Religious Involvement and Regional Mental Healthcare Spending in the Netherlands

Master thesis

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Jessie Draafsel

Student number: 582620

Thesis supervisor: Mieke Reuser

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Abstract

BACKGROUND Healthcare spending and utilization vary substantially across regions in many countries, including the Netherlands. It is unclear which factors are precisely the cause of this. Religion is one of the potential factors that is relatively understudied, especially for mental healthcare spending. This is surprising since theories do suggest that our religious mindset and cultural background play vital roles in how we perceive mental illness, care for our mental health and seek specialist support when necessary.

OBJECTIVES The main aim of this study was to examine the association between religious involvement and regional mental healthcare spending in the Netherlands. In addition, this study aimed to examine whether this association differed between basic mental healthcare and specialist mental healthcare.

METHODS A cross-sectional study was carried out using data from multiple datasets for the year 2016, aggregated to a municipality level with the municipality mapping of 2020. Linear regression analyses were performed with total, basic and specialist mental healthcare spending as dependent variables. The independent variables were tested in two models: one simple model with religious affiliation and a more extensive model with religious attendance and all separate sorts of religion. Each model was estimated with and without correction for healthcare need, sociodemographic and healthcare supply-side characteristics.

RESULTS Positive but nonsignificant associations were observed between religious affiliation and total and specialist mental healthcare spending and a negative but nonsignificant association was observed between religious affiliation and basic mental healthcare spending. Further, a positive significant association was found between Protestantism and specialist spending and between 'other religious affiliation' and basic spending. A negative significant association was found between Hinduism and basic spending.

CONCLUSION Based on the present findings, religious affiliation does not seem to play an important role in explaining differences in regional mental healthcare spending in the Netherlands. However, evidence was found for a relationship between specific religions and specific types of mental healthcare spending. Further research is needed to conclude what these findings exactly mean and whether and what kind of future action is needed.

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1. Introduction

Healthcare spending and utilization vary substantially across regions in many countries. In 2010, after adjusting for regional differences in age, sex and race, the average healthcare spending of a Medicare enrollee was $14,423 in Miami, FL, but just $7,819 in Minneapolis, MN (Finkelstein et al., 2016). These differences have also been found in the Netherlands. Despite the fact that the Netherlands has a rather standardized health system, individual healthcare spending varies more than 20 percentages points between provinces (Moura et al., 2019). Moura et al. (2019) estimated that in 2013 the average resident of Limburg spent €2,181 on healthcare services included in the basic health insurance package (excluding mental healthcare), while in Utrecht this was only €1,758. This would not be a major concern if this variation could be fully explained by differences in need, or if higher utilization would result in higher quality. However, after adjusting for health status and demography, variation proceeds to exist and higher levels of healthcare utilization are not generally correlated with better patient outcomes (Finkelstein et al., 2016).

Disparities in healthcare utilization and spending can have many causes. One common way to group causes is to divide them in demand- and supply-side factors. Demand-side factors are factors that can be attributed to patients, while supply-side factors are factors that can be attributed to regional characteristics. Many Dutch studies focus on the supply side (De Jong et al., 2009; Douven et al., 2015) and Dutch policy measures aiming to reduce disparities also mainly tackle the supply side, with the underlying idea that variations are caused by inefficient and excessive use of care in some regions. Issuing detailed treatment guidelines for supply-sensitives procedures is a policy measure that corresponds to this idea. However, a recent study of Moura et al. (2019) concluded that patient characteristics are the main driver of regional variation in healthcare expenditures in the Netherlands. A right understanding of factors that explain regional variation in healthcare spending is needed to develop policies to improve efficiency and to make budget allocation decisions. If, instead of supply-side factors, indeed the demand-side factors are of great importance, measures mainly focused on the supply side might be failing to target the problem or be even counterproductive.

Relatively little is known about the specific demand-side factors that could play a role in the variation in regional healthcare spending in the Netherlands, apart from health status, gender and age. One theoretically possible determinant of healthcare utilization (which is closely related to spending) is religion. Previous studies have shown that there might be a positive relationship between religion and healthcare utilization, with a focus on preventive care use, like cancer screening (Benjamins, 2007) and regular checkups (Hill et al., 2006). Possible mechanisms behind this relationship are that

religion influences people's health beliefs and attitudes, but also that religion could have a positive impact on help-seeking through increased social support, capital and religion related health initiatives (Ellison et al. 2008).

Despite being a focus of increasing interest, the role of religion in mental healthcare use remains understudied. This is surprising since theories do suggest that our religious mindset and cultural background play vital roles in how we perceive mental illness, care for our mental health and seek specialist support when necessary (Chowdhury, 2016). Compared to somatic health, mental health is a difficult term to define, since normative beliefs play a vital role in it (Van der Kolm & Noort, n.d.). What some (unreligious) people would call a psychotic experience, could be valued by religious people as something spiritual. These religious perceptions of mental health may cause individuals to choose different strategies to deal with their mental problems than by using formal mental care, for example by seeking care from religious providers or by using religious coping (Koenig et al., 2001). Further, there is a worldwide underutilization of mental care services, with only 42-44% of those with common mental diseases worldwide seeking treatment for these symptoms from any medical or professional service provider (Roberts et al., 2018). In a European study focused on attitudes towards seeking professional help for health problems, the researchers found that 13.8% of Dutch respondents answered that they would definitely not go to a counselor in case of serious psychological problems and 21.6% answered that they would probably not go (Ten Have et al., 2010). This suggests that other factors than need might play an important role in mental healthcare utilization.

Although theories on the relationship between religion and mental healthcare exist, empirical evidence on the association between religion and mental care use is rather scarce and inconclusive. Some research suggests that religious-based beliefs may negatively influence help-seeking (Chadda et al., 2001; Ng et al., 2011), while other studies found no significant association between religious affiliation (Pickard, 2006), frequency of attendance at religious services (Chen et al., 2007) and mental health service utilization. Another study even found a positive association between religious attendance and mental healthcare use (Harris et al., 2006). Additionally, there is a lack of knowledge about the role of religion in explaining the differences in healthcare utilization and spending in the Netherlands. More profound understanding of this relationship could add to explaining regional differences in mental healthcare spending. Therefore, the aim of this study is to examine the association between religion and regional mental healthcare spending in the Netherlands. The corresponding research question is: *What is the association between religious involvement and regional mental healthcare spending in the Netherlands?*

Furthermore, this study will make a distinction between the generalist mental healthcare and the specialist mental healthcare. The patients of generalist and specialist mental healthcare differ in their severeness of disease, which might influence their help-seeking. Alternative strategies of coping with mental health issues might not be adequate for patients in serious distress, because they might be in need for services only offered in formal mental healthcare like psychotropic medications and specialized psychotherapies (Harris et al., 2006). On the other hand, specialist care could include inpatient care, which in turn may conflict more with patients' religious practice than generalist care (Ayvaci, 2017). For these reasons, the following sub-questions will be examined:

- *What is the association between religious involvement and regional generalist, basic mental healthcare spending in the Netherlands?*
- *What is the association between religious involvement and regional specialist mental healthcare spending in the Netherlands?*

The findings of this study will indicate whether regional variation in mental healthcare costs may in some part be attributable to differences in religious involvement. This would contribute to the policy debate on variation in healthcare costs and its causes. Further, this study might contribute to policies ensuring timely and appropriate use of mental healthcare. For example, by incorporating religion in information provision and the treatment of mental illness.

In the next chapter the institutional setting of this study will be outlined and relevant theories and research on mental healthcare utilization and religion will be discussed. Next, the research methods will be provided, including a description of the dataset, variables and the statistical approaches. Thereafter, the results of the descriptive statistics and regression analyses will be presented. Finally, in the discussion, the findings will be explained and linked to the research question and theory, strengths and limitations will be discussed and suggestions for further research and action will be given.

2. Theoretical framework

In this chapter, first, the institutional setting will be discussed in which this study takes place. Thereafter, theories and models of healthcare utilization and religion will be proposed and empirical evidence on the relationship between religion and mental healthcare utilization will be discussed in detail. The final section will further describe the different religions in this study and its relationships with mental health and service utilization.

Institutional setting

Health Insurance Act

The financing of the Dutch curative healthcare system is based on Social Health Insurance and managed competition (Kroneman et al., 2016). Since 2006, all Dutch citizens are mandatorily insured for curative healthcare under the Health Insurance Act (HIA). All individuals aged 18 or older have to purchase a health insurance plan from a health insurer and those under 18 are insured through their parents. Health insurers have to accept anyone who applies for an insurance policy and incentives for cherry-picking of least costly individuals by insurers are reduced via a risk-equalization system. The basic health insurance package includes GP-care, maternity care, hospital care, some allied healthcare, mental care and home nursing care. Additionally, people could choose to purchase supplementary insurance for care not included in the basic health insurance package, like eye care and dental care (Kroneman et al., 2016). Managed competition applies for care regulated by the HIA. This means that health insurers and providers negotiate on price and quality of care, while the Dutch Health Care Authority oversees whether the competition is fair and establishes maximum prices for care for which negotiation is not feasible. This means that prices across the country may differ for similar services (Kroneman et al., 2016).

While, in principle, health insurance is mandatory for all citizens, people may object to taking out health insurance on the grounds of their religion or philosophy. These ‘conscientious objectors’ are obliged to pay a replacement tax instead and people can only be registered as a conscientious objector and obtain exemption from paying health insurance premiums if they also do not have any other insurances (Zorgverzekering Informatie Centrum, n.d.).

Mental healthcare

In mental healthcare, three levels of care can be distinguished. People with mental health issues will first visit their GP (level 1). Often their condition is treated by the GP with help of a specialized mental care practice nurse. If the GP suspects a DSM-IV disorder, they refer the patient to basic

mental care (level 2). Here, care is provided by, for instance, psychologists, psychiatrists or psychotherapists in an outpatient setting. Patients that have a (suspected) DSM-IV disorder, combined with highly complex problems, and/or form a high risk to themselves or their environment, are referred to specialized mental care (level 3). These patients are treated by a multidisciplinary team and in an outpatient setting as much as possible. (Kroneman et al., 2016). As it is not possible to distinguish mental health related costs from the GP from other GP costs, this study only includes costs incurred for basic and specialist care (level 2 and 3). Due to the differences in care between the basic and specialist care, this study will also conduct analyses for the two types of care separately. It is hypothesized that religion has a more positive association with specialist care compared to basic care. This is expected because the severity of disease is higher and need might therefore have more impact on healthcare utilization than other factors, like religion. Harris et al. (2006) made a distinction in their study between people with moderate distress and more serious distress. They expected to see a negative association between religious attendance and mental health care use for those with moderate distress, but a positive association for those with more serious distress. This hypothesis was also based on the theory that the substitution of religious involvement for formal mental healthcare would be more successful for those with lower levels of distress. Other studies also showed that individuals with serious mental illness are relatively less likely to see religious providers exclusively, compared to individuals with less serious illness (Wang et al., 2003). Eventually, Harris et al. (2006) found a positive association between religious attendance and formal mental care use for both severities. However, this association was indeed stronger for those with more serious distress.

Healthcare utilization

Determinants of healthcare utilization and spending

Determinants of healthcare utilization can be found on different levels of focus: the individual, neighborhood and societal level. For this study, especially individual and neighborhood determinants are of interest since these will be more likely to cause variation between regions of the Netherlands compared to determinants on a societal level. A well-known model focused on individual characteristics is Andersen's behavioral model of health service utilization (Andersen & Newman, 2005). According to this model, utilization is dependent on the predisposition of the individual to use services, his ability to secure services and his illness level (see Figure 1). The main determinant of this study, religion, is one of these predisposing factors. The model suggests that some individual characteristics existing prior to the onset of the illness can predict the propensity towards healthcare use. The social structure variables, of which religion is one, point to the social and physical

environment of the individual and associated behavior patterns which may be related to the utilization of health services (Andersen & Newman, 2005).

Another common way to group determinants of healthcare utilization is to make a distinction between the previously mentioned demand- and supply-side factors (Skinner, 2012). Many studies have emphasized the importance of supply-side factors as drivers of regional variation (Chan Jr., 2016; Cutler et al., 2019). Also in the Netherlands, research has mainly focused on the supply-side; studying differences in physician remuneration schemes (Douven et al., 2015) and variation in medical practice (De Jong et al., 2009; De Jong et al., 2010) as possible causes. However, a recent Dutch study has identified demand-side factors as the most important source of variation (Moura et al., 2019). When looking at Figure 1, the community determinants can be seen as supply-side factors, while the predisposing and illness level determinants can be seen as demand-side factors.

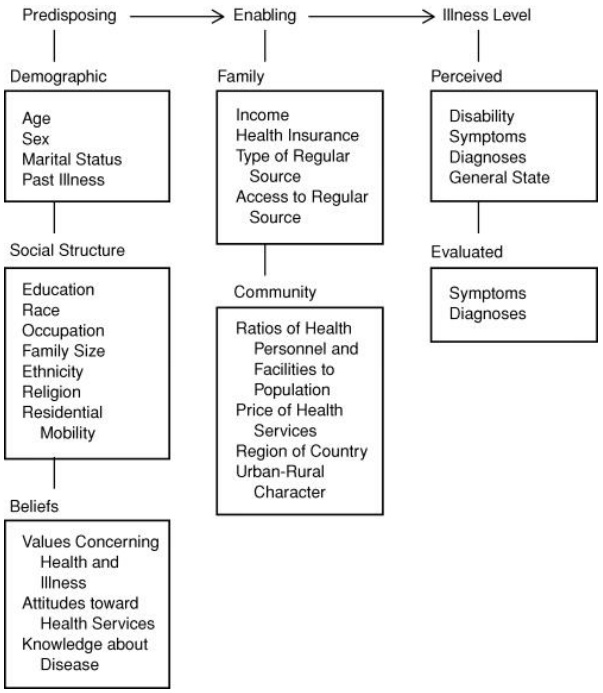


Figure 1: Individual determinants of health service utilization

Neighborhood determinants of healthcare utilization

This research is focused on regional level differences in healthcare spending. While regional level healthcare utilization, and subsequent healthcare spending, could be seen as the sum of utilization of individuals, not only individual characteristics are relevant to an individual's demand for healthcare. Over the last century, there has been increasing interest in the role of contextual factors, above and beyond individual factors. Examples are the studies of Law et al. (2005) that found that place

(neighborhood) affected physician use and having unmet need for care, and of Litaker et al. (2005) that found that the social and economic characteristics of where an individual lives are associated with report of a usual source of care. Mohnen et al. (2019) call these contextual factors the meso level: the physical and social environment in which a person lives, the local neighborhood. In their paper they introduce the "Neighborhood and healthcare utilization model" to show how neighborhoods matter in healthcare utilization (See Figure 2). In this model they identify three mechanisms by which the neighborhood characteristics affect healthcare utilization: via [1] the supply side, [2] need, directly or through mediators and [3] demand for healthcare – irrespective of need.

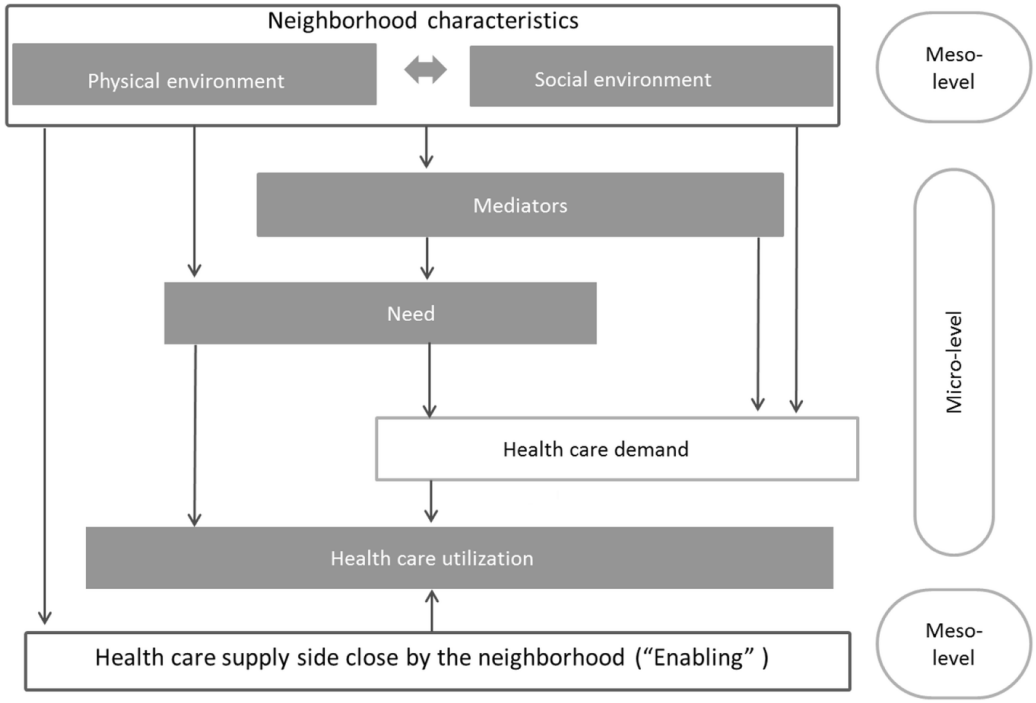


Figure 2: Neighborhood and healthcare utilization model

Mohnen et al. do not directly identify the religiosity of a neighborhood as a determinant of healthcare utilization, but they do identify social capital, which is a part of the social environment depicted in Figure 2. Social capital is a very broad concept which can be defined as sharing common norms, behavioral reciprocity and mutual trust. This concept can encompass measures of many factors, like social participation and social norms, but also culture and religion (Mohnen et al. 2019). Social capital could have an effect on healthcare demand, irrespective of health. For example, the level of social capital, including social norms and values in a neighborhood may motivate people to use healthcare (Leader & Michael, 2013) and information may be accessible and spread more easily in neighborhoods with higher levels of social capital (Kawachi et al., 1999). Empirical research shows

that there might also be an association between social capital and mental health service use. Individuals living in states with higher levels of bonding and bridging social capital experienced better continuity of care for mental health services on three outcomes: greater provider consistency, no service gap for patients with schizophrenia or affective psychosis and having a mental health outpatient visit the first six months after discharge (Greenberg & Rosenheck, 2003). Additionally, a Dutch study found that a lower level of informal social control was strongly associated with a lower number of days of total care consumption, after controlling for individual level demographic and socioeconomic variables (Drukker et al., 2004).

Although there is very little knowledge on how and if religiosity on a meso level could affect the mental healthcare utilization and spending of regions, the above literature does not make such a relationship unlikely. Therefore, when interpreting the results, this broader level effect should be taken into account next to the individual level.

Religion and healthcare utilization

There is no uniform link between religion and healthcare utilization. Studies have shown that religion can be both related to decreased and increased healthcare utilization and depends on the population and the type of service examined. Furthermore, the operationalization of religion matters; religious affiliation and denomination, religious attendance and religious salience may have different effects on service utilization (Greil et al., 2010). A literature review on religion and health service utilization found 24 of 31 studies showing a significant religious effect, but was not able to isolate any consistent trends (Schiller & Levin, 1988). Although the review is a bit dated, it did present a useful model, as can be seen in Figure 3, relating religious factors to healthcare. This model could be used as a starting point for the search of further relevant literature.

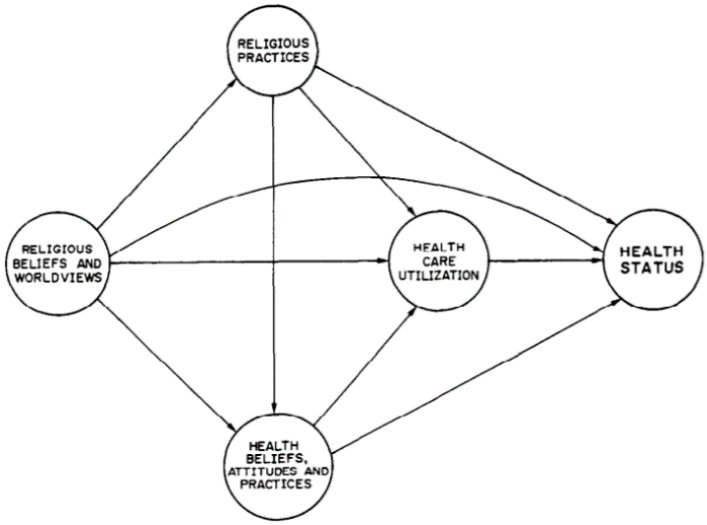


Figure 3: Relation of religious factors to healthcare and health

Some more recent studies have found positive associations between religion and the use of preventive care services. For example, associations between religious attendance and different types of screening (Benjamins, 2007) and regular checkups (Hill et al., 2006) were found. The study of Benjamins & Brown (2004) found that both men and women who report high levels of religiosity are more likely to use preventative services (i.e., flu shots, cholesterol screening, breast self-exams, mammograms, pap smears, and prostrate screening). However, a Dutch study examining the association between religious affiliation and general, preventive and alternative care utilization only found significant differences for alternative care use (Marangos et al., 2010).

Although most studies indicate a positive relationship between religion and healthcare utilization, negative associations can also be found. Religion might negatively influence utilization through the pathway of health beliefs and attitudes. For example, in the Netherlands, some strict protestant denominations condemn the use of vaccinations (Webbink & Ultee, 2004). Furthermore, increased religiosity could cause lower utilization because of higher fatalism or external locus of control (Straughan & Seow, 1998, 2000). In addition to the content of religious beliefs and specific theologies, the impact of religion on utilization (both positive and negative) may also be due to social support and capital from religious participation and specific health initiatives undertaken by certain religious organizations (Ellison et al., 2008).

Religion and mental healthcare utilization

Numerous studies have been conducted to investigate the relationship between religious involvement and mental well-being, of which the majority found a positive association (Moreira-Almeida et al., 2006). However, less is known about the relationship between religious involvement and the use of mental healthcare. Theory on this relationship offers explanations for both positive and negative effects. Religious involvement might induce barriers to access mental health services (Ayvaci, 2017). Religious people may interpret mental problems as spiritual or believe that psychiatric disorders are caused by a weakness in faith. In these cases, they may turn to forms of religious coping instead of formal mental care. Further, religious participation may substitute formal mental healthcare and reduce the use of services. This could be for example through interactions with other members and through clerical counseling (Harris et al., 2006). A study conducted in the United States suggests that roughly a quarter of people turned to religious providers first for help with their mental problems (Wang et al., 2003). Qualitative studies on barriers to mental healthcare found that religious clients expressed greater distrust towards healthcare systems and were more concerned about the social stigma associated with seeking treatment (Nakash, et al. 2019), and that seeing

professional help from specialized mental health services was perceived as conflicting with religious beliefs (Mitchell & Baker, 2000). Further, Nakash et al. (2019) found that religious clients highlighted the belief in a higher healing entity, while secular clients highlighted the importance of internal processes within the self. On the other hand, religious involvement could also facilitate treatment initiation. Clergy may refer individuals to formal mental health services and other members of religious-based social support networks may encourage people with mental health problems to contact with clergy. Furthermore, religious involvement could provide people with more formal treatment options, since many denominations sponsor organizations that provide mental health services (Harris et al., 2006).

Empirical evidence on the relationship between religion and mental healthcare use is sparse and inconclusive. Western studies found no significant association between religious affiliation (Pickard, 2006), frequency of attendance at religious services (Chen et al., 2007) and mental health service utilization among the elderly. On the other hand, a study in Singapore did find a lower tendency of elderly people with religious affiliations to seek treatment for mental health problems (Ng et al., 2011). Further, one study found some evidence of a positive relationship between religious service attendance and outpatient mental healthcare use and a negative relationship between the importance of religious beliefs and outpatient use among people with moderate distress (Harris et al., 2006). Among people with serious distress, they found that service attendance and the importance of religious beliefs were more strongly related to the use of outpatient care and medication, while a negative association was seen between outpatient use and the influence of religious beliefs on decisions (Harris et al., 2006).

Different religious perceptions on mental health

While the previous paragraphs have focused on religion in general, specific religious affiliations may also have their own relationships with mental health and mental health service use. In the following sections, the religious affiliations included in this study will be discussed separately. Due to the low prevalence and relevance of Judaism, Hinduism and Buddhism in the Netherlands, these affiliations will be discussed in less detail than Christianity and Islam.

Christianity

In the Western European Christian tradition, suffering was regarded as punishment for sin. In the past half century, the Church's influence on Dutch society has decreased. However, in 1985, still many Dutch people with a strict religious background agreed with statements like 'disease is a punishment for sin', 'prayer is the best medicine' and 'suffering is meaningful if you believe in God'

(Vellenga, 1992). In some Christian communities such as Pentecostals, Catholics and Anglicans, demonic possession is believed to be a cause of mental illness. A demon can be eradicated by deliverance, also known as exorcism (Mathison, 2016). An Australian study found that 38.2% of the Protestant Christian participants endorsed a demonic etiology of major depression and 37.4% of schizophrenia (Hartog & Gow, 2005). In addition, some Christians believe that if you have enough faith, pray or are prayed for correctly, read the Bible, and regularly attend worship services, you will be free of fear and emotional problems (Webb et al., 2008). When people do have emotional problems, they might believe this is caused by not living a good Christian life. Webb et al. (2008) examined messages about mental illness in 14 contemporary Christian self-help bestsellers. They found that demonic influence was the most frequently cited reason for depression. Other reasons mentioned were failure as a Christian, negative cognitions, and negative emotions. Trusting God, religious activity and individual willpower were mentioned as Christian responses to depression.

These beliefs about the causes of mental illnesses, could influence beliefs about effective treatment. A study conducted in the United States found that 97 of the 540 Protestant Christian participants believed that emotional/mental/relationship problems only required a religious/spiritual answer and that it was common to believe that a person should only visit a mental health professional as a last resort (Royal and Thompson, 2012). This is not the only study reporting that Christians believed that primary treatment should come from the church or individuals associated with the church (Crosby & Bossley, 2012; McLatchie & Draguns, 2001). A Dutch study carried out in 2008, showed that 62% of the church congregations (of the Protestant Church of the Netherlands) had specific initiatives for psychiatric patients and people with psychological problems (De Jong, 2008). Initiatives concerned were pastoral contact, a buddy project or friend service, a walk-in house, financial support and practical guidance. Possible reasons for Christians to seek help from religious advisors are the stigma carried by seeking help from mental health professionals (Crosby & Bossley, 2012) and the belief that this experience would undermine or weaken their faith (Mayers, et al., 2007). However, seeking religious help and seeking professional help are not mutually exclusive. Clergy are also known to refer persons to mental health professionals (Harris et al., 2006; Van der Kolm & Noort, n.d.). Additionally, in the Netherlands many mental health facilities exist with a Christian character and there is increasing attention for integrating faith in regular treatments for mental illness (Vrije Universiteit Amsterdam, n.d.).

While these spiritual and religious beliefs of mental illness do exist, it is important to note that not all Christians hold the same beliefs about mental illness. There are also many individuals that believe in the biomedical model of mental illness and view psychological and psychiatric problems as illnesses

for which treatment is valued (Mathison, 2016). Further, part of previous cited literature comes from countries in which religion and the church may play different roles in society than in the Netherlands. In the last century, great secularization has taken place in the Netherlands (Arts, 2009). In 2008, 49% of Dutch citizens considered themselves to be Christian of which 30% was Catholic. However, the number of people regularly visiting the church is low. Only 23% of the Catholics visited the church at least once per month. This percentage is much higher for the Protestant and Reformed Church, with 63% (Arts, 2009)**.** Research focused on the value of health also showed a difference between the denominations. The reformed people considered a strong faith more important and good health less important than Catholic and non-religious people (Van der Zweep & Knol, 1996). In a Dutch article about the collaboration between mental health care and local religious communities, they explained that many of the mainstream churches with highly educated pastors have benevolent attitudes towards mental health care. However, evangelical and Pentecostal churches are growing and they are developing confidence in their own practices of faith healing and deliverance ministry, and generally have less faith in psychiatry than the established churches (Van der Kolm & Noort, n.d).

Islam

In the Islam it is believed that the innate disposition, called the fitrah, is a source of guidance which is centered in the soul and tells people when they are wrong (Haque, 2004). Mental problems may arise when someone deviates from fitrah or when corruption of the positive nature takes place, by following one's own whims. Illness may also be seen as the will of God and problems of life may be trials from God (Haque, 2004). However, there is not one way of interpreting the Quran and therefore also beliefs about mental health are likely to differ. A Dutch psychiatrist lays out in her article about psychiatry and Islam in the Netherlands that discussion exists on whether (mental) illness is compatible with Islam (Acherrat-Stitou, 2009). An example of a question that could be asked is: 'Is depression a lack of faith?'. Some believe that someone with enough faith can't be depressive, anxious or suicidal. Someone with enough faith, accepts what Allah gives him, does not doubt, is grateful and knows that it will be better in the hereafter. In this case suicidality is a taboo. Praying, reciting supplications and reading the Quran could give relief. On the other hand, people could also belief that Allah has given man sicknesses and the responsibility to work on their own healing, or belief that something like depression is a biological condition separate from the inner fate. These are just a few examples of the many possible interpretations (Acherrat-Stitou, 2009).

Next to the official doctrine, the Islam also knows a 'popular belief' (Hoffer, 2005). Although the interpreters of official Islam see this as superstition and distinctive from the Islam, in the experience of many Muslims this distinction does not exist and elements of official doctrine and popular belief

are mixed. From this belief arises the idea that there are other factors that may cause mental health problems, including interventions from the djinn ('evil spirit'), black magic and effects of the evil eye. For these problems, people may visit Islamic healers. Their treatments are focused on the use of verses from the Quran. Reciting is most common, but they could also be used for making amulets and healing water. Studies have shown that around 5-10% of Turkish and Moroccan Muslims sometimes make use of these services. In many cases, however, they have first been to a doctor or other care provider, or combine the two services (Hoffer, 2005). Higher use of these Islamic healing services, does therefore not necessarily have to lead to lower use of formal care. Further, just as for Christianity, institutions emerge that are focused on providing transcultural mental healthcare (Acherrat-Stitou, 2009).

Apart from one's own view on seeking formal mental healthcare, stigma also plays an important role, both for the individual who is ill, as for their family. Families and individuals may be discouraged to seek formal help for their problems out of fear that they will shame the family or be revealed as weak. Because of this stigma, Muslims may prefer to seek help from within their family and community, as this is more socially acceptable and protects the family from negative public opinions (Amri & Bemak, 2012).

While empirical evidence from the Netherlands is scarce, studies from Australia (Youssef & Deane, 2006) and the United Kingdom (Weatherhead & Daiches, 2010) have identified underutilization of mental health services among Arab and/or Muslim minorities. Further, Aloud (2004) found that only 9% of the 281 Arabi-Muslim participants of his study in the United States had visited a mental health specialist in the last 3 years. Another study from the United States, also found a discrepancy between reported need and reported under-use of services among Muslims (Khan, 2007). Explanations given in these studies correspond with the theory discussed: cultural and traditional beliefs about mental health problems, the use of informal-indigenous resources and perceived societal stigma. Another explanation provided is the (lack of) knowledge and familiarity with formal services (Aloud, 2004).

Judaism

In Judaism, it is believed that God doesn't give anyone more trials than one can handle. This may lead to stigma against mental illness if someone feels like they cannot handle a situation through their religion (Mathison, 2016). However, there are few signs of higher stigma in Jewish cultures compared to other religious or non-religious groups. An American study from 2012 found that older Jewish White people were more accepting of psychotherapy than non-Jewish Whites and Black participants (Midlarsky et al., 2012). They were more tolerant of stigma, had greater confidence in a therapist's

ability to help and were more open to sharing their feelings and concerns. This is not surprising as psychotherapy has been dominated by Jewish figures and shares key components with Jewish culture like emphasis on help-seeking, emotional expressivity and focus on self-knowledge (Midlarsky et al., 2012). Another study found that compared to Catholics and Protestants, Jews were more likely to seek treatment with mental health specialists (Yeung & Greenwald, 1992).

Hinduism and Buddhism

In Hinduism, it is believed that all illnesses, whether physical or mental, have a biological, psychological and spiritual element. The spiritual element is reflected in the belief of witchcraft, the evil eye and spirit possession as possible causes of mental illness (Dwyer, 2003). In addition, mental illness can be seen the result of karma from this or a previous life (Queensland Health, 2011). It is not uncommon to first seek help from family or traditional and religious healers before reaching out to a medical doctor or psychiatrist (Chaturvedi, 2015). Just as in Hinduism, Buddhists believe in reincarnation and philosophy of karma (Wynaden et al., 2005). However, in contrast with other religions, Buddhism does not generally encompass ideas of justice and punishment and Western Buddhists do not generally believe in supernatural forces intervening in human affairs (Brazier, 2006). In a study among elderly Singaporeans, both Buddhism and Hinduism had a negative, yet insignificant, association with seeking treatment by mental healthcare professionals compared to no religious affiliation (Ng, 2011).

Conclusion

It can be concluded that religion influences the way mental health is perceived and that this in some cases could affect the utilization of formal mental healthcare. It is hard to conclude to what extent these views exactly impact utilization, but in the scarce empirical studies there seems to be a slight tendency to lower utilization. This especially seems to be the case for the Islam and some stricter denominations of Christianity. Based on the above literature and taking into account the Dutch context of this study, it is hypothesized that municipalities with higher shares of Muslims, Hindus, Buddhists and Protestants have lower mental healthcare spending. No significant differences are expected for higher shares of Catholics and Jews. Further, it is hypothesized that higher attendance of religious services is associated with lower mental healthcare spending, as this can be seen as an indication of the strength and importance of belief. For the difference between basic and specialist spending, more negative associations are expected for basic care compared to specialist care.

This chapter has given a detailed description of concepts, theories and empirical evidence that are relevant for understanding and interpreting the study. Empirical evidence on the association between religion and mental healthcare utilization is rather scarce and inconclusive, but theories on the subject do support the existence of a link between the two matters. This makes religion a relevant variable in explaining variation in mental healthcare spending. The next chapter will lay out the methods used to conduct the study and achieve the final results.

3. Methods

Dataset

This observational, cross-sectional study involved analyses based on data from multiple datasets for the year 2016. Regional level data on mental healthcare spending, age and sex were retrieved from Vektis. This dataset was expanded with data on religion, obtained from Statistics Netherlands (CBS), health status, obtained from the National Institute for Public Health and the Environment (RIVM) and sociodemographic and healthcare supply-side factors, obtained from CBS. This data has been aggregated to a municipality level with the municipality mapping of 2020 (n=349). Municipalities with missing data of one of the variables have been excluded from the study (n=6).

Data aggregation

Due to differences in data formats, the data had to be adjusted before it could be used. The aggregation of all information into one dataset was reached by the following steps:

(1) Data on mental healthcare costs were provided in age-blocks of 5 years for males and females separately. The (mental healthcare) costs of all age groups above 18 were added up to get the total costs per municipality for females and males separately. Thereafter, these numbers were again added up to get the costs irrespective of sex. To be able to compare municipalities of different sizes, the total costs were divided by the total insured years of that municipality. Since it was not possible to see how many of the insured years in the age group of 15-19 belonged to those 18 years and older, this group could not be included. Therefore, after this step, the dataset contained the mental healthcare costs of basic, specialist and long-term care of those 20 years and older per insured year per municipality. While the data was from 2016, it was presented in the municipal mapping of 2020.

(2) Data on religion came from 2014 and all explanatory variables came from 2016[1]. To be able to add these variables to the dataset, the regional data had to be converted to the municipality mapping of 2020. Between 2014 and 2020, the number of municipalities decreased from 403 to 355. All municipalities that disappeared either merged with others to one new municipality or joined an already existing municipality. For all new municipalities it was calculated to what extent they existed out of every old municipality, based on the population sizes of the municipalities. For example: new municipality X, exists for 20% out of old municipality 1 and for 80% out of old municipality 2. To get these weight factors, in most cases the population size of 2016 was used. For the municipalities that disappeared between

[1] Except for education (2019), but since the mapping in 2019 and 2020 was the same, this variable did not have to be converted.

2014 and 2016, the most recent year was used and in cases only parts of municipalities were included, a population size from a specific document on municipality changes was used, provided by CBS. This was the case when some villages from the old municipality joined one municipality and other villages joined the other. After this step, there was a list showing to what extent a municipality from the new mapping (2020) consisted of municipalities from the old mappings (2014 –2016).

(3) The data for religion and the other explanatory variables were converted into the mapping of 2020. This was done by multiplying the data from old municipalities with the weight factors from step 2 to and adding these values up get a new value for the new municipality. This was possible since all variables were either percentages, or average numbers. After this step, all values were known for the municipalities that existed in the 2020 mapping, but were not existent in the original datasets of the explanatory variables from 2014 and 2016.

(4) As a last step, the explanatory variables were added to the dataset containing the costs. In case a municipality had not changed between 2016 (or 2014 in case of religion) and 2020, the values from the original explanatory variable dataset were inserted. In case there was a change, the computed values from step 3 were inserted. This resulted in an excel sheet containing a list of the 355 municipalities from the 2020 mapping, with its corresponding values for spending, religion and all other explanatory variables.

(5) Municipalities with missing values for religion or costs were excluded (n=6). The final dataset therefore consisted of 349 different municipalities.

Variables

Mental healthcare spending

The main dependent variable in this study was average mental healthcare spending under the basic insurance in 2016 per insured year per municipality. This variable included generalist basic mental healthcare, specialist mental healthcare and long-term mental healthcare. Further, analyses have been conducted for generalist and specialist care separately. The data on spending was retrieved from a Vektis open data file. This file contained all – under the basic insurance – declared healthcare costs from the cost year 2016, subdivided according to the different care types within the Health Insurance Act. Since, as of 2015, mental healthcare costs incurred by children under the age of 18 are covered by the Child and Youth Act, only data of individuals from the age of 18 could be included. Due to data constraints, eventually only data of individuals from the age of 20 were included. The costs per municipality were divided by the number of insured years, to make it possible to compare costs between regions.

Religious involvement

The independent variable of interest in this study was religious involvement. The analysis included two measures of religious involvement: religious attendance and religious affiliation. The religious attendance variable measured the percentage of people monthly visiting a religious service. The religious affiliation variable measured the percentage of people affiliated with a religion or ideological group. In the original survey, the following categories could be chosen as a specification of religious affiliation: Catholicism, Reformed Protestantism, Dutch Reformed Church, Dutch Protestant Church, Islam, Judaism, Hinduism, Buddhism and other. The variable religious affiliation was used to analyze the difference between being religious and not religious. Furthermore, Catholicism, Protestantism (a sum of the three denominations that were provided), Islam, Judaism, Hinduism, Buddhism and Other were used as separate variables in part of the analyses. The data on religion were provided per municipality in the year 2014 and were retrieved from CBS. These data were self-reported and taken from the Labor Force Survey (EBB), to which approximately 460 thousand adults (18 years and older) contributed in the period 2010-2014. The data were collected using the internet, by telephone and home visits.

Covariates

To be able to extract the full effect of religion on mental healthcare spending and not the effect of other characteristics of regions, this study controlled for healthcare need, sociodemographic characteristics and healthcare supply characteristics that have the potential to confound the relationship between religion and mental healthcare spending. It is chosen not to include lifestyle variables, as lifestyle may work as a mediator between religion and health, and subsequently spending. For example, in certain religions, like the Islam and some denominations of Christianity, alcohol consumption is disapproved. Studies have also found differences in alcohol consumption and other lifestyles between people with different religions (Bruggink & van Herten, 2009; Pew Research Center, 2019). In addition, alcohol use is associated with mental health (Boden & Fergusson, 2011). If lifestyle is indeed a mediator and would be added to the model, the study would not calculate the full correlation, but only a partial effect.

Healthcare need

Since this study was interested in variation of healthcare spending that is caused by other factors than differences in health status, it has corrected for healthcare needs. Self-reported health variables have been used as a proxy for healthcare needs. Four variables were retrieved from the RIVM and included the following: perceived health as good or very good, severely impaired due to health

status, high risk of anxiety or depression and severe loneliness. All self-reported health variables were expressed in percentages of the population 19 years and older. The data were taken from the Public Health Monitor 2016 and collected through Computer Assisted Web Interviewing and Computer Assisted Personal Interviewing. A plausibility check for internal consistency and completeness for pilot studies was performed by the institute.

Sociodemographic characteristics

Sociodemographic characteristics included in this study were: age, sex, ethnicity, marital status, income, education and employment rate. For age and sex, the Vektis dataset was used to compute the male population and the population aged 45-65 as a percentage share of the total population included in this study. To compute these variables, the insured years of the relevant groups were divided by the total insured years of the population of 20 years and older. Age was used in this format since the relationship between age and health service utilization for common mental disorders (CMD) is commonly found to be hill-shaped, with middle-aged respondents most likely to seek treatment. For sex, the female gender is associated with higher treatment-seeking (Roberts et al., 2018).

Ethnicity, marital status, income, and employment rate were retrieved from CBS for the year 2016. Education was also retrieved from CBS, but came from the year 2019 due to its unavailability for earlier years. For ethnicity, the percentages of people with a migration background (western and non-western) were used. Previous studies have shown that being Caucasian is associated with higher treatment-seeking for common mental disorders (Roberts et al., 2018). For marital status, the percentage share of married persons was added to the analysis, as being married seems to be negatively associated with treatment-seeking. The education variable used in this study was the percentage share of people with a high education. Several studies have found higher numbers of health service utilization for CMD for people with higher education levels (Roberts et al., 2018). Income was included in the study as the percentage share of low income households. A household income is considered low when the standardized and deflated income (price level of 2000) is below €9249 a year. For the employment rate, the net employment rate was used. This is the share of the employed labor force in the total population of those aged 15-75. Associations between low income, unemployment and mental health utilization are inconsistent, but there is evidence that a low income (Sareen et al., 2011) and unemployment (Murphy & Athanasou, 1999) are associated with a higher risk of mental illness. Further, on a regional level, socioeconomic status is also found to be associated with mental illness (Mair et al., 2009).

Supply-side characteristics

Besides demand-side characteristics like sociodemographic characteristics and religion, there are also healthcare supply-side characteristics that might affect healthcare utilization and spending. This study included these four characteristics: proximity to general practitioner (GP), pharmacy and hospital including outpatient clinics and urbanity. Information on these variables was collected from CBS. The proximity to a healthcare facility was defined as the distance to that facility by road, expressed in kilometers. For urbanity, the environmental address density was used. This is the number of addresses within a one kilometer circle around a certain address. These variables were added because they could impact service use through the supply-side, as discussed in the theoretical framework. Further, urbanity is found to be associated with mental health admissions (Peen & Dekker, 2004).

Data analysis

Descriptive statistics were used to describe the dataset using means, standard deviations (sd), minimums and maximums. Further, country maps were used to present variations of spending and religion across the Netherlands. In addition to the descriptive statistics, multiple linear regression analyses were conducted. This was done in two different analyses. In the first analysis, the association between religious affiliation and the three sorts of mental healthcare spending was examined. These results show the effect of religion in general. In a second analysis, the variable religious attendance and all the separate sorts of religion were tested. This way, it could be examined whether religions differ in their association with mental healthcare spending and if religious attendance is associated with mental healthcare spending on top of religiousness itself. Each model was estimated with and without covariates in order to show the extent to which healthcare need, sociodemographic and healthcare supply-side characteristics confound the relationships between religious involvement and mental healthcare spending. Finally, these steps led to the establishment of 12 different models: 6 for the analysis including only religious affiliation and 6 for the more extensive analysis including religious attendance and the separate religions. The following equation was formulated:

$$\gamma_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots \beta_p X_{pi} + \varepsilon_i$$

where i stands for the municipality and

γ_i = total, basic and specialist mental healthcare spending per insured year for municipality i;

X_{pi} = explanatory variables;

β_p = slope coefficients for each explanatory variable;

ε_i = error term.

Prior to conducting the analyses, assumptions to perform linear regression analyses were checked: normal distribution of residuals, linearity between independent variable and outcome, homoscedasticity of the residuals and the absence of multicollinearity. In the case of total and specialist mental healthcare spending, the residuals seemed to be slightly heteroscedastic and collinearity was observed between religious attendance and Protestantism. No further steps were taken, but both these observations were taken into account when interpreting the results, as mentioned later on in chapter 5. Furthermore, in both analyses a minimum of 15 cases per parameter was achieved to guarantee a decent power. All analyses were carried out with SPSS Statistics 25 and p-values < 0.05 were considered statistically significant.

4. Results

Descriptive statistics

Table 1 shows the descriptive statistics of the data per municipality, including the covariates. Total mental healthcare spending per insured year varied considerably between municipalities, ranging from €84.30 in Dinkelland to €685.61 in Boekel. This is a percentage deviation from the mean of -56.99% and +249.78%. The mean spending per insured year of specialist mental healthcare was significantly larger than of basic mental healthcare, with €174.14 compared to €13.03. For both, the variation was smaller compared to the total, with percentage deviations from the mean ranging from -55.87% to +151.96% for specialist care and -80.36% to +95.64% for basic care.

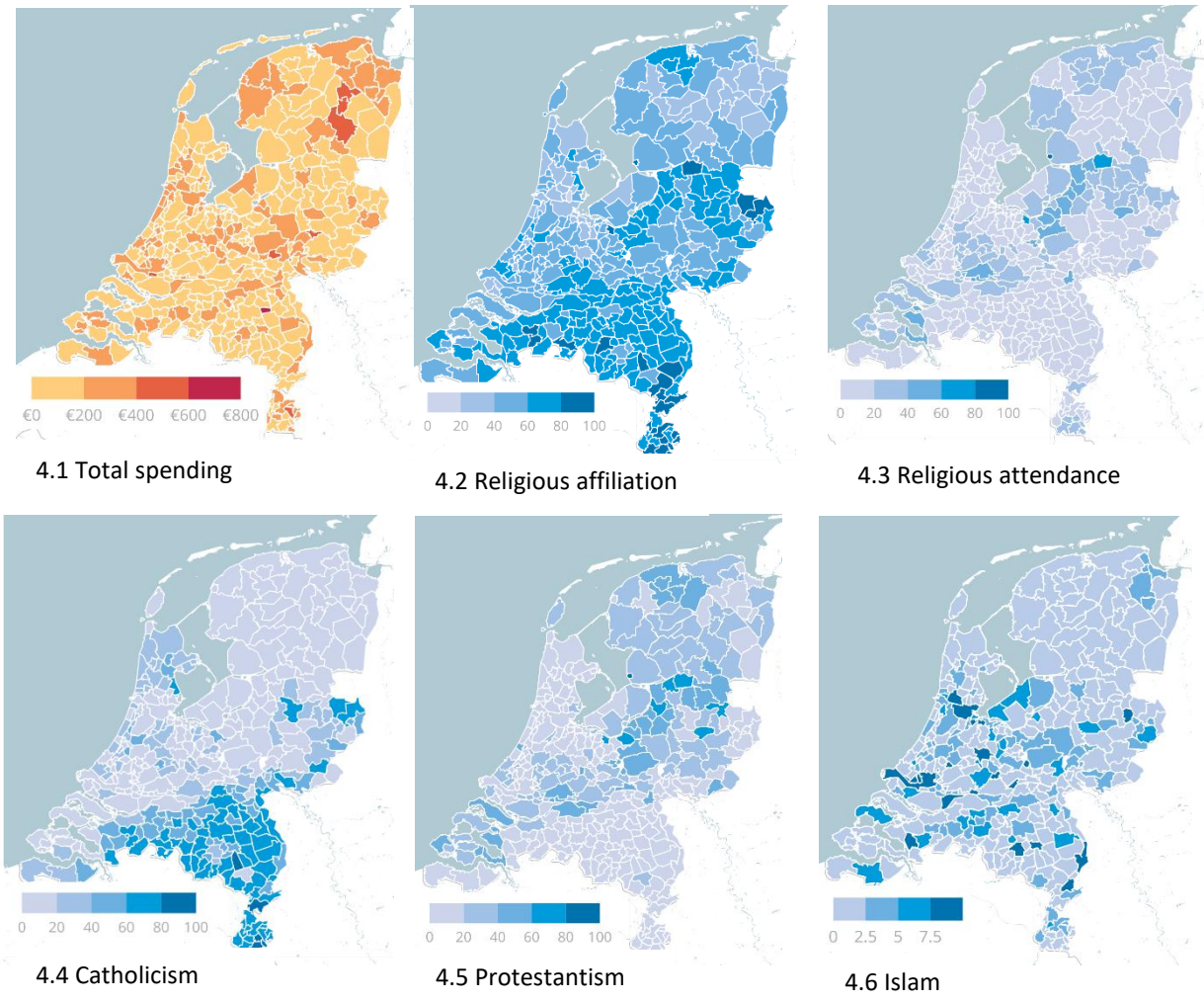
Table 1: Descriptive statistics (n=349)

		Mean	Std. dev.	Min.	Max.
Healthcare spending	Basic mental healthcare (€ per insured year)	13.03	3.95	2.46	25.50
	Specialist mental healthcare (€ per insured year)	174.14	57.94	76.84	438.77
	Total mental healthcare (€ per insured year)	196.01	75.20	84.30	685.61
Religion	Religious attendance (%)	18.80	11.25	3.10	95.80
	Religious affiliation (%)	57.20	15.52	19.90	98.10
	Catholicism (%)	31.16	24.75	0.40	88.30
	Protestantism (%)	19.20	16.91	0.00	84.10
	Islam (%)	2.45	2.61	0.00	13.40
	Judaism (%)	0.07	0.21	0.00	2.90
	Hinduism (%)	0.22	0.41	0.00	3.10
	Buddhism (%)	0.26	0.28	0.00	1.80
Health status	Perceived health as good or very good (%)	76.62	3.71	63.20	85.00
	Severely impaired due to health status (%)	32.80	3.59	22.30	44.20
	High risk of anxiety or depression (%)	42.36	4.42	31.00	56.00
	Severe loneliness (%)	9.21	1.92	5.00	16.00
Sociodemographic	Age (% 45-65)	38.14	2.37	27.32	44.63
	Sex (% male)	49.04	0.93	45.72	52.51
	Migration background (%)	15.03	8.24	3.30	52.00
	Married (%)	52.17	5.13	28.40	63.20
	Low income (%)	5.91	2.13	3.00	15.00
	High education (%)	28.97	7.31	14.30	57.30
	Net employment rate (%)	66.39	2.75	52.40	72.50
Supply-side	Distance to GP (km)	1.13	0.39	0.50	2.80
	Distance to pharmacy (km)	1.47	0.67	0.60	5.90
	Distance to hospital (outpatient clinics incl., km)	6.03	3.89	1.20	25.31
	Urbanity (number of addresses per km^2)	1146.37	756.98	205.00	6011.00

Std. dev. - Standard deviation; Min. – Minimum; Max. – Maximum

On average, 57.2% of the inhabitants of municipalities was religious and 18.8% monthly visited a religious service. Catholicism was most common in the municipalities with an average of 31.16%, followed by Protestantism (19.20%) and Islam (2.45%). Overviews of the variation of religious affiliation, attendance, Catholicism, Protestantism, Islam and total healthcare spending across the

Netherlands are presented in Figure 4. Municipalities with high spending on mental healthcare are seen all across the country. For religion, it can be seen that the south-east of the Netherlands has relatively high numbers of Catholics, while Protestantism and religious attendance are high in the diagonal between Zeeland and Overijssel (sometimes referred to as the Bible belt) and in the north. Higher numbers of Muslims are found in the south and middle of the Netherlands and in municipalities with bigger cities. The overviews of the other religions and spending types can be found in Appendix A.



4.1 Total spending | 4.2 Religious affiliation | 4.3 Religious attendance

4.4 Catholicism | 4.5 Protestantism | 4.6 Islam

Figure 4: Variation of religion and mental healthcare spending across the Netherlands

Regression analyses

Religious affiliation

The results of the simple linear regression models are presented in Table 2. The beta coefficients in the crude models indicated negative and significant correlations between religious affiliation and

total, basic and specialist mental healthcare spending. After adjusting for covariates, religious affiliation was positively associated with total mental healthcare spending (b = 0.190). For specialist care, a similar positive association was found (b = 0.240), while for basic care, a small negative association was found (b = -0.019). None of these corrected associations were found to be statistically significant. The results of the covariates in the simple models can be found in Table B1 of the Appendices.

Table 2: Simple linear regression models

	Dependent variable: Mental healthcare spending					
	Total		Basic		*Specialist*	
	(1)	(2)†	(3)	(4)†	(5)	(6)†
Religious affiliation	-1.211***	0.190	-0.082***	-0.019	-0.959***	0.240
	(0.252)	(0.304)	(0.013)	(0.017)	(0.194)	(0.200)
Constant	265.274***	136.572	17.697***	8.349	228.992***	281.890
	(14.927)	(363.863)	(0.767)	(20.649)	(11.479)	(239.835)
Observations	349	349	349	349	349	349
R^2	0.062	0.406	0.103	0.306	0.066	0.565
Adjusted R^2	0.060	0.377	0.100	0.272	0.063	0.544
Note:	*p<0.1; **p<0.05; ***p<0.01					
†	*Including covariates (need, sociodemographic, supply-side characteristics)*					

Specific religions and religious attendance

The results of the extensive linear regression models are presented in Table 3. Before the adjustment for covariates, positive and significant associations were found between Islam (b = 5.673), Other (b = 6.572) and total mental healthcare spending. All other religions and religious attendance were negatively, but not significantly, associated with total spending. After the correction for covariates, Catholicism and Protestantism were positively associated with total spending, while Islam was slightly negatively associated with total spending. The other variables had slightly stronger or weaker associations, but stayed in the same direction. All of the corrected associations were insignificant.

In the crude model, Catholicism, Protestantism and Hinduism had negative, significant associations with basic mental healthcare spending and Islam and Other had positive, significant associations with basic spending. In the adjusted model, most associations were weaker and less significant, and for Judaism the association changed from positive to negative. Hinduism (b = -2.105) and Other (b = 0.299) were still significantly associated with basic mental healthcare spending. For specialist mental

healthcare spending, positive and significant associations were observed for Islam and Other, before correcting for the covariates. In the corrected model, religious attendance, Judaism, Hinduism and Buddhism had non-significant, negative associations with specialist spending, while Catholicism, Islam and Other had non-significant, positive associations. Protestantism had a positive and significant association with specialist mental healthcare spending. The results of the covariates in the extensive models can be found in Table B2 of the Appendices.

Table 3: Extensive linear regression models

Dependent variable: Mental healthcare spending						
	Total		Basic		*Specialist*	
	(1)	(2)†	(3)	(4)†	(5)	(6)†
Religious attendance	-1.042	-0.463	0.028	0.051	-0.907	-0.316
	(0.863)	(0.819)	(0.043)	(0.045)	(0.646)	(0.538)
Catholicism	-0.503	0.415	-0.067***	-0.029	-0.298	0.409
	(0.397)	(0.424)	(0.020)	(0.023)	(0.297)	(0.278)
Protestantism	-0.827	1.137	-0.123***	-0.037	-0.552	1.023**
	(0.790)	(0.777)	(0.039)	(0.043)	(0.591)	(0.510)
Islam	5.673***	-0.048	0.309***	0.197*	5.885***	0.102
	(1.768)	(1.929)	(0.088)	(0.106)	(1.322)	(1.267)
Judaism	-5.698	-13.794	0.942	-0.492	-3.345	-5.233
	(18.595)	(17.041)	(0.926)	(0.933)	(13.909)	(11.192)
Hinduism	-5.151	-8.051	-1.309**	-2.105***	-4.418	-6.067
	(10.760)	(9.913)	(0.536)	(0.950)	(8.048)	(6.511)
Buddhism	-5.721	-6.394	1.156	0.607	-1.655	-1.999
	(14.520)	(12.658)	(0.723)	(0.607)	(10.861)	(8.313)
Other	6.572**	1.989	0.316**	0.299**	6.051***	1.385
	(2.577)	(2.295)	(0.128)	(0.126)	(1.928)	(1.507)
Constant	211.157***	157.649	14.906***	6.944	175.161***	305.074
	(22.610)	(370.818)	(1.126)	(20.295)	(16.912)	(243.536)
Observations	349	349	349	349	349	349
R^2	0.144	0.417	0.230	0.367	0.193	0.576
Adjusted R^2	0.124	0.376	0.212	0.322	0.175	0.546
Note:	*p<0.1; **p<0.05; ***p<0.01					
†	*Including covariates (need, sociodemographic, supply-side characteristics)*					

5. Discussion and conclusion

The purpose of this study was to examine the association between religious involvement and mental healthcare spending on a regional level. In addition, this research examined whether this association differed between basic, generalist mental healthcare and specialist mental healthcare. It was hypothesized that municipalities with higher shares of Muslims, Hindus, Buddhists and Protestants would have lower mental healthcare spending, while no significant differences were expected for higher shares of Catholics and Jews. Further, it was hypothesized that higher attendance of religious services would be associated with lower mental healthcare spending. For the difference between basic and specialist spending, more negative associations were expected for basic care compared to specialist care.

Summary of findings

Small, positive associations were found between religious affiliation and total and specialist mental healthcare spending, after correcting for the covariates. This means that municipalities with higher percentages of religious affiliation had slightly higher spending for total and specialist mental care. A negative, but almost non-existent, association was found between religious affiliation and basic mental healthcare spending. In all three analyses, the standard errors for the coefficients were high and therefore the results can be labeled as not significant. This does not mean that these associations cannot exist in reality, but it does reflect an increased likelihood of the associations to be caused by chance. In the extensive analyses, after correcting for the covariates, religious attendance was found to be negatively associated with total and specialist spending and slightly positively associated with basic spending. For Catholicism and Protestantism, associations of the opposite site were observed. Islam had a positive correlation with basic and specialist spending and a slightly negative association with total spending. Further, negative associations were observed for Hinduism and Judaism, positive associations for other religious affiliation and mixed results for Buddhism. Again, most of these associations were insignificant and should be interpreted with caution. However, three significant associations were observed. These associations showed that specialist mental healthcare spending was higher in municipalities with a higher share of Protestantism and basic mental healthcare spending was higher in municipalities with a higher share of other religious affiliation and substantially lower in municipalities with a higher share of Hinduism.

Discussion of findings

To our knowledge, this is the first study to assess the association between religious involvement and mental healthcare spending on a regional level in the Netherlands. This makes it hard to directly

compare the results with other studies. However, studies do exist on the relationship between religion and mental healthcare utilization. It is expected that similar associations exist for utilization and spending, as they are closely related, but since differences in spending could also be caused by differences in prices, this is not a certainty.

Contrary to the hypothesis, two positive associations were found for religious affiliation. While most theories and studies lean towards a negative association, these findings are consistent with those of Harris et al. (2005) and Pickard (2005), who found positive associations between religion variables and mental health service use. This positive result could possibly be explained through the 'religious practices' pathway projected in Figure 3 of the theoretical framework. Practices related to the religion, like contact with clergy and other members, might encourage people to seek help (Harris et al., 2006). Another explanation is that the theories referred to in chapter 2 are not applicable in the modern Dutch context. Taking into account the non-significance of the results, it is possible that religion does not play a serious role in the mental help-seeking behaviors of Dutch individuals. For total and specialist care, the hypothesized negative association was observed between religious attendance and spending. However, due to the high uncertainty around these results, it cannot be concluded that religious attendance is very relevant on top of religiousness. Few studies have specifically examined religious attendance as a separate variable besides other religion variables, but the ones who have, also did not find any significant associations (Chen et al., 2007; Pickard, 2005).

A previous study on the use of mental health services found that persons from all religious affiliations (Christianity, Islam, Hinduism and Buddhism) reported less frequent treatment by healthcare professionals (Ng, 2011). While our study also expected to see lower spending in municipalities with higher shares of Protestantism, Islam, Hinduism and Buddhism, in most cases there was little evidence of this association. However, we did find some evidence for this hypothesis for Hinduism, as Hinduism had a quite big and significant association with basic mental healthcare spending. This result supports the theory that Hinduists are likely to first seek help from family or traditional and religious healers, before reaching out to a medical doctor or psychiatrist (Chaturvedi, 2015). Another possibility is that help is not sought at all. In a qualitative study on Hindu Indian American conceptions of mental health, they found that most Hindus did not seek any help because they believed they did not need it (Sekhsaria, 2019). Another noteworthy result was the positive, but relatively small, association between Protestantism and specialist spending. Possible reasons for this result correspond with the explanations previously discussed for religion in general, such as encouragement to seek help from clergy and other members. Further, it is possible that Protestants choose for formal mental care provided by health facilities with a Cristian character, instead of

replacing formal care by care from, for example, religious advisors. However, following this reasoning, a positive association would also be expected for basic spending, which was not the case in this study. Lastly, interesting results were found for the 'other religious affiliation' variable. In all models, this variable was positively associated with spending and in the case of basic spending, this association was significant. It is difficult to provide explanations for this, as it is not known out of what kind of religions and ideological groups this category exists. However, this could be something interesting for future research.

As expected, a more positive association was found between religious affiliation and specialist mental healthcare, compared to basic mental healthcare. This could be explained by the difference in severity of disease. Healthcare need is expected to be the most important determinant of mental healthcare utilization for people with serious distress, that are found in specialist care, while for people with moderate distress it is more likely that other factors impact their decision as well. Another explanation is that the substitution of religious involvement for formal mental healthcare would be more successful for those with lower levels of distress (Harris et al., 2006). Previous studies that focused on differences between severities of disease found that individuals with serious mental illness are relatively less likely to see religious providers exclusively, compared to individuals with less serious illness (Wang et al., 2003) and that there is a more positive association between religious attendance and mental healthcare utilization for people with more serious distress compared to people with moderate distress (Harris et al., 2006). However, for religious attendance and the separate religions, no consistent support was found for this relationship.

All of the studies referred to in the previous paragraphs are based on an individual-level association between religion and healthcare utilization. However, in this study the association was examined on a regional level. While this regional level could be seen as the sum of utilization of individuals, this aggregated level cannot be simply interpreted at an individual level. As explained in Figure 2 of the theoretical framework, it is possible that characteristics on a more meso level, in this case the religiousness of a municipality, affect a person's healthcare utilization, irrespective of that person's own characteristics. While it was not possible to find previous research on this mechanism for religion in specific, there are studies on this mechanism for social capital. As discussed in the theoretical framework, religion is connected to social capital and social capital may motivate people to use healthcare (Leader & Michael, 2013). Religious communities are found to impact social cohesion and people who are affiliated with a religious denomination are found to demonstrate a greater propensity to trust, which are both important aspects of social capital (Auguste, 2019). Sometimes, studies even see this social aspect of religion as a whole separate construct called

religious social capital, defined as the social resources available to individuals and groups through their social connections with a religious community (Maselko et al., 2011). Pathways through which social capital could affect healthcare utilization are by influencing the availability of health services in communities, the availability and effectiveness of outreach resources between healthcare providers and the communities they serve and care-seeking behavior of individuals in the communities (Derose & Varda, 2009). Thus, it is possible that not the personal religious belief, but the social capital related to religion (measured on a meso-level), is important in explaining healthcare utilization. This pathway through neighborhood social capital could be another possible explanation for the positive association between religious affiliation and total and specialist spending. However, due to the design of this study, it is not possible to separate the individual and regional effect from each other.

Interestingly, before correcting for the confounding variables, significant negative associations were found between religious affiliation and spending. Apparently, some of the explanatory power of religion is taken away by the covariates. The results of the full models, suggest that especially the individual predisposing and illness level variables, proposed by Andersen's model (Figure 1 of the theoretical framework), are important in explaining mental healthcare spending. For total and specialist spending, positive significant associations were found for severe loneliness, while surprisingly, negative significant associations were found for high risk of anxiety or depression. For basic care, another healthcare need variable had a positive significant association, namely severely impaired due to health status. Most studies seem to agree that religion has a positive relationship with mental health (Moreira-Almeida et al., 2006). If municipalities with higher religious involvement have, for example, less severe loneliness, this could be a plausible explanation for the lower spending in the unadjusted model. In addition to healthcare need, all of the sociodemographic variables, except age, were significantly associated with mental healthcare spending in at least one of the analyses and could therefore also have affected the difference in results for religion between the adjusted and unadjusted models. The regional variables included in this study based on the model of Mohnen et al., like proximity to healthcare facilities and urbanity (which are part of the physical environment depicted in Figure 2), were not found to be significantly associated with mental healthcare spending and therefore do not seem to be relevant. Since this study was not specifically focused on the confounding effects of each variable separately, it is not possible to conclude which variables exactly cause the change in effects. However, the results do suggest an important role for healthcare need and sociodemographic characteristics in explaining mental healthcare spending, which can explain the difference in associations for religious affiliation between the adjusted and unadjusted models.

Strengths and limitations

This study has several strengths and limitations. The first strength is that, to our knowledge, this is the first study to examine the association between religion and mental healthcare spending on a regional level in the Netherlands. Furthermore, this study has managed to include many different covariates in the analysis. This increases the chance that the results can be assigned to religion and do not measure the effects of other regional characteristics. However, this only holds for the variables that were included in the study, which leads us to the first limitation. Not all variables that could be possibly correlated with religion and mental healthcare spending could be included in the analysis, which means that the results may still be biased due to omitted variables. Therefore, the results should be interpreted with caution.

Second, it was not possible to get precise and accurate data on all variables. This study was only able to include basic and specialist mental healthcare spending. However, people with mental health issues will first visit their GP, before they possibly get referred to basic care. Thus, an important part of mental care utilization, namely the first step of help-seeking, is lacking in this study. Furthermore, self-assessed variables were used to correct for need, which might be subject to reporting bias and unobserved heterogeneity in perceptions of health status. This was not a perfect proxy for healthcare need and therefore reduced its construct validity. The imperfect correction for healthcare needs may have led to biased results. Since religious involvement has often been found to be associated with better mental health, in the case of an imperfect correction for healthcare needs, negative associations might reflect a lower utilization due to lower needs, instead of due to religious reasons.

Third, this study was limited in that it only had access to regional data. While individual determinants were discussed, an association on an aggregated level cannot be simply interpreted at an individual level (risk of ecological fallacy). Therefore, this study cannot make distinctions between individual and regional effects. In addition, it is possible that individual patterns of religion and healthcare use are clouded by municipal averages.

Fourth, the assumptions for performing linear regression analyses were not fully met. In the case of total and specialist mental healthcare spending, the residuals were not perfectly homoscedastic and collinearity was observed between religious attendance and Protestantism. Heteroscedasticity influences the standard errors and the corresponding significance tests of the parameters. These are therefore no longer reliable when the assumption of homoscedasticity is violated. As a consequence, the results should be interpreted with some margin. In addition, collinearity may produce larger

standard errors in the related independent variables. Therefore, the significance levels of religious attendance and Protestantism are not fully trustworthy.

Last, it is important to note that data from different years and different age groups were used. Some precision may be lost due to the aggregation of data from different years, but the impact is expected to be low. It was tried to combine the data from the old municipalities to the new municipalities as precise as possible. Further, only religion (2014) and education (2019) did not come from the year 2016 and it is assumed that these variables have not changed too much over these years to seriously impact the results. For age, it was not always possible to retrieve variables that were specific to the population 20 years and older (the age group of mental healthcare spending), but the most important variables did not deviate too much from this group: religion (18 years and older) and healthcare need (19 years and older).

Policy implications and further research

In this study, no clear evidence was found for a relationship between general religiousness and regional mental healthcare spending in the Netherlands. However, the present study does raise the possibility that specific religiousness (i.e., the separate religions) can in some part explain variation in regional mental healthcare spending in the Netherlands. These new insights increase our understanding of regional variation in mental healthcare spending in the Netherlands and therefore contribute to the policy debate on variation in healthcare costs and its causes. Yet, the implications of these differences in spending for the mental healthcare sector and policy remain unclear on the basis of this sole research. A further study with a focus on healthcare utilization is suggested, in which warranted (on the basis of health status) and unwarranted variation can be separated more precisely. This study would rule out the possibility that the findings are caused by differences in prices or health care need. When executed on a regional level, this study could provide further information on the variation in healthcare use in the Netherlands. However, to learn more about the specific relationship between religious involvement and mental healthcare use, individual-level studies might be more meaningful.

Furthermore, future research should include all sorts of mental healthcare services. Next to basic, specialist and long-term mental care, the care provided by the GP and mental care practice nurse should be included. Visiting the GP is the first step someone can take when facing mental problems and in many cases people will be treated there, without being referred to basic mental care. Therefore, this is a very relevant type of care when studying determinants of mental healthcare use.

Finally, many questions remain to be addressed concerning how specific religions would influence mental healthcare utilization. While this study has pointed out some possible explanations, further investigation is required to better understand the pathways in a Dutch context. For example, do Dutch Hinduists underutilize mental care because they are less able to find their way in healthcare? Or is formal care substituted by care from religious advisors, or family and friends? In addition to quantitative research, qualitative research might be useful in answering these remaining questions.

References

Acherrat-Stitou, Z. (2009). Islam en psychiatrie in Nederland, een verkenning. *Psyche & Geloof, 20*(2), 110-118.

Aloud, N. (2004). *Factors affecting attitudes toward seeking and using formal mental health and psychological services among Arab-Muslims population* [Doctoral dissertation, the Ohio State University]. CiteSeer(X). https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.822.3491&rep=rep1&type=pdf

Amri, S., & Bemak, F. (2012). Mental health help-seeking behaviors of Muslim immigrants in the United States: Overcoming social stigma and cultural mistrust. *Journal of Muslim Mental Health, 7*(1), 43–63.

Andersen, R., & Newman, J.F. (2005). Societal and Individual Determinants of Medical Care Utilization in the United States. *Milbank Q, 83*(4).

Arts, K. (2009). Ontwikkelingen in kerkelijkheid en kerkbezoek (1999–2008). In H. Schmeets & R. Van der Bie (Eds.), *Religie aan het begin van de 21ste eeuw* (pp. 41-46). The Hague, The Netherlands: Statistics Netherlands.

Auguste, D. (2019). Exclusive Religious Beliefs and Social Capital: Unpacking Nuances in the Relationship between Religion and Social Capital Formation. *Issues in Race and Society: An Interdisciplinary Global Journal.*

Ayvaci, E. (2017). Religious Barriers to Mental Healthcare. *The American Journal of Psychiatry Residents' Journal.*

Benjamins, M.R. (2007). Predictors of preventive health care use among middle-aged and older adults in Mexico: the role of religion. *Journal of Cross Cultural Gerontology, 22*, 221-234.

Benjamins, M.R., & Brown, C. (2003). Religion and preventative health utilization among the elderly. *Social Science & Medicine, 58*, 109-118.

Boden, J.M., & Fergusson, D.M. (2011). Alcohol and depression. *Addiction, 106*(5), 906-14.

Brazier, C. (2006). *A Buddhist perspective on mental health*. Tariki Books and Papers. https://buddhistpsychology.typepad.com/my-blog/a-buddhist-perspective-on-mental-health.html

Bruggink, J.W., & Van Herten, M. (2009). Religie, gezondheid en leefstijl. In H. Schmeets & R. Van der Bie (Eds.), *Religie aan het begin van de 21ste eeuw* (pp. 53-64). The Hague, The Netherlands: Statistics Netherlands.

Chadda, R.K., Agarwal, V., Sing, M.C., & Raheja, D. (2001). Help seeking behaviour of psychiatric patients before seeing care at a mental hospital. *International Joournal of Social Psychiatry, 47*(4), 71-78.

Chan, D.C. (2016). *Informational frictions and practice variation: evidence from physicians in training* (Working Paper No. 21855). National Bureau of Economic Research.

Chaturvedi, S.K. (2015). Religious, Spiritual, and Cultural Aspects of Psychiatric Ethics in Hinduism. *The Oxford Handbook of Psychiatric Ethics.*

Chen, H., Cheal, K., Elizabeth, C.M.H., Cynthia, Z., & Levkoff Sue, E. (2007). Religious participation as a predictor of mental health status and treatment outcomes in older persons. *International Journal of Geriatric Psychiatry, 22*, 144–153.

Chowdhury, N. (2016). Integration Between Mental Health-Care Providers and Traditional Spiritual Healers: Contextualising Islam in the Twenty-First Century. *J Relig Health, 55*, 1665-1671.

Cutler, D., Skinner, J., Stern, A.D,. & Wennberg, D. (2019). Physician beliefs and patient preferences: a new look at regional variation in health care spending. *American Economic Journal: Economic Policy*, *11*(1), 192-221.

Crosby, J.W., & Bossley, N. (2012). The religiosity gap: preferences for seeking help from religious advisors. Mental Health, Religion, & Culture,15(2), 141-159.

De Jong, G. (2008). Ruimte voor anderszijn, inventarisatie van kerkelijke initiatieven voor mensen met psychische aandoeningen en hun naastbetrokkenen (Kaski nr. 579). Utrecht: PKN.

De Jong, J., Groenewegen, P.P., Spreeuwenberg, P., Westert, G.P., & de Bakker, D. (2009). Do decision support systems influence variation in prescription? *BMC Health Services Research, 9.*

De Jong, J., Groenewegen, P.P., Spreeuwenberg, P., Schellevis, F., & G.P.Westert. (2010). Do guidelines create uniformity in medical practice? *Social Science & Medicine, 70*, 209–216.

Derose, K.P., & Varda, D.M. (2009). Social capital and health care access: a systematic review. *Med Care Res Rev, 66*(3), 272-306.

Douven, R., Mocking, R., & Mosca, I. (2015). The effect of physician remuneration on regional variation in hospital treatments. *International Journal of Health Economics and Management, 15*(2), 215–240.

Drukker, M., Driessen, G., Krabbendam, L., & van Os, J. (2004). The wider social environment and mental health service use. *Acta Psychiatrica Scandinavica, 110*(2), 119–29.

Dwyer, G. (2003). The divine and the demonic: Supernatural affliction and its treatment in North India. London: RoutledgeCurzon.

Ellison, C.G., Lee, J., Benjamins M.R., Kraus, N.M., Ryan, D.N., & Marcum, J.P. (2008). Congregational support networks, health beliefs, and annual medical exams: findings from a nationwide sample of Presbyterians. *Review of Religious Research, 50*(2), 176-193.

Finkelstein, A., Gentzkow, M., & Williams, H. (2016). Sources of geographic variation in health care: evidence from patient migration. *Quarterly Journal of Economics, 131*(4), 1681–1726.

Greenberg, G.A., & Rosenheck, R.A. (2003). Managerial and environmental factors in the continuity of mental health care across institutions. *Psychiatric Services:54*(4), 529–34.

Greil, A., McQuillan, J., Benjamins, M., Johnson, D.R., Johnson, K.M., & Heinz, C.R. (2010). Specifying the effects of religion on medical helpseeking: The case of infertility. *Social Science & Medicine, 71(*4), 734-742.

Haque, A. (2004). Religion and Mental Health: The Case of American Muslims. *Journal of Religion and Health, 43*, 45-58.

Harris, K.M., Edlund, M.J., & Larson, S.L. (2006). Religious Involvement and the Use of Mental Health Care. *Health Services Research*, *41*(2), 395-410.

Hartog, K., & Gow, K. M. (2005). Religious attributions pertaining to the causes and cures of mental illness. *Mental Health, Religion & Culture, 8*(4), 263–276.

Hill, T.D., Ellison, C.G., Burdette, A.M., & Musick, M.A. (2006). Religious attendance and the health behaviors of Texas adults*. Preventative Medicine, 42*, 309-312.

Hoffer, C.B.M. (2005). 'Psychose' of 'djinn': verklaringsmodellen en interculturele communicatie in de GGZ. *Tient Care/ Neuropsychiatrie & Gedragsneurologie*: 141-146.

Kawachi, I., Kennedy, B.P., & Glass, R. (1999). Social capital and self-rated health: a contextual analysis. *Am J Public Health*: *89*(8), 1187–93.

Khan, Z. (2006). Attitudes Toward Counseling and Alternative Support Among Muslims in Toledo, Ohio. *Journal of Muslim Mental Health, 1*(1), 21-42.

Koenig, H.G., McCoullough, M.E., & Larson, D.B. (2001). *Handbook of Religion and Health.* Oxford University Press.

Kroneman, M., Boerma, W., Van den Berg, M., Groenewegen, P., de Jong, J., & Van Ginneken, E. (2016). Netherlands: Health system review. *Health systems in transition*, *18*(2).

Law, M., Wilson, K., Eyles, J., Elliott, S., Jerrett, M., Moffat, T., & Luginaah, I. (2005). Meeting health need, accessing health care: The role of neighborhood. *Health & Place,* 11(4), 367–77.

Leader, A.E., & Michael, Y.L. (2013). The association between neighborhood social capital and cancer screening. *Am J Health Behav: 37*(5), 683–92.

Litaker, D., Koroukian, S.M., & Love, T.E. (2005). Context and healthcare access: Looking beyond the individual. *Medical Care, 43*(6):531–40.

Mair, C., Diez Roux, A.V., & Galea, S. (2008). Are neighbourhood characteristics associated with depressive symptoms? A review of evidence. *J. Epidemiol. Community Health, 62*(11), 940-946.

Marangos, A.M., Groenewegen, P.P., & Graaf, N.D. de. (2010). Levensfilosofie en zorggebruik in Nederland. *Mens en Maatschappij, 85*(2), 135-153.

Mathison, L.A. (2016). Mental Health Stigma in Religious Communities: Development of a Quantitative Measure. Graduate Theses and Dissertations

Mayers, C., Leavey, G., Villianatou, C., & Barker, C. (2007). How clients with religious or spiritual beliefs experience psychological help-seeking and therapy: A qualitative study. *Clinical Psychology and Psychotherapy, 14*(4), 317-327.

Maselko, J., Hughes, C., & Cheneyc, R. (2011). Religious social capital: Its measurement and utility in the study of the social determinants of health. *Soc Sci Med, 73*(5), 759–767.

McLatchie, L. R., & Draguns, J. G. (2001). Mental Health Concepts of Evangelical Protestants. *The Journal of Psychology, 118*(2), 147-159.

Midlarsky, E., Pirutinsky, S., & Cohen, F. (2012). Religion, ethnicity, and attitudes toward psychotherapy. *J Relig Health, 51*(2), 498-506.

Mitchell, J.R., & Baker, M.C. (2000). Religious commitment and the construal of sources of help for emotional problems. *Psychology and Psychotherapy: Theory, Research and Practice, 73*(3), 289–301.

Mohnen, S. M., Schneider, S., & Droomers, M. (2019). Neighborhood characteristics as determinants of healthcare utilization – a theoretical model. *Health Economics Review, 9*(1).

Moura, A., Salm, M., Douven, R., & Remmerswaal, M. (2019). Causes of regional variation in Dutch healthcare expenditures: evidence from movers. *Health Econ, 28*(9), 1088-1098.

Moreira-Almeida, A., Lotufo Neto, F., & Koenig, H.G. (2006). Religiousness and mental health: a review. *Brazilian Journal of Psychiatry*, *28*(3), 242-250.

Murphy, G.C., & Athanasou, J.A. (1999). The effect of unemployment on mental health. *Journal of Occupational and Organizational Psychology, 72,* 83–99.

Nakash, O., Lambez, T., Cohen, M., & Nagar, M. (2019). Religiosity and barriers to mental healthcare: a qualitative study among clients seeking community mental health services. *Mental Health, Religion & Culture, 22*, 1-16.

Ng, T.P. , Nyunt, M.S.Z., Chiam, P.C., & Kua, E.H. (2011). Religion, health beliefs and the use of mental health services by the elderly. *Aging & Mental Health, 15*(2), 143–149.

Peen, J., & Dekker, J. (2004). Is urbanicity an environmental risk-factor for psychiatric disorders? *Lancet, 363*, 2012-3.

Pickard, J.G. (2006). The relationship of religiosity to older adult's mental health service use. *Aging and Mental Health, 10*, 290–297.

Queensland Health. (2011). *Health Care Providers' Handbook on Hindu Patients*. Division of the Chief Health Officer, Queensland Health. https://www.health.qld.gov.au/__data/assets/pdf_file/0027/157608/hbook-hindu-s2.pdf

Roberts, T., Miguel Esponda, G., Krupchanka, D., Shidhaye, R., Patel, V., & Rathd, S. (2018). Factors associated with health service utilisation for common mental disorders: a systematic review. *BMC Psychiatry, 18*(262).

Royal, K. D., & Thompson, J. M. (2012). Measuring Protestant Christians' willingness to seek professional psychological help for mental illness: A Rasch Measurement Analysis. Journal of Psychology and Christianity, 31(3), 195-204.

Sareen, J., Afifi, T.O., McMillan, K.A., & Asmundson, G.J.G. (2011). Relationship Between Household Income and Mental Disorders: Findings From a Population-Based Longitudinal Study. *Arch Gen Psychiatry, 68*(4), 419–427.

Schiller, P.L., & Levin, J.S. (1988). Is there a religious factor in health care utilization?: A review. *Social Science & Medicine, 27*(12), 1369-1379.

Sekhsaria, K.P. (2019). *Hindu indian american conceptions of mental health* (Order No. 10976557). Available from ProQuest Dissertations & Theses A&I. (2302687725). Retrieved from https://www-proquest-com.eur.idm.oclc.org/dissertations-theses/hindu-indian-american-conceptions-mental-health/docview/2302687725/se-2?accountid=13598

Skinner, J. (2012). Causes and consequences of regional variations in health care. In M.V. Pauly, P.P. Barros, T.G. McGuire (Eds.), *Handbook of health economics*. London, United Kingdom: Elsevier Science.

Straughan, P.T., & Seow, A. (1998). Fatalism reconceptualized: a concept to predict health screening behavior. *Journal of Gender, Culture, and Health, 3*, 85-100.

Straughan, P.T., & Seow, A. (2000). Attitudes as barriers in breast screening: a prospective study among Singapore women. *Social Science & Medicine, 51*, 1695-1703.

Ten Have, M., De Graaf, R., Ormel, J., Vilagut, G., Kovess, V., & Alonso, J. (2010). Attituden aangaande zoeken van professionele hulp voor psychische problemen en werkelijk hulpzoekgedrag: verschillen in Europa. *Tijdschrift voor psychiatrie 52*(4), 205-217.

Van der Kolm, G.J., & Noort, A. (n.d.). Samenwerking tussen GGZ en lokale geloofsgemeenschappen. *Handelingen.* Retrieved April 14, 2021, from https://www.handelingen.com/index.php/artikelen/51-samenwerking-tussen-ggz-en-lokale-geloofsgemeenschappen-gerrit-jan-van-der-kolm-annemarie-noort.

Van der Zweep, A., & Knol, H. (1996). Gezondheid, een baken voor het leven? De samenhang tussen waarden, attitudes en gedrag met betrekking tot gezondheid. In S.E. Kooiker & M. Mootz (Eds.), *Patiënt en professie*. Rijswijk: SCP.

Vellenga, S.J. (1992). Zin, ziel en zorg: over levensbeschouwing en geestelijke gezondheidszorg. Kampen: Kok.

Vrije Universiteit Amsterdam. (n.d.). Religie en zingeving moeten onderdeel worden van de behandeling van psychiatrische stoornissen. Retrieved April 12, 2021, from https://www.vu.nl/nl/nieuws-agenda/agenda/2019/apr-jun/14juni_profdr-j-schaap-jonker.aspx

Wang, P.S., Berglund, P.A., & Kessler, R.C. (2003). Patterns and Correlates of Contacting Clergy for Mental Disorders in the United States. *Health Services Research*, *38*(2), 647–73.

Weatherhead, S., & Daiches, A. (2010). Muslim views on mental health and psychotherapy. *Psychology and Psychotherapy: Theory, Research and Practice, 83*(1), 75-89.

Webb, M., Stetz, K., & Hedden, K. (2008). Representation of mental illness in Christian selfhelp bestsellers. Mental Health, Religion, & Culture, 11(7), 697-717.

Webbink, E., & Ultee, W. (2004). Van polio tot meningokokken-C: gedragingen en opvattingen van bevindelijke gereformeerden in Nederland. *Mens & Maatschappij*, *79*, 4-23.

Wynaden, D., Chapman, R., Orb, A., McGowan, S., Zeeman, Z., & Yeak, S. (2005). Factors that influence Asian communities' access to mental health care. *International Journal of Mental Health Nursing*, *14,* 88-95.

Yeung, P.P., & Greenwald, S. (1992). Jewish Americans and mental health: results of the NIMH Epidemiologic Catchment Area Study. *Soc Psychiatry Psychiatr Epidemiol*, *27*(6), 292-7.

Youssef, J., & Deane, F.P. (2006). Factors influencing mental-health help-seeking in Arabic-speaking communities in Sydney, Australia. *Mental Health, Religion & Culture,* 9(1), 43-66.

Zorgverzekering Informatie Centrum. (n.d.). *Gemoedsbezwaarde verplicht verzekerd?* Retrieved April 12, 2021, from https://www.zorgverzekering.org/veelgestelde-vragen/gemoedsbezwaarden-verplicht-verzekerd/

Appendices

Appendix A. Country maps of remaining religions and spending types

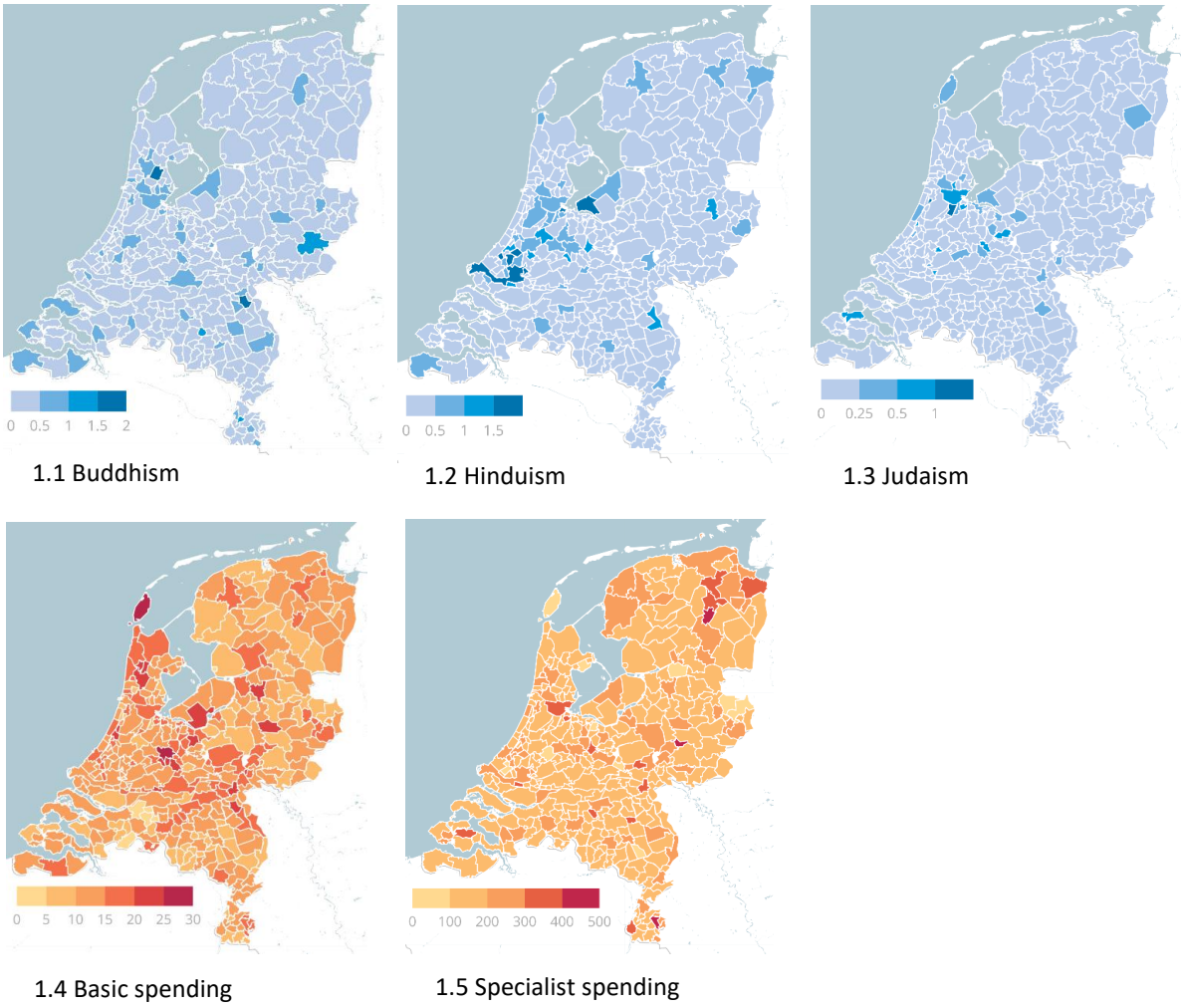


Figure A: Country maps of remaining religions and spending types

Appendix B. Regression coefficients including covariates

Table B1: Simple linear regression models including covariates

Dependent variable: Mental healthcare spending						
	Total		*Basic*		*Specialist*	
	B	*SE*	*B*	*SE*	*B*	*SE*
Religious affiliation	0.190	0.304	-0.019	0.017	0.240	0.200
Perceived health as good or very	1.677	1.719	0.036	0.098	0.698	1.133
Severely impaired due to health	1.809	1.450	0.236***	0.082	1.337	0.956
High risk of anxiety or depression	-2.651**	1.178	-0.056	0.067	-1.777**	0.776
Severe loneliness	14.502***	4.029	-0.256	0.229	11.680***	2.656
Age 45-65	0.866	1.931	-0.023	0.110	0.380	1.273
Male	-9.718*	5.247	-0.364	0.298	-9.441***	3.459
Migration background	-2.389***	0.915	0.092*	0.052	-2.380***	0.603
Married	-2.080	1.492	-0.226***	0.085	-1.892*	0.983
Low income	18.878***	3.901	0.316	0.221	16.920***	2.571
High education	1.695**	0.650	0.045	0.037	1.184***	0.429
Net employment rate	4.417**	2.134	0.414***	0.121	3.332***	1.407
Distance to GP	-1.233	12.211	-0.284	0.693	-8.327	8.049
Distance to pharmacy	-4.463	6.691	0.031	0.380	-2.439	4.410
Distance to hospital	-1.233	12.211	-0.103*	0.061	-0.941	0.708
Urbanity	-0.008	0.011	-0.001	0.001	-0.004	0.007
Constant	136.572	363.863	8.349	20.649	281.890	239.835
Observations	349		349		349	
R^2	0.406		0.306		0.565	
Adjusted R^2	0.377		0.272		0.544	
Note:	*p<0.1; **p<0.05; ***p<0.01					

Table B2: Extensive linear regression models including covariates

Dependent variable: Mental healthcare spending						
	Total		*Basic*		*Specialist*	
	B	*SE*	*B*	*SE*	*B*	*SE*
Religious attendance	-0.463	0.819	0.051	0.045	-0.316	0.538
Catholicism	0.415	0.424	-0.029	0.023	0.409	0.278
Protestantism	1.137	0.777	-0.037	0.043	1.023**	0.510
Islam	-0.048	1.929	0.197*	0.106	0.102	1.267
Judaism	-13.794	17.041	-0.492	0.933	-5.233	11.192
Hinduism	-8.051	9.913	-2.105***	0.543	-6.067	6.511
Buddhism	-6.394	12.658	0.607	0.693	-1.999	8.313
Other	1.989	2.295	0.299**	0.126	1.385	1.507
Perceived health as good or very	0.762	1.798	-0.005	0.098	-0.094	1.181
Severely impaired due to health	1.807	1.465	0.247***	0.080	1.273	0.962
High risk of anxiety or depression	-3.252***	1.242	-0.084	0.068	-2.224***	0.816
Severe loneliness	14.590***	4.081	-0.259	0.223	11.838***	2.680
Age 45-65	2.734	2.297	0.191	0.126	1.983	1.509
Male	-7.806	5.494	-0.017	0.301	-7.595**	3.608
Migration background	-1.570	1.050	0.124**	0.057	-1.826***	0.690
Married	-3.818**	1.841	-0.425***	0.101	-3.391	1.209
Low income	15.276***	4.633	-0.197	0.254	13.921***	3.042
High education	1.799***	0.662	0.047	0.036	1.254***	0.435
Net employment rate	4.281*	2.324	0.286**	0.127	3.021**	1.526
Distance to GP	-4.805	12.470	-0.235	0.682	-11.552	8.190
Distance to pharmacy	-2.987	6.812	-0.071	0.373	-1.414	4.474
Distance to hospital	-1.929*	1.115	-0.108*	0.061	1.303*	0.732
Urbanity	-0.008	0.011	-0.001	0.001	-0.004	0.007
Constant	157.649	370.818	6.944	20.295	305.074	243.536
Observations	349		349		349	
R^2	0.417		0.367		0.576	
Adjusted R^2	0.376		0.322		0.546	
Note:	*p<0.1; **p<0.05; ***p<0.01					