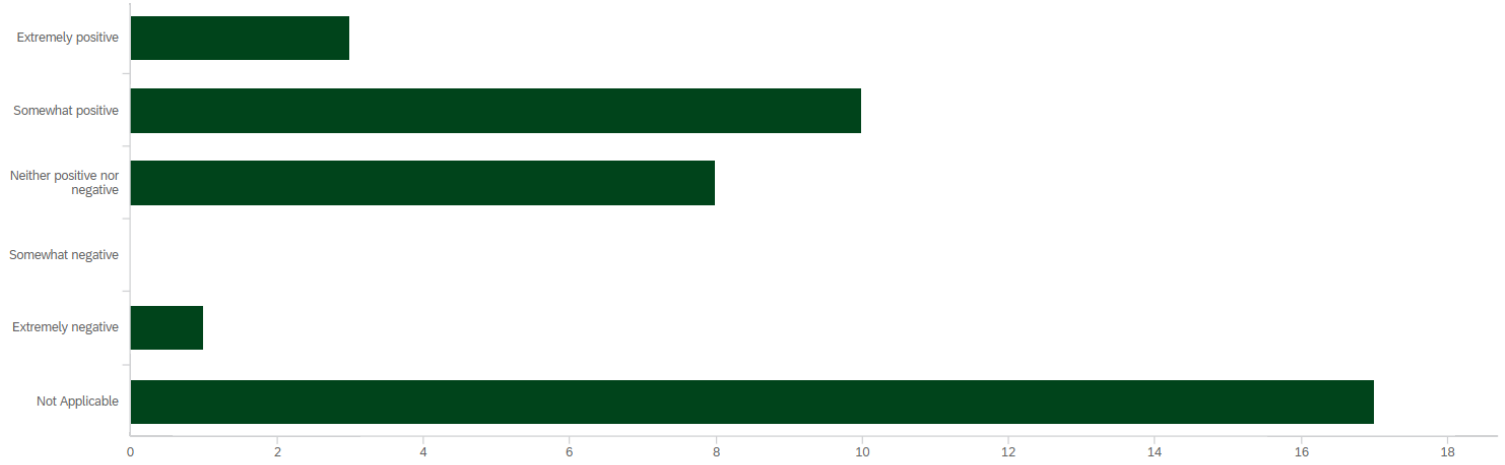
This question is based on community support trends and belief systems that impact suicide and mental health statistics.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you believe in a higher power?	1.00	5.00	3.17	1.41	1.99	40

Q16

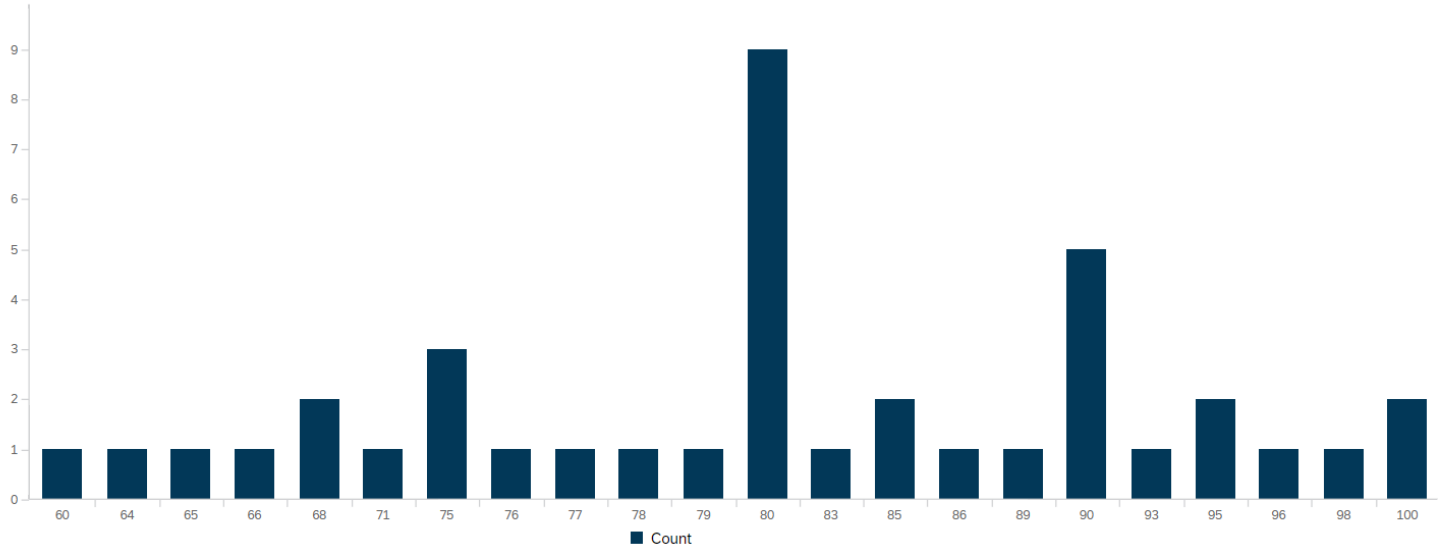
Belief in a higher power can influence community support systems, help seeking behavior as well as suicidality. Therefore, this question aims to gauge how the respondents view their beliefs.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	If so, do you experience positive feelings associated with your belief?	1.00	6.00	3.95	1.92	3.69	39

Q17

This question focuses on the perception of safety and seeks to identify trends in that area. *Research states that feelings of safety are associated with mental health.*



Q18

Do you belong to any clubs or organizations in Groningen?

This question references community and support systems. Clubs and organizations are a part of these. Of the 40 respondents, 10 do not belong to a club or organization in Groningen.

Q19

Outside of community organizations, I asked respondents to discuss their support systems.

Non-existent, fully available worldwide online
I am on the board of a supporters association of basketball club Donar in Groningen as a paymaster.
I have a few close friends, two or three and the rest are more distant friends or people I know either from class or other occasions. The community in Groningen is far more independent and distant than it is back home, whether that be university life in my country or other social organisations.
Support system for money? Work Support system for mental health? Girlfriend, friends, family
I have my friends and family on the phone. My support system physically in the Netherlands has recently gone through several changes due to a break up and is now reduced to one person.
Friends mostly, most of my close friends are here. Also my association.
My roommates and some friends from gymnastics and university.
Friends, family, pets, psychologist,online help (healtygamer.gg), games and gamers
I attended a few sessions with a psychologist. I am in touch with my study advisor.
I have been in touch with a Psychologist for the past year because I was not mentally well. I struggled with anxiety, panic attacks, losing focus and more. I am now seeing a psychiatrist, and we are going to start work on trauma therapy after I was just diagnosed with PTSD.

I have friends, university faculty and vineyard groningen (church) to lean on to. I also keep in contact with my family and friends from back home

a few of friends here, online chatting with family and old friends far away

I don't really have a support system

I am party of the study association Clio, which is made up of some of the International Relations and International Organization's students. I am also speakers' coordinator for the Forum Committee. Together with the rest of the team, we organize conferences, debates and other cultural events aimed at bridging the gap between what we study in class and what is happening in the real world.

You mean like medical support? I didn't register doctor yet.. but I do have business insurance.

My friends are the best support system I can get

I have around three very close friends and my boyfriend :) i meet with them regularly and they always support me and help me feel better.

I have friends and a sport club I attend weekly.

Family +friends live in Groningen.

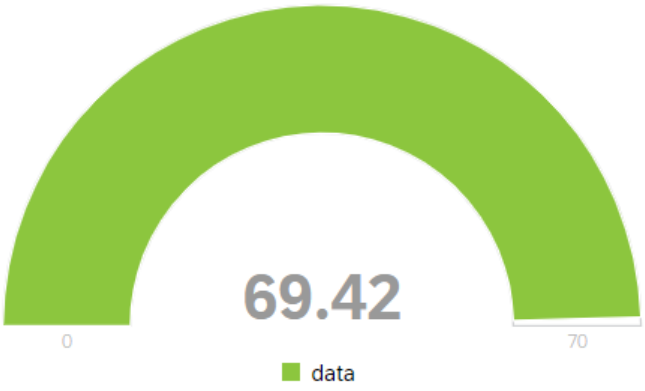
My brother lives in Groningen and i have nice friends from the study

Back to Top

Friends, roommates
Friends and daily video call with my parents
Friends? Worklife, Uni, Ome Duo
I have a nice family which I can relay on. I can also relay on my boy friend. My friends are mostly in my home town, but I do have some close friends in Groningen.
I have two really good friends which I also (separetely) kept seeing during quarantaine. One of those I was working with during the first locksown. But with my other job, that'll be too much noise for her. In combination with her PhD stress, that means the other friend feels as my only stable support system in Groningen.
I have family and Friends here. Also I have a therapist
I have friends
Mainly my friends and my aunt
STUGG
I have a great friend group, but everyone is busy and some of my friends no longer live here. I am in a relationship which helps me feel supported.

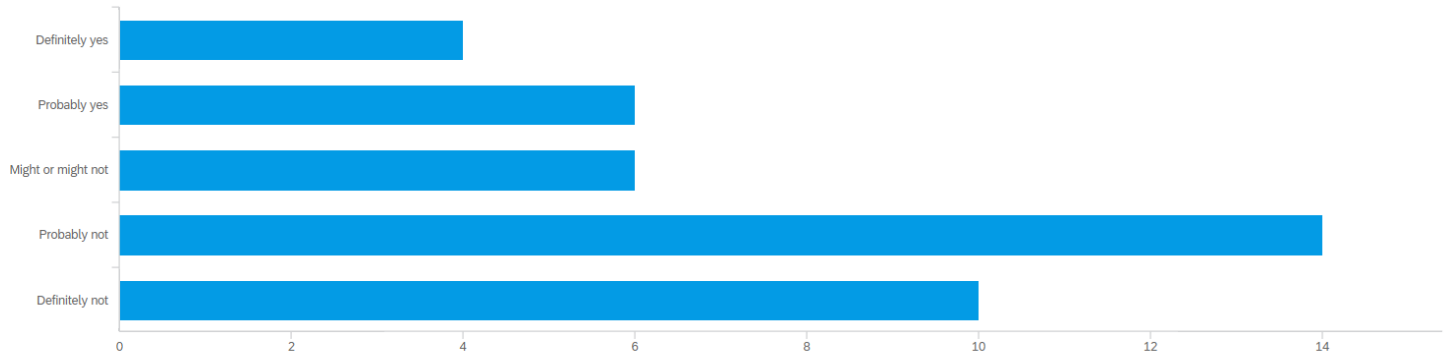
Q20

Question twenty asks respondents about their feelings of social inclusion where 0 is completely excluded from society and 100 is complete integration into the society of Groningen. The data indicates that on this scale, respondents feel mostly integrated in the society.



Q21

Question twenty one revolves around the individual experience of isolation which, according to prior research is a risk factor for suicidal ideation.



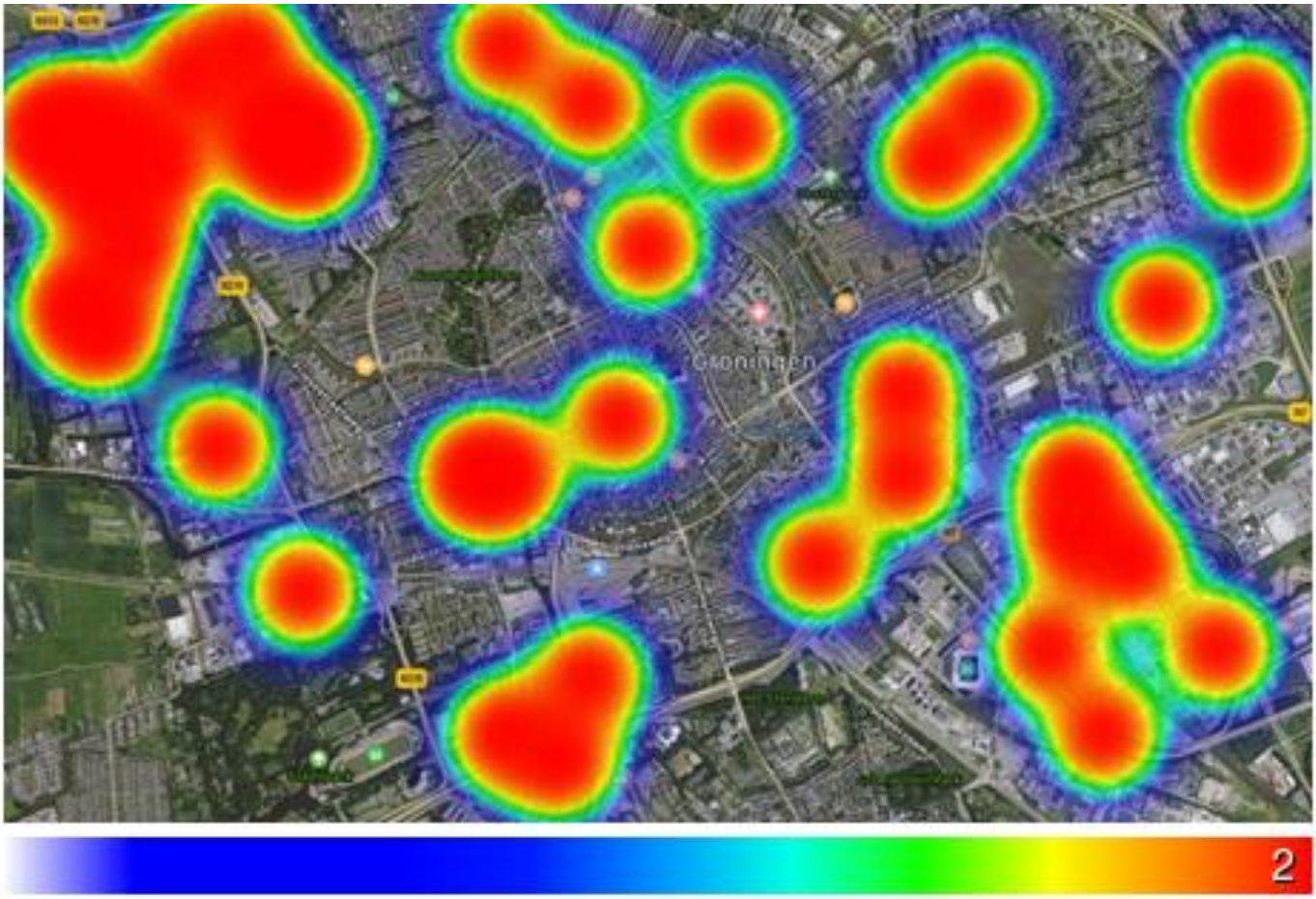
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you feel isolated in your current housing situation?	1.00	5.00	3.50	1.28	1.65	40

Q22

This question asks respondents to indicate where they feel most comfortable in the city.

Q23

This question asks respondents to indicate where they feel least drawn to in the city.



Q24

This question was originally included to account for perceptions of comfort in terms of different spatial environments.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What picture feels the most comforting to you	1.00	7.00	4.65	1.46	2.13	40

#	Field	Choice Count
1		2.50% 1
2		0.00% 0
3		7.50% 3
4		60.00% 24
5		2.50% 1
6		5.00% 2

7  22.50% 9

Most people were drawn to the picture of a small suburban town. (Image 24)

Appendix D.

Survey 1.

Preliminary Survey: Interviewing The Public

Conducted March, 2020

Survey one introduces isolation as a component of the field of mental health.
Data was collected on a voluntary basis from 27 recipients living in Groningen, the Netherlands in March of 2020. Unfortunately, collected data does not include gender which will be needed in future studies as we understand the differences between the mental health of men and women. The survey is a combination of multiple choice and short answer questions and was collected via word of mouth. It should be noted that I confirmed the results would be anonymous as an attempt to eliminate hesitance to answer the more sensitive questions. The survey data was gathered using Qualtrics provided by The University of Groningen.
I collected zip codes to gauge the perception of the immediate physical environment and to investigate if there was a concentration of answers in one zip code. This proved to be helpful as most results came from the Oosterpoort section of Groningen. It should be noted that one zip code could have been entered incorrectly or if entered correctly, is located outside of The Netherlands. [Figure A.] Individual countries of origin were also collected as different countries and societies have different views on mental health which could have influenced propensity to answer questions in a way that reflects the beliefs of those specified cultures.

Q1

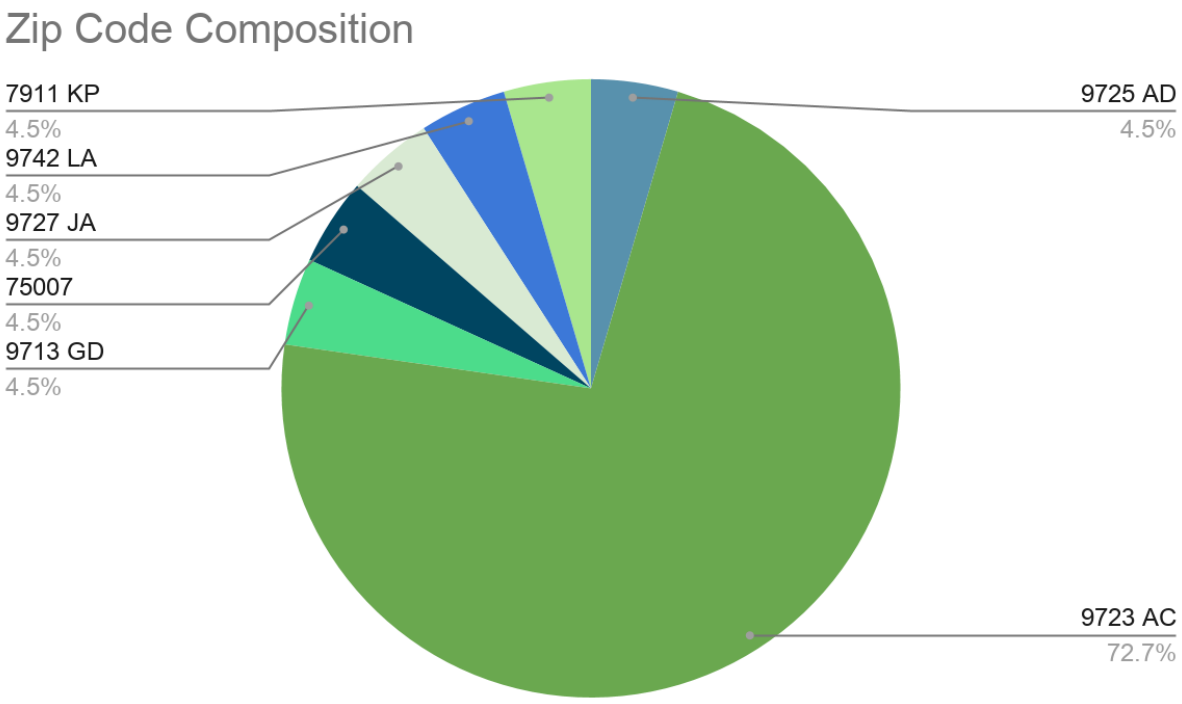


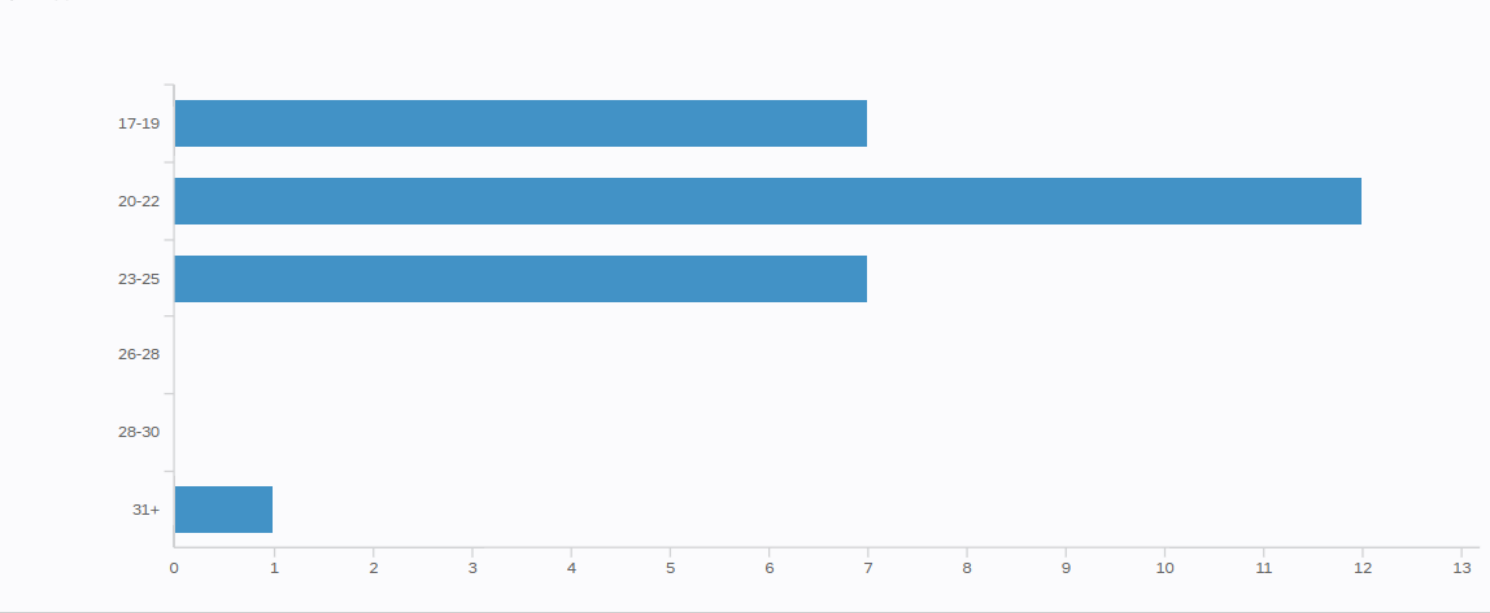
Figure A.

Q2

For this question, I divided the city and outlying areas into 16 areas in order to receive general information about where participants are most drawn to. There is an option for “other” which the data shows a response for. The intention here was to investigate if people in Groningen were generally interested in being in environments that increase mental health as per the research provided as a basis for this project. Most of the reasoning and responses seem to be in line with research indicating the importance of green space and social connectedness for the individual.

Envision your favorite place in the city of Groningen. Please select to the best of your ability where this area is.

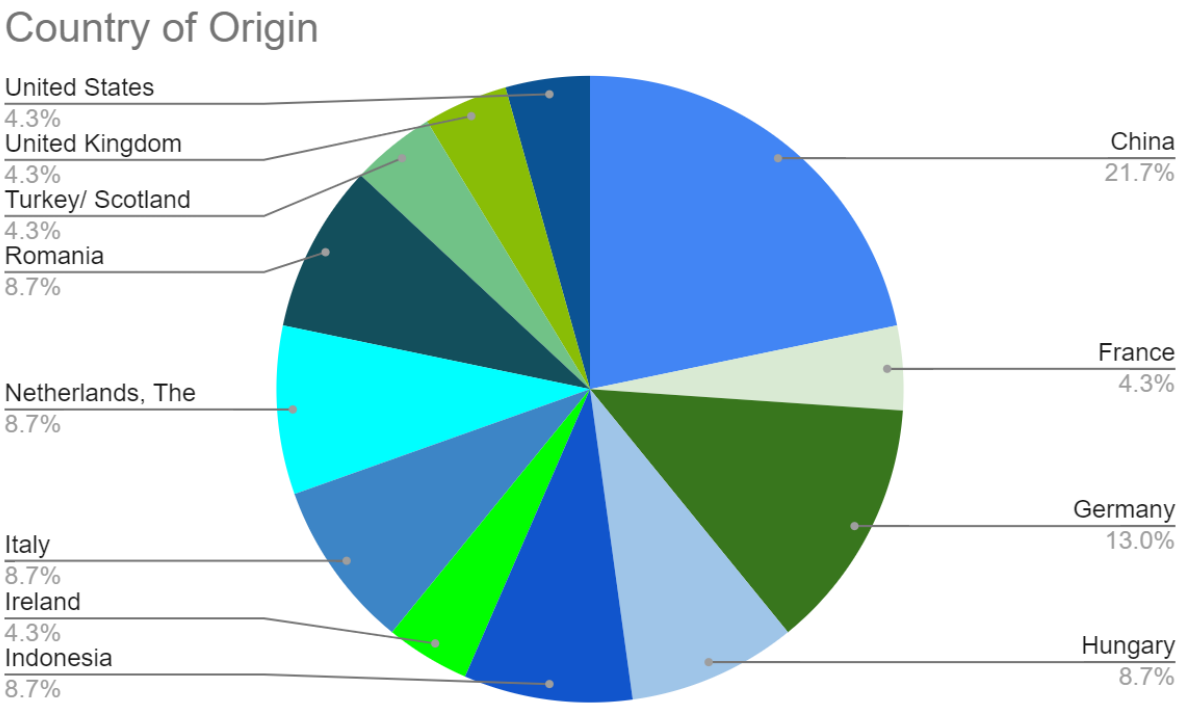
Q3



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What is your age?	1.00	6.00	2.15	1.04	1.09	27

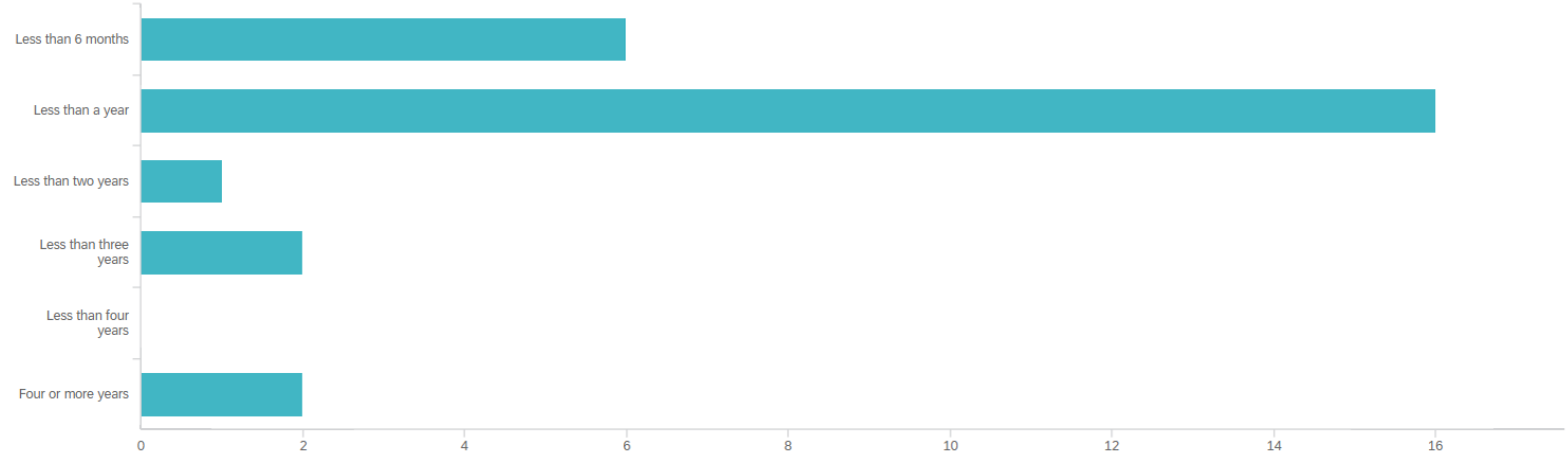
Q4

Country of origin was included as a part of this survey in order to account for bias as it relates to nationality and feelings of belonging.



Q5

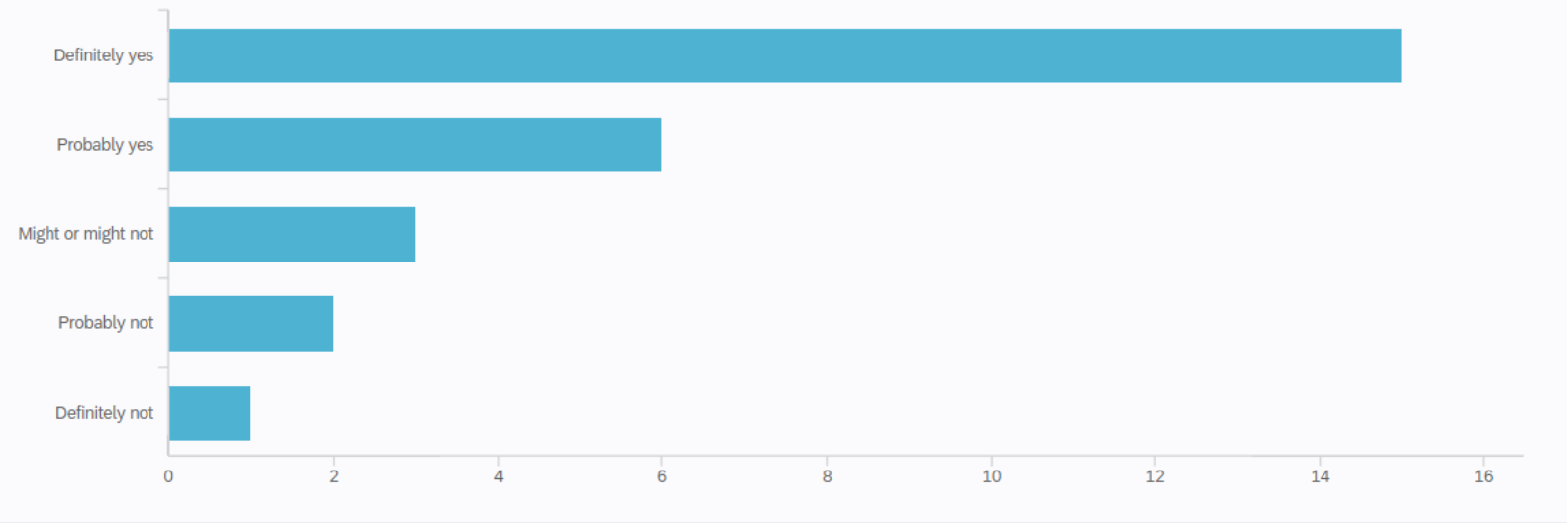
The next question asks respondents to indicate how long they have lived in Groningen as a component of stability and familiarity with the community which research points to as being important to mental health.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	How long have you lived in Groningen?	1.00	6.00	2.26	1.29	1.67	27

Q6

In order to reinforce that mental health is a pertinent issue in the lives of the public, individuals were asked to indicate whether or not they or someone they know has suffered with mental health issues.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Have you ever known someone with a mental illness, including yourself.	1.00	5.00	1.81	1.12	1.26	27

Q7 (labeled as Q25)

The following question asks about feelings of loneliness as these feelings can be indicative of suicide risk.

Q25 - How often do you feel alone?

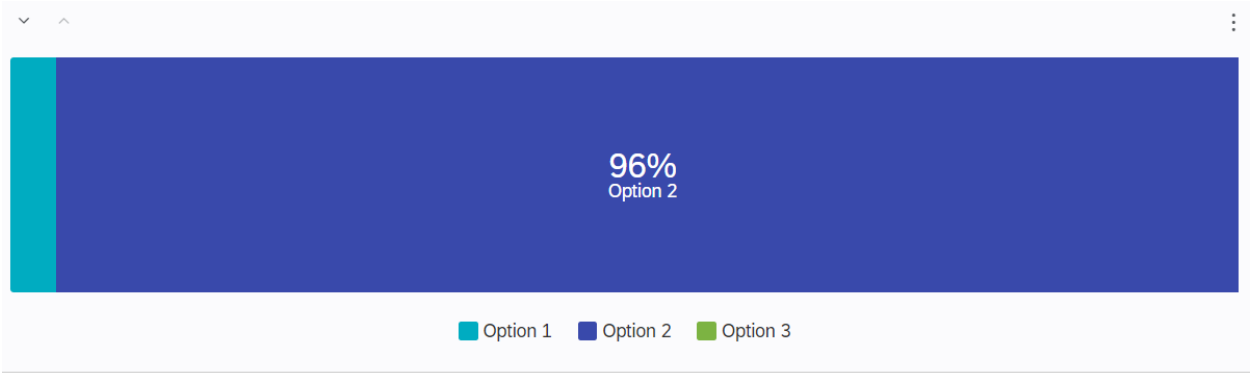
Page Options

#	Field	Choice Count	
1	Almost all of the days	11.11%	3
2	Most of the days	14.81%	4
3	Some of the days	37.04%	10
4	Rarely	29.63%	8
5	Almost never	7.41%	2
			27

Showing rows 1 - 6 of 6

Q8

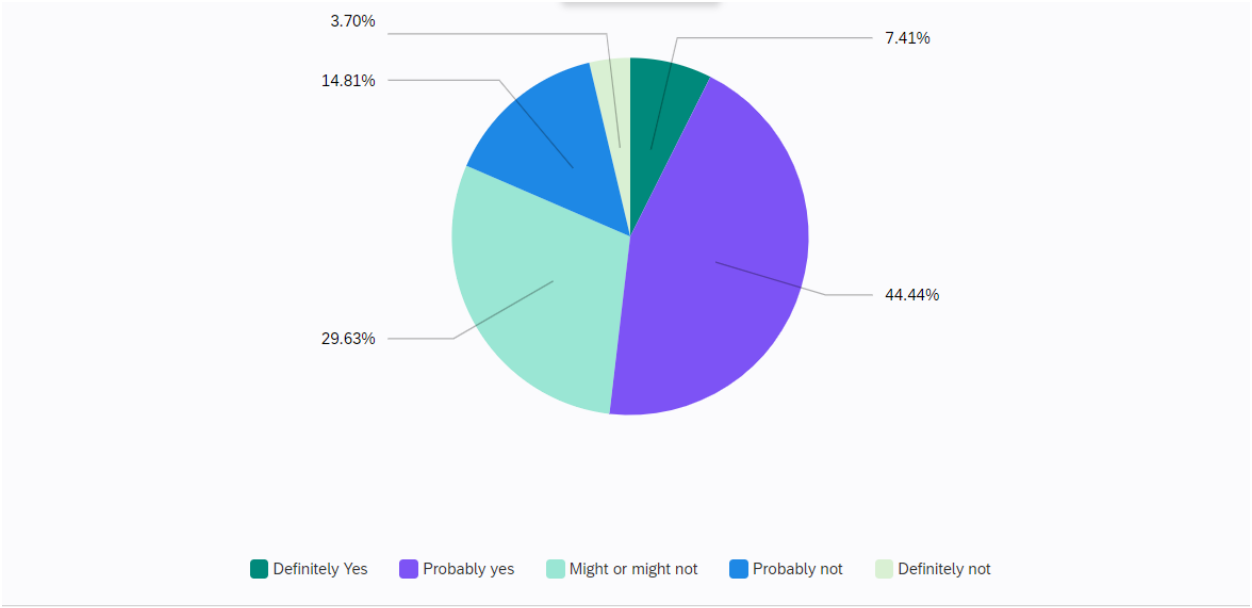
The following question is a quality check of which one person answered incorrectly.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Quality Check: Please select option 2	1.00	2.00	1.96	0.19	0.04	27

Q9

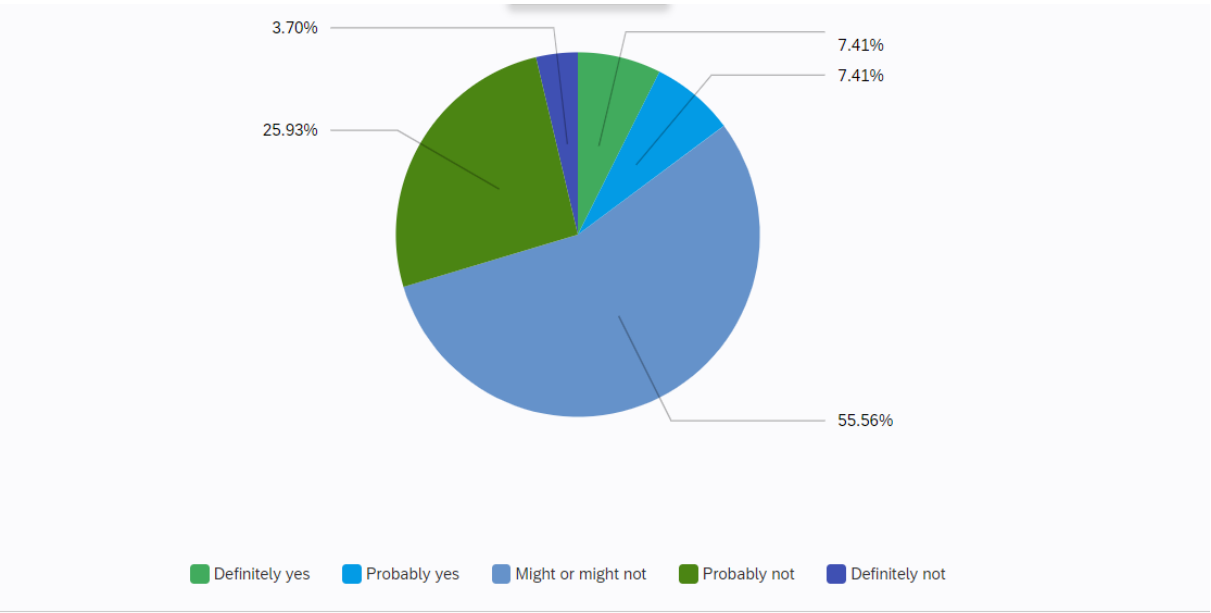
In an effort to investigate community awareness and experience with mental health care, the following question was asked. It requests that respondents reflect on their own experiences with their neighbors specifically as this relates to community level information.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Would you be able to recognize if a friend or neighbor was at risk for suicide or is struggling with their mental health?	1.00	5.00	2.63	0.95	0.90	27

Q10

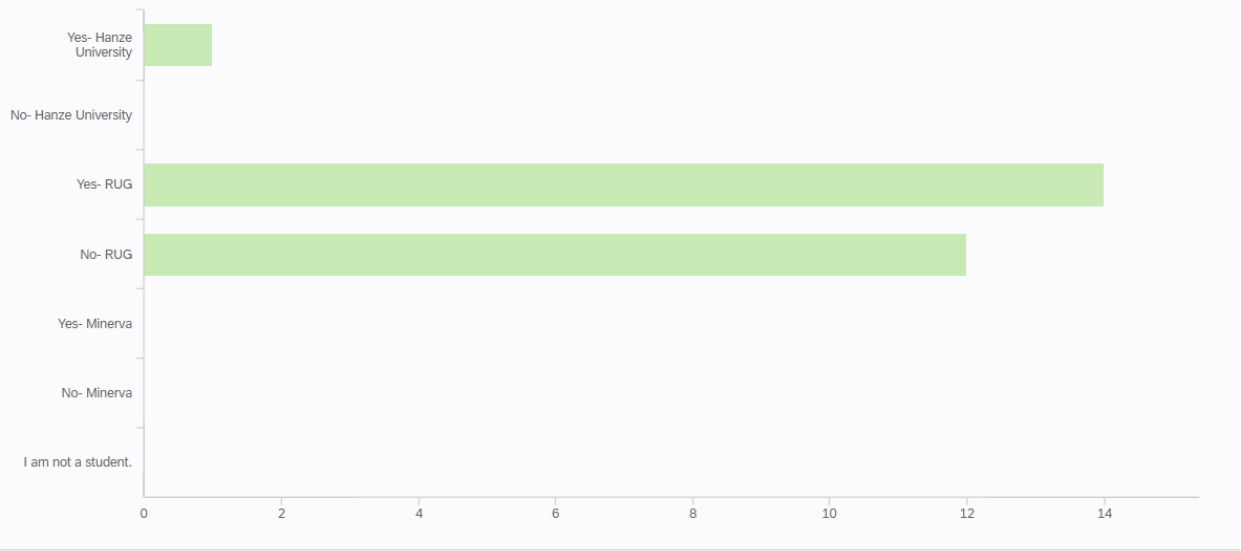
Question 10 builds upon the previous but focuses on professional resources rather than interpersonal relationships as a way to support mental health.



Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Do you feel that your neighborhood has enough support regarding mental health? For instance, do you feel that there are enough offices and places to reach out to in case of crisis?	1.00	5.00	3.11	0.87	0.77	27

Q11

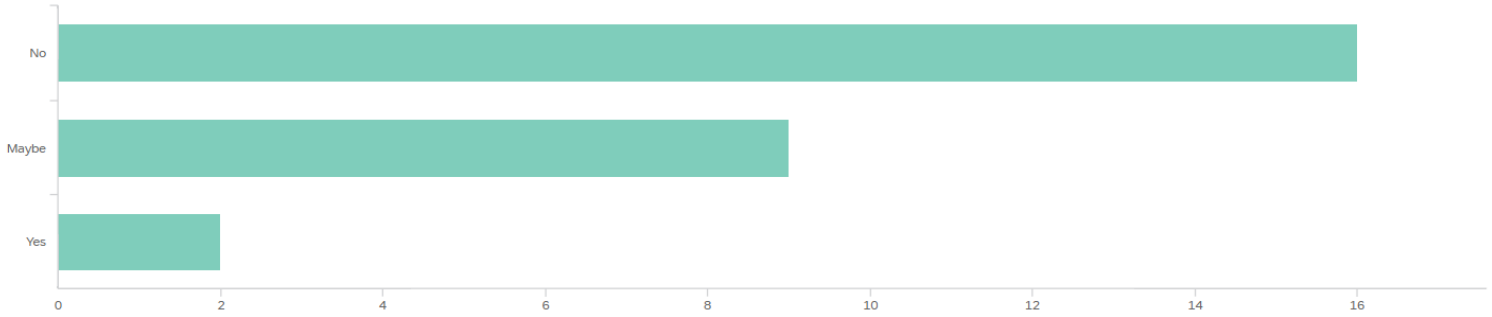
This question was posed in order to investigate how and if Universities within Groningen support the mental health of their students.This reflects another aspect of resource awareness for th epublic within Groningen.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Students Only: Do you feel that your university has made an effort to counsel and guide students at risk for mental health issues? (Have you seen any handouts, web pages, maps or other information	1.00	4.00	3.37	0.67	0.46	27

Q12

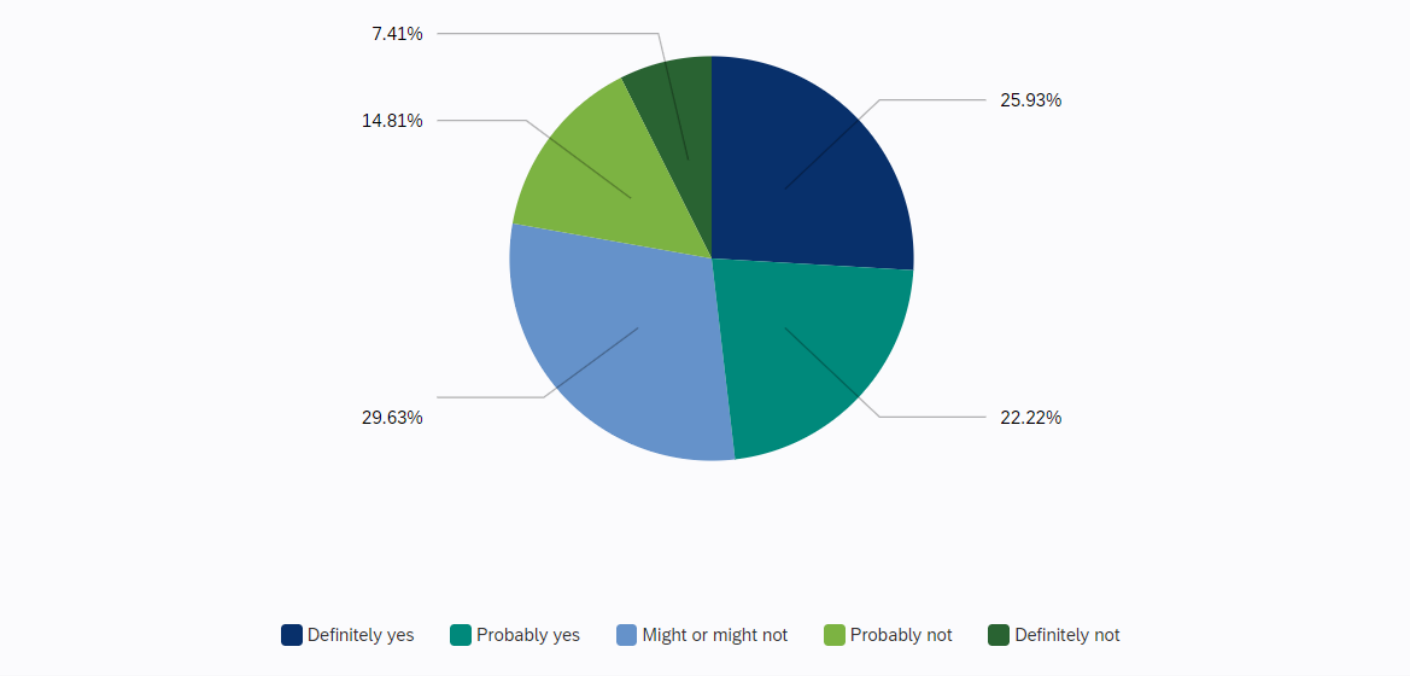
This question was posed with the intention of illustrating public awareness of physical suicide prevention interventions within the scope of Groningen.



Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Do you recall ever seeing physical aspects of suicide prevention in Groningen?(Signs, messages of hope or resource postings in public areas)	1.00	3.00	1.48	0.63	0.40	27

Q13

Question 13 was posed with research surrounding community support systems as a motivator. The question aims to paint a better picture of the readiness and awareness of the public to intervene in case of a mental health crisis.



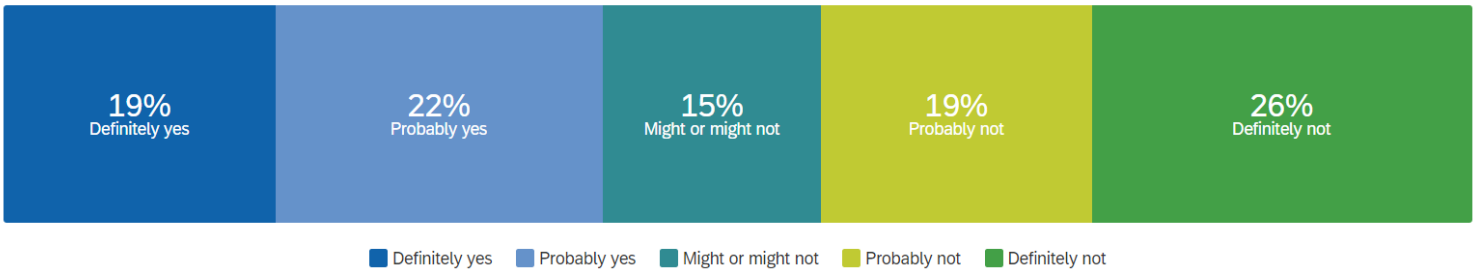
#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you feel that you would know what to do in a mental health crisis (such as a self-harm situation)?	1.00	5.00	2.56	1.23	1.51	27

Q14 (labeled 12)

The intention behind this question was to uncover the awareness of mental health services within Groningen in order to discover the effectiveness of existing resources in reaching the public.

Q12 - Are you aware of mental health services in Groningen?

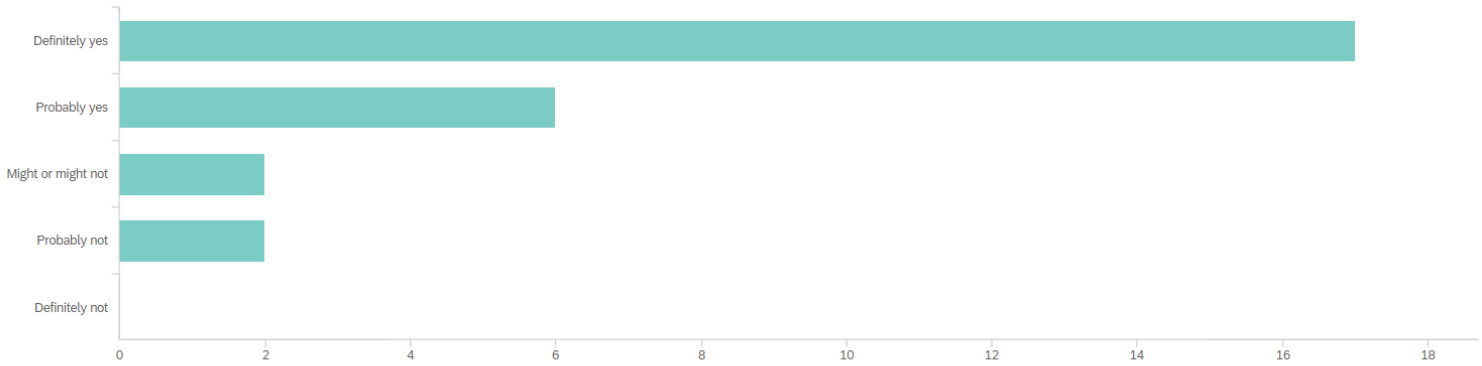
Page Options



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Are you aware of mental health services in Groningen?	1.00	5.00	3.11	1.47	2.17	27

Q15

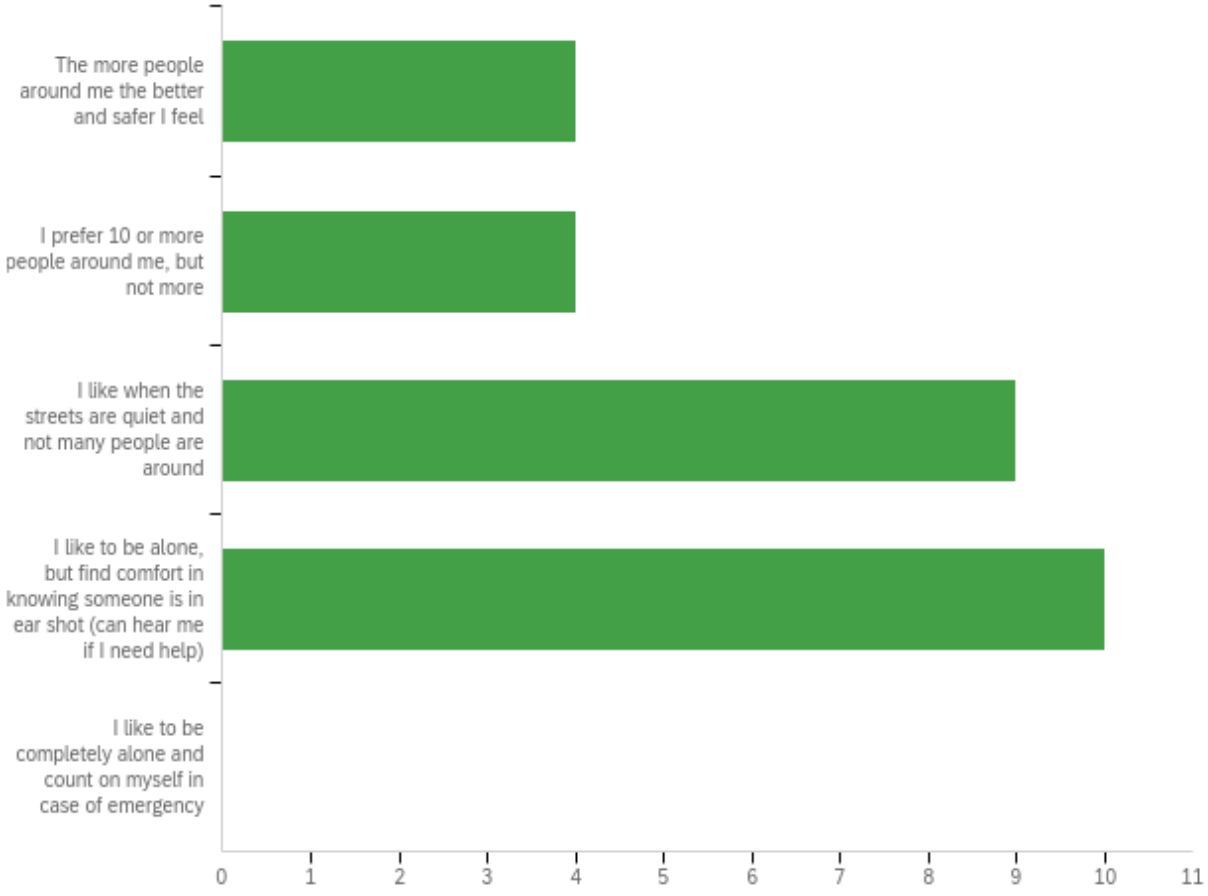
Question 15 asks respondents to reflect on feelings of being home and the importance it has on the state of their mental health. This was in an attempt to provide a majority and display exceptions such as home-bodies or agoraphobes. This is especially pertinent during the lockdowns of the coronavirus pandemic.



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Coun
1	Would you say that leaving your house is an important for your mental health?	1.00	4.00	1.59	0.91	0.83	27

Q16

Question 16 poses the question to the respondents which focuses on comfort as it relates to social exposure. It is here where the respondents create a trend that informs social contact encouragement as well as shows the importance of different types of opportunities for social engagement. This is applicable to the number of patients in a hospital room and illustrates the differing wishes of the public in Groningen.

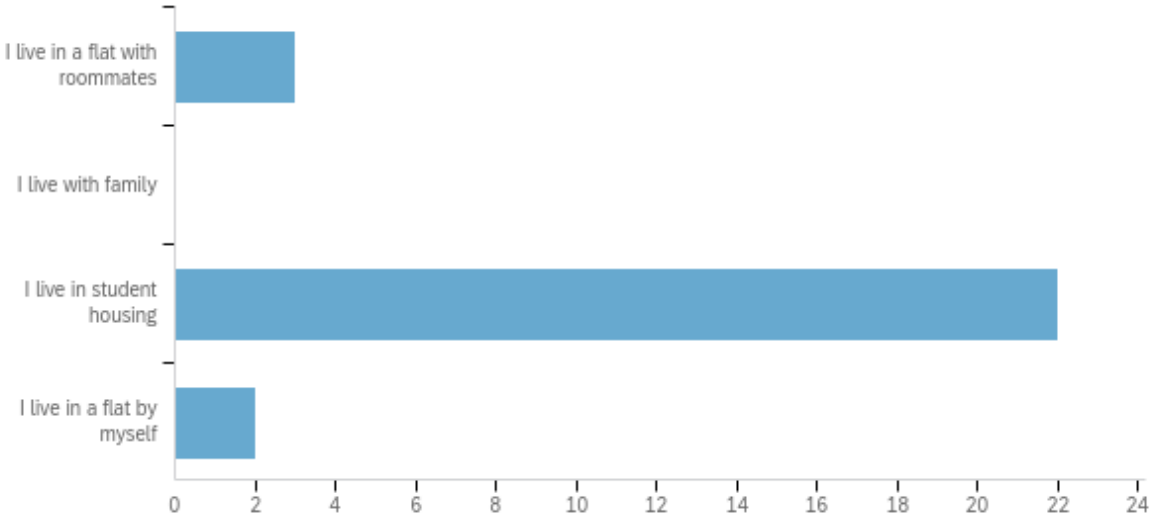


#	Field		Choice Count
1	The more people around me the better and safer I feel	14.81%	4
2	I prefer 10 or more people around me, but not more	14.81%	4
3	I like when the streets are quiet and not many people are around	33.33%	9
4	I like to be alone, but find comfort in knowing someone is in ear shot (can hear me if I need help)	37.04%	10
5	I like to be completely alone and count on myself in case of emergency	0.00%	0
			27

Showing rows 1 - 6 of 6

Q17

This question seeks to investigate the living situation of those who replied to the survey. It shows that many live in student housing, leaning toward yet again, another space where intervention could be proposed.



Q18

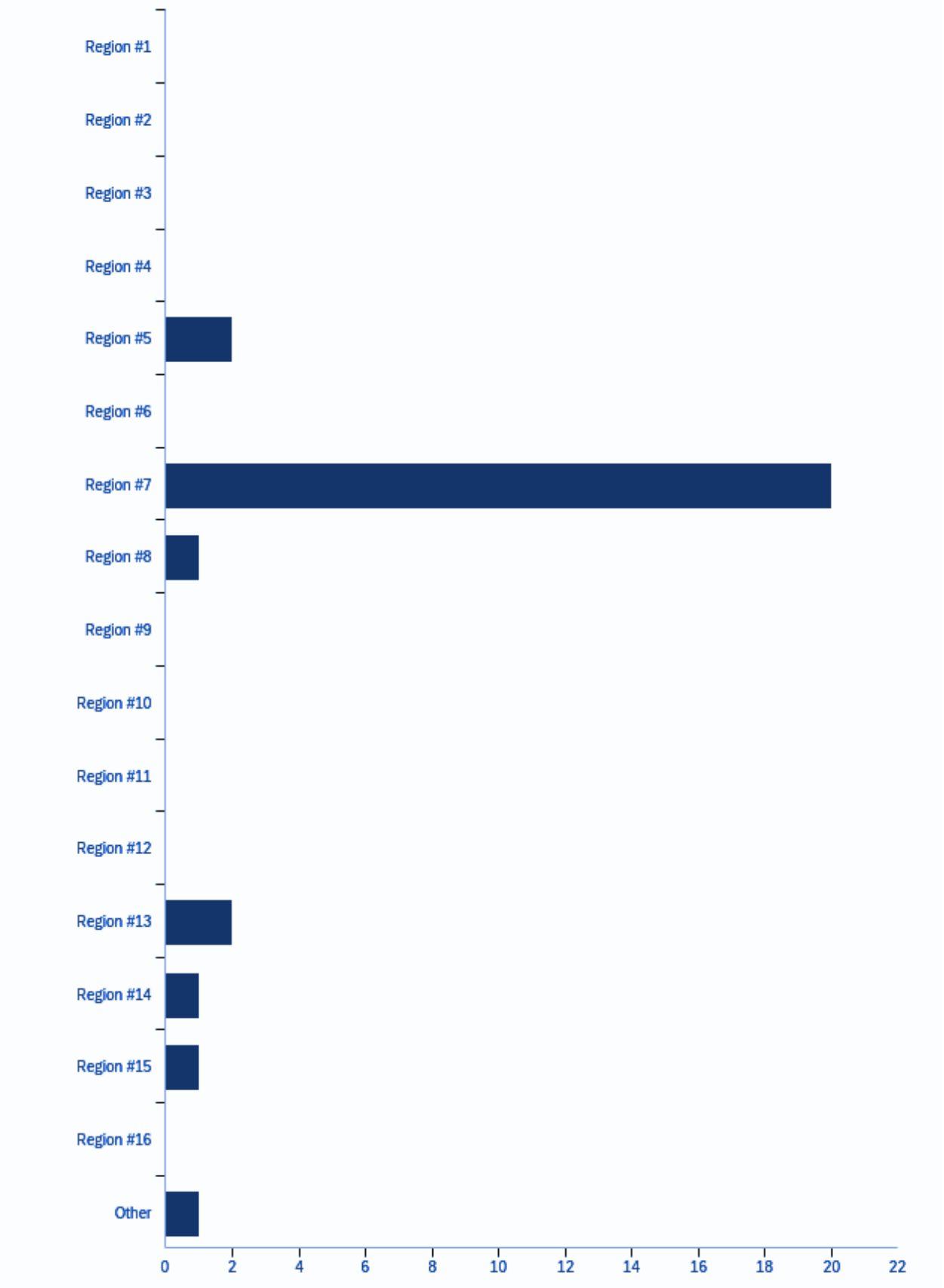
Question 18 asks respondents to reflect on the qualities of their environment. This helps illustrate aspects of space that can be incorporated into spatial transformation in order to boost mental health.

What are a few reasons you chose this area?

Everything is close together and you can easily get around. Also, there's lots of things to do!
Here are the nightclubs
It's pretty and relaxing
It's city center- convenient
Historical area
still close to the centre but not too close
Home
Friends, connection
pretty
Shopping
It's where I live, very comfortable and I have my own room.
Pubs
there s a lot of things to do in the center i guess.
Can study
Convenient
Because it IS the city center and it is full of life
It is out of the city, very quite, a lot of land, best place to escape for an hour
There are so many options for social activities, but also spaces for studying. Also it has generally a nice vibe
Central, close to uni
There is a big park there (Noorderplansoen) but is not far away from the city or from my home
Going out life, everything you can do in the city
Close to city centre
Bars, clubs, university, social activities
There is a nice place to sit on the water

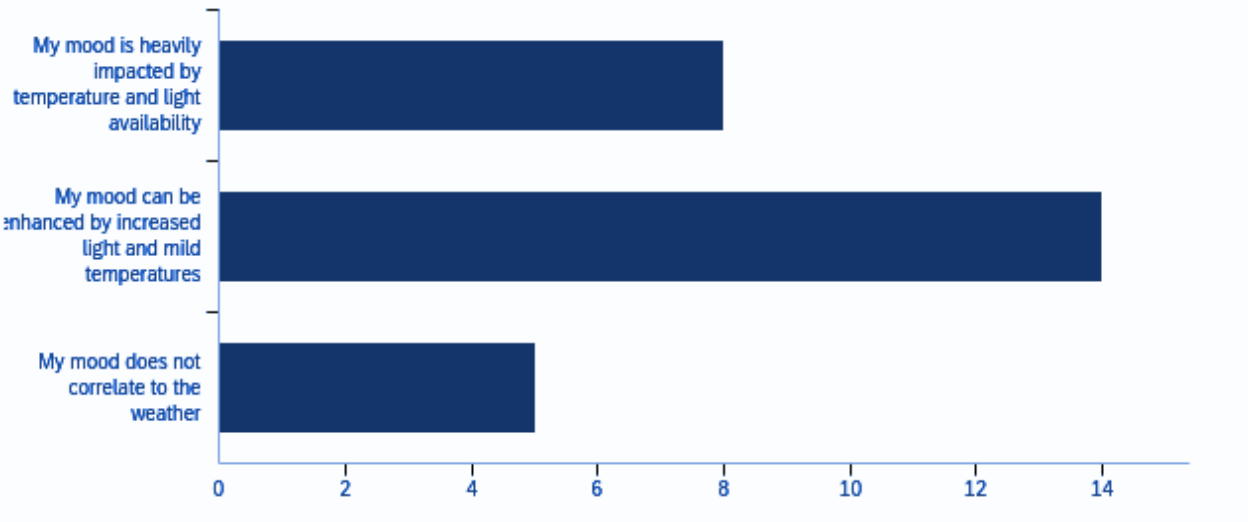
Q19

Question 19 is tied to the question labeled 26. It attempts to get individuals living within Groningen to become aware of the places where they are most comfortable. Additionally, it provides data that could be helpful in discovering trends of attraction to certain elements of the environment.


Region #1
Region #2
Region #3
Region #4
Region #5
Region #6
Region #7
Region #8
Region #9
Region #10
Region #11
Region #12
Region #13
Region #14
Region #15
Region #16
Other
0
2
4
6
8
10
12
14
16
18
20
22

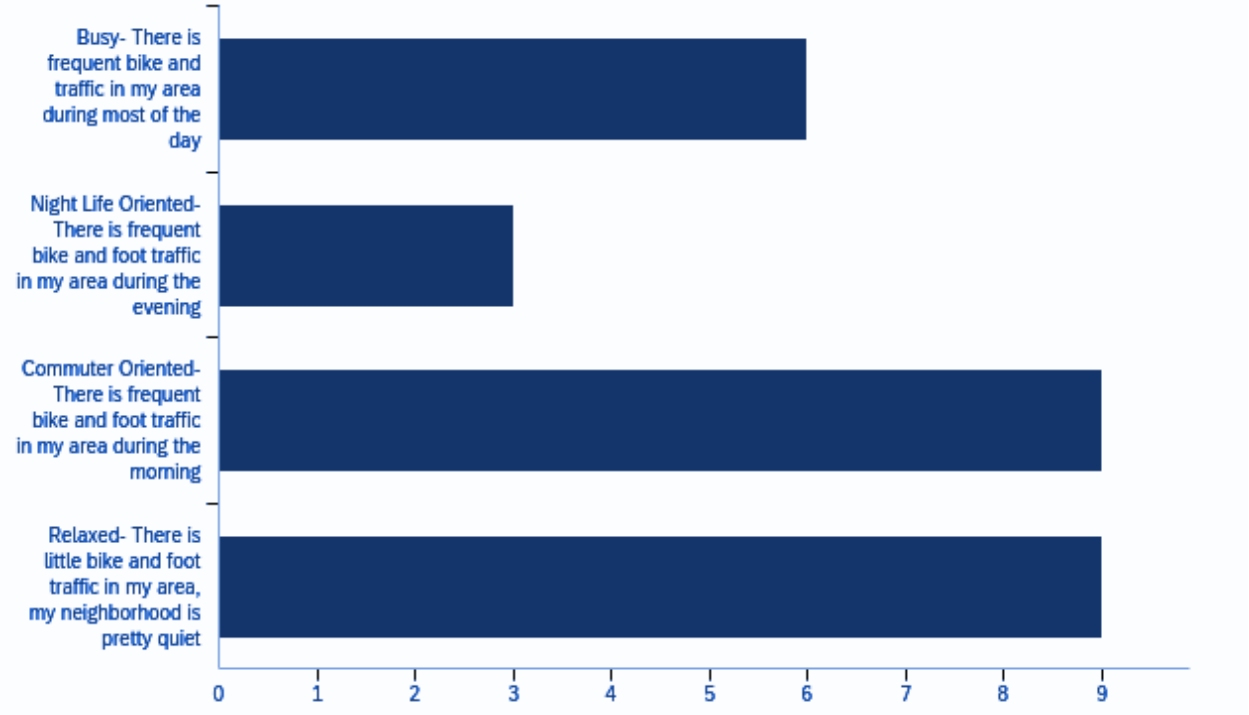
Q20

In order to account for seasonal mood changes, this question was posed. The results were aimed at eliminating bias from this standpoint.



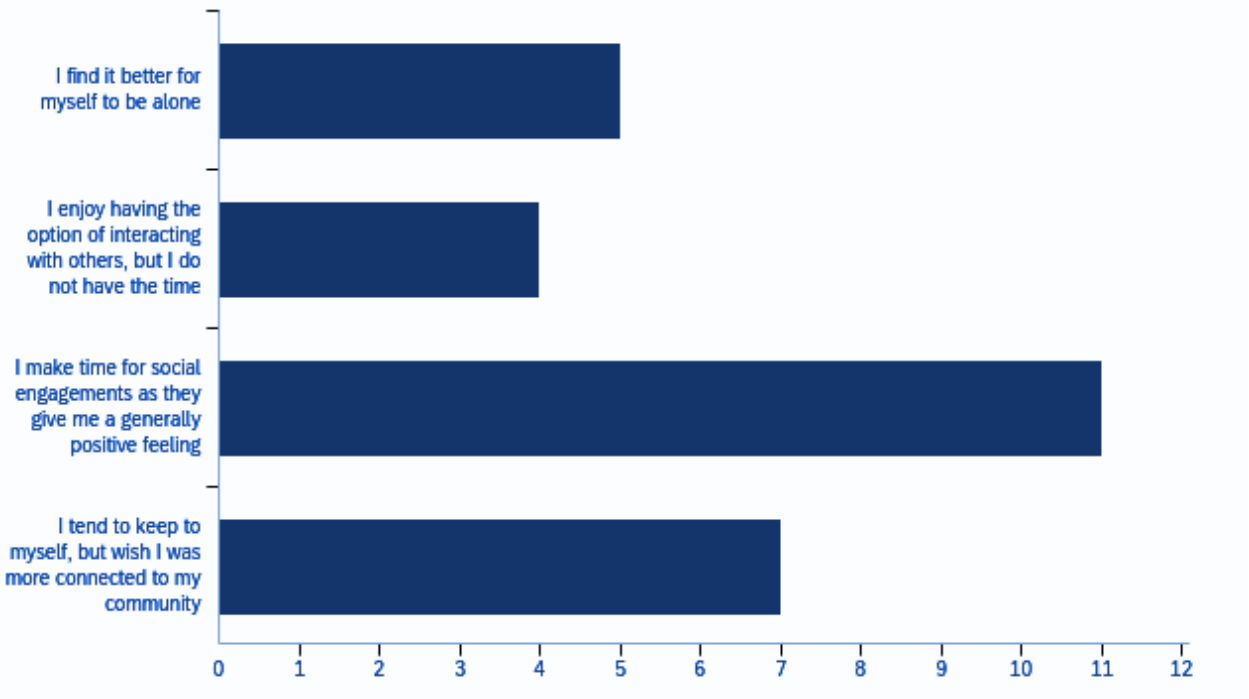
Q21

Preliminary research indicated that environment can shape mental health. Therefore, this question aims to understand where the individuals live to account for the most likely environment where an intervention might occur.



Q22

This question intends to gain the perspective of individuals surrounding how they like to spend their time. This hereby attempts to bring awareness of individual social needs.

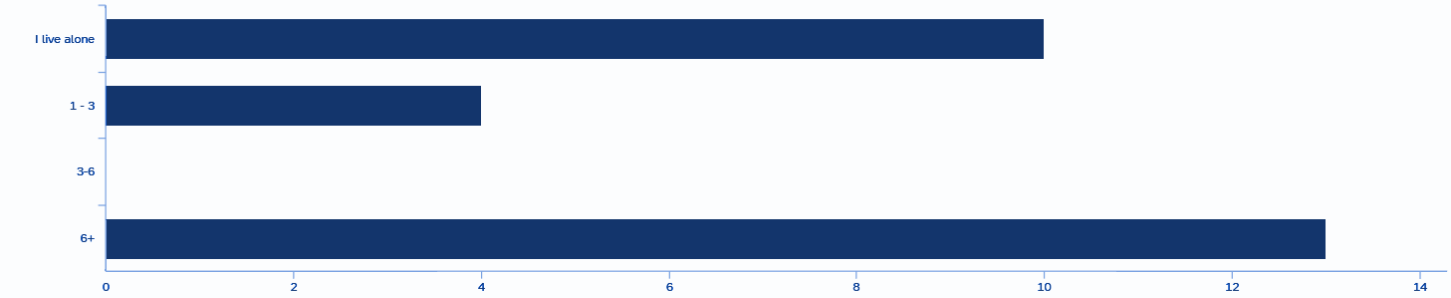


Q23

Question 23 simply inquires about number of housemates in order to account for the potential for social stimulation and avoidance of involuntary isolation.

Please indicate number of housemates or roommates.

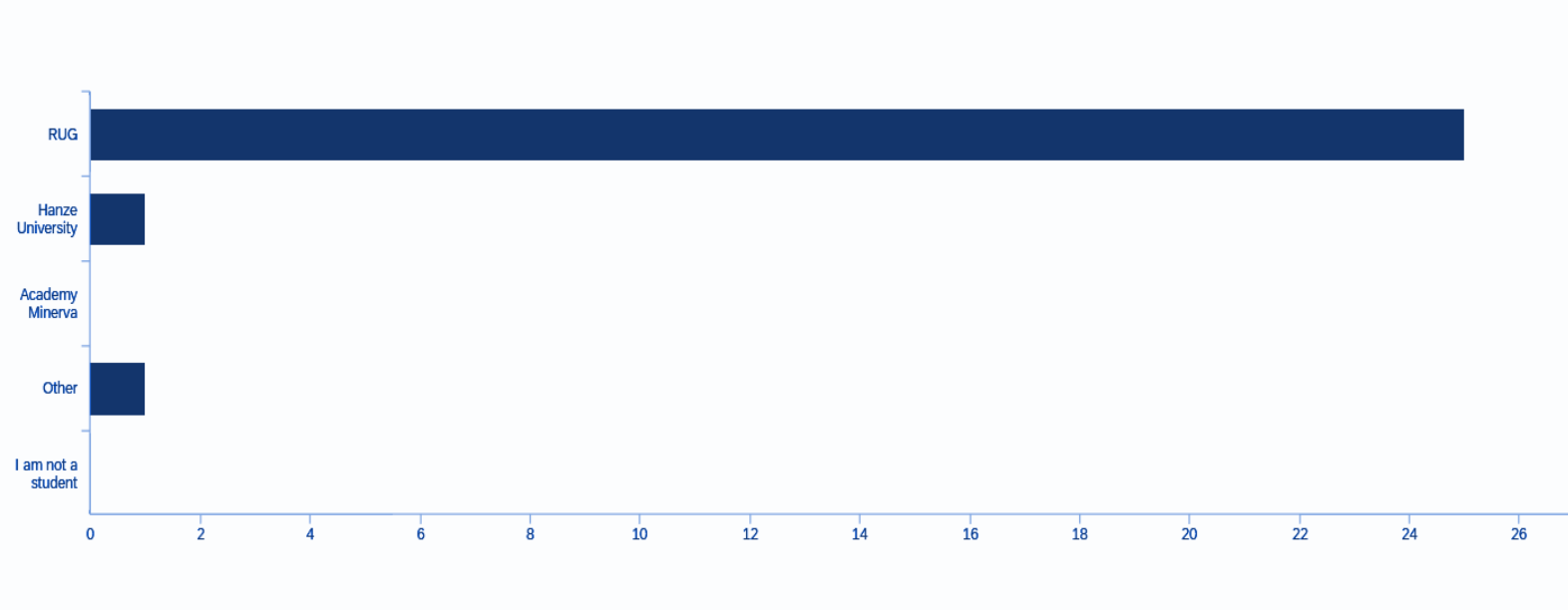
Page Options



Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Please indicate number of housemates or roommates.	1.00	4.00	2.59	1.39	1.95	27

Q24

Question 24 attempts to retrieve data surrounding student status in order to account for data skews toward one university being better equipped to handle the needs of its student population.


RUG
Hanze University
Academy Minerva
Other
I am not a student
0
2
4
6
8
10
12
14
16
18
20
22
24
26