# From national to regional and from supply to demand-oriented healthcare purchasing

## Summary

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# Preface

This document contains the summary of my graduation assignment for the master Business Administration. It is a summary of the results of the research I conducted on behalf of an insurance company, in the period from February to August 2015. In this research paper, the demand and supply of mental healthcare is compared on a regional level. The original thesis is, on demand of the health insurance company, written in Dutch. In addition, the results of the research are confidential. So the name of the insurance company and sensitive data will not be mentioned in this summery. Because the programme of my master is taught entirely in English, an English summary of my master thesis is necessary for my graduation.

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# Introduction

The mental healthcare is responsible for six percent of the total healthcare expenditure in the Netherlands (GGZ Nederland, 2014). In the Netherlands, eighteen percent of the adult population develops a new mental illness annually (Veerbeek et al, 2014). Through this, the mental healthcare has an important effect on the Dutch society. When someone has metal health issues, the citizen can rely on the healthcare system of the Netherlands. In the healthcare system, there are two types of mental healthcare. The first type is curative mental healthcare and the second type is long-term mental healthcare. Curative mental healthcare focuses on healing the mental disorder and the treatment of mental disorders. Long-term mental healthcare focuses on the care of mental disorders.

The Dutch government attempts to realize a healthcare system, which provides high quality care and is affordable and accessible for everyone (in need of healthcare).Through effective use of available resources, it is possible to realize quality, accessibility, and cost containment of healthcare (Ministerie van Volksgezondheid, Welzijnen Sport, 2007). With the introduction of the Health Insurance Act (in Dutch: Zorgverzekeringswet) in 2006, the healthcare system of the Netherlands has been reformed (Raad voor de Volksgezondheid & Zorg, 2008a). A major objective of the system is to create a more efficient healthcare through more competition incentives (Rutten, 2012). Next to this, one of the critical success factors of the system is a well-developed healthcare purchasing process by health insurance companies (Nederlandse Zorgautoriteit, 2010).

In the new healthcare system, healthcare purchasing has a central role in relation to the achievement of the social objectives of care: quality, accessibility and affordability. The health insurer has an important task in securing these interests. Next to this, health insurance companies are responsible for the availability of healthcare for their customers. Control on demand (In Dutch: sturing op de vraag) implies healthcare insurance companies to purchase or finance healthcare on behalf of their customers. According to the Raad voor de Volksgezondheid & Zorg, healthcare purchasing is the process that leads to a contract between a healthcare insurer and a healthcare provider. The contract exists of agreements about the care that the healthcare provider must provide to the insured during the term of the contract. Typical topics of agreements in a contract are price, quality of the healthcare, quantity of healthcare and the type of healthcare (RVZ, 2008a).

# Aim research

So far, the healthcare purchasing of mental healthcare at the health insurance company is national oriented and based on the supply of mental healthcare. The budget of mental healthcare is based on the macro budget from the government. The aim of the health insurance company is to connect the supply and demand of mental healthcare in a region, in order to comply with the duty of care (In

Dutch: zorgplicht) in a more efficient manner. Where the main difference is the switch from a national view to a smaller region view. To know whether the health insurance company meets this duty of care, this regional insight is necessary. If the health insurance company purchases the necessary mental healthcare based on the demand of the past and fulfills the duty of care, the healthcare purchasing process is effective. In the transition from national and supply-driven healthcare purchasing to regional and demand-driven healthcare purchasing, the health insurance company noticed that the management information, that is necessary for this transformation, is not clear or available at this moment.

Additionally, the curative mental healthcare costs arise by an interaction among supply and demand. In this interaction the health insurer has a guiding and controlling role. The demand of mental healthcare should be balanced with the supply of healthcare (Vissers & Beech, 2005).

Therefore, this research focuses on identifying and analyzing a regional overview of the supply and demand of the curative mental healthcare in the period of 2011 till 2015. The analysis is performed for the regions Haaglanden and Twente.

The central question in this study is: *How can the budget for the curative mental healthcare be used effectively and efficiently, so that the demand and supply are better connected in each region?*

## Theoretical framework

This research is based on the three market model of Lapre & Montfort (2008), which is shown in figure 1. The sub-questions of the research are also based on the three market model. The three market model (demand, supply and financer) shows a systematic view of the Dutch healthcare system. The mechanisms of the model apply to curative mental healthcare as well. According to this model, the Health Insurance Act has an important role in the operation of the system. The Health Insurance Act resulted in several market forces on the three markets in the healthcare system, whereby the various markets have different characteristics:

- Delivery market, where healthcare providers do things in favor of their clients.
- Selling/Purchasing market, where healthcare provider's do things in favor of the healthcare insurance companies.
- Insurance market, where healthcare insurance companies do things in favor of the clients.

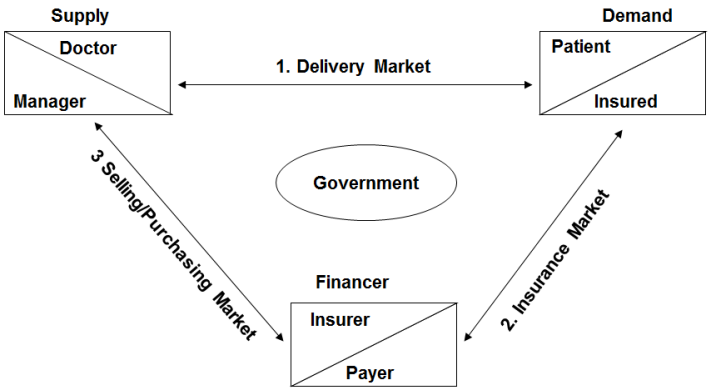


*Figure 1: Three Market Model of the Healthcare System (Lapre& Montfort, 2001; Raad voor de Volksgezondheid & Zorg, 2008a)*

This paragraph will describe the several stakeholders that are involved in the model. The actor 'patient' on the demand side of the three market model represents the healthcare utilisation due to the healthcare need of an insured. Next to this, the actor 'doctor' on the supply side represents the healthcare, which the doctor has to provide to the patient. Another actor is the 'manager' on the supply side which makes healthcare agreements with the actor 'insurer' on the financer side. Finally the actor 'insured' will have an insurance at a healthcare insurance company, the 'payer'. Through this, the insured is entitled to the Dutch healthcare.

The markets and associated actors must adhere to (current) laws and regulations, in which supervision, quality requirements and preconditions for pricing are established (RVZ, 2008b). In order to discourage risk selection for healthcare insurance companies at the insurance market, risk adjustment is used by the government. According to Ministry of Health, Welfare and Sport (2007) risk adjustment is a system where healthcare insurers are financially compensated for insured with an unfavorable risk profile.

Next to the three market model, there is another model important for this research. In the literature there are several predictive determinants, which could lead to healthcare utilisation of an insured. According to Mackenbach & van der Maas (2008) not every health need will be converted into healthcare demand. Furthermore, not every healthcare demand does lead to healthcare use.

It is important that not only the risk of getting a mental illness is mentioned, but also the difference between predictive determinants in a population that affects the healthcare utilisation (Mackenbach & van der Maas, 2008). It is likely that this also applies to the curative mental health, whereby a part of the adult Dutch population does not appeal the mental healthcare for various reasons. The most common individual determinants are formulated in the Behavioral Model of Health Service Use van

Andersen & Newman, which is shown in Figure 2. Andersen & Newman (2005) showed that different individual determinants contribute to the healthcare use of an individual.

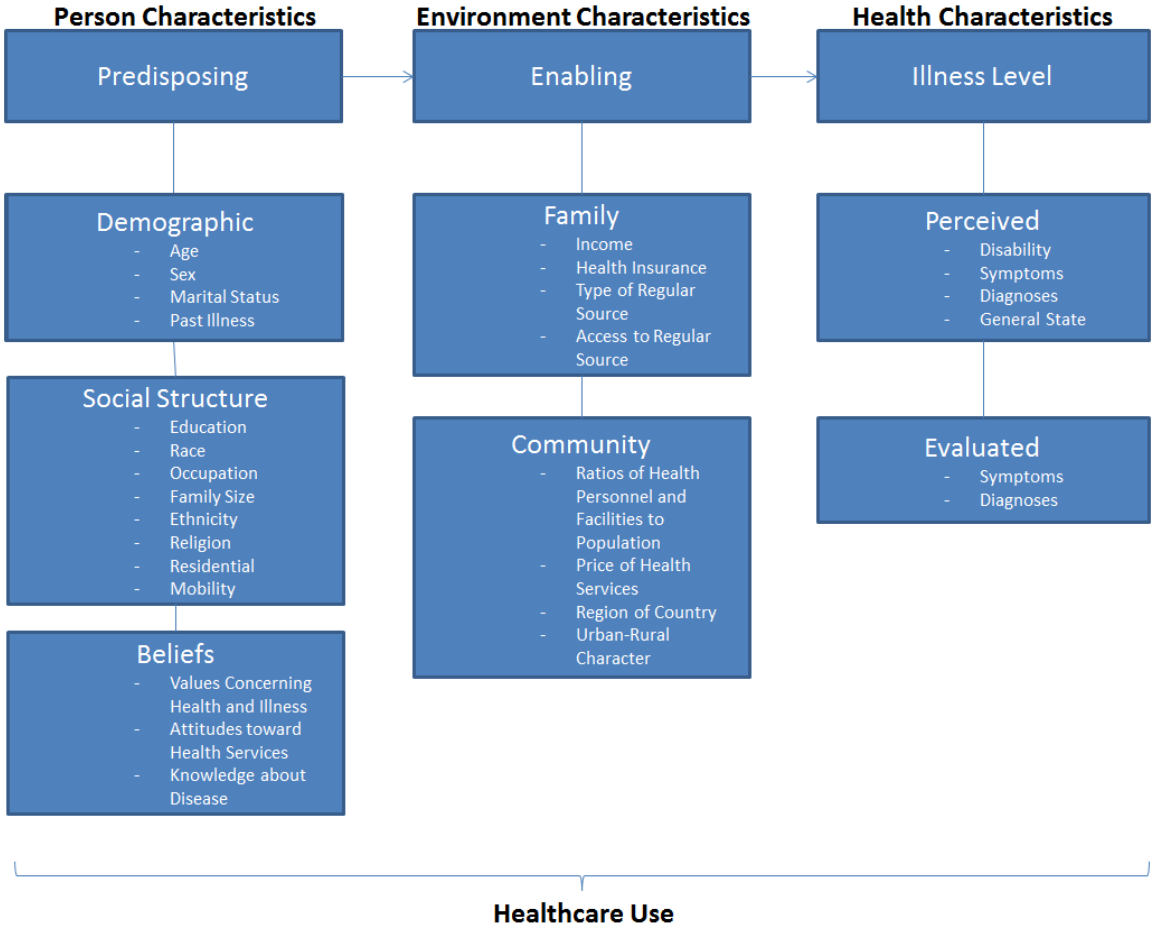


*Figure 2: The Behavioral Model of Health Service Use (Andersen & Newman, 2005)*

## Method

To answer the central question of this research, the research design consists of a literature study, retro perspective study and a prospective study. The following sub-questions have been researched:

1. In which way is the market of the curative mental healthcare organized over de past five years? (financer/insurer)
2. Which contracted curative mental healthcare had the health insurance company in their core regions over the past five years? (Supply/Manager)
3. Which supplied curative mental healthcare had the health insurance company in their core regions over the past five years? (Supply/Doctor)
4. Which realized demand of curative mental healthcare had the health insurance company in their core regions over the past five years? (Demand/Patient)

5. What was the potential demand of curative mental healthcare based on the health insurance company's population characteristics? (Demand/Insured)
6. In which way the curative mental healthcare budget can be divided, whereby the supply and demand match in the region, concerning healthcare providers in the core region for 2016?

For each sub-question the best method is investigated and chosen. Some changes in laws and regulations and other factors have influenced the sub-questions. Therefore, a number of important decisions and changes have been made in the sub-questions, affecting the results[1].

Data which is needed for this study is collected from the database of the health insurance company. The programme SAP BusinessObjects has been used to analyze the information management.

## Mental healthcare from 2011 till 2015

This part will explain important changes in the curative mental healthcare in the period from 2011 till 2015. Insured under the eighteen and who using the curative mental healthcare are no longer covered under the Health Insurance Act from 2015 onwards. In order to increase the comparability between the relevant years, only insured above the age of eighteen will be investigated. However, the database of the health insurance company has split insured under eighteen and insured older than eighteen only from 2012 onwards. Therefore, the number of insured in 2011 includes the insured under the age of eighteen.

Changes in main diagnoses covered by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) can lead to changes in the realized healthcare costs and in the percentage of insured with healthcare use. Insured with adjustment disorders (in Dutch: aanpassingsstoornissen) do no longer appear in the database of the health insurance company from 2012 onwards. This is in contrast with insured suffering from somatoform disorders and / or eating disorders, who appear in the database of the health insurance company from 2012 onwards

In the period from 2011 till 2013 the curative mental healthcare existed of primary and secondary healthcare. Since 2014, the curative mental healthcare exists of a nurse practitioner (in Dutch: POH-GGZ), the generalistic basic mental healthcare (in Dutch: Generalistische Basis Geestelijke Gezondheidszorg (GBGGZ)) and the specialized mental health (in Dutch: Specialistische Geestelijke Gezondheidszorg (SGGZ)). The new structure may lead to substitution of the generalistic basic mental healthcare to the nurse practitioner of mental healthcare. Also, substitution can occur from

[1] See appendix 1 for a more comprehensive explanation

the specialized mental health to the generalistic basic mental healthcare. If substitution takes place, there may occur a decrease in the costs of care. Because of changes in the supplementary insurance, only the numbers of treatments and realized healthcare costs covered by the basic insurance (in Dutch: basisverzekering) are included in the analysis.

In 2012, the personal contribution (in Dutch: eigen bijdrage) for insured might had a great effect on the healthcare utilization of curative mental healthcare, because the major increase of personal contribution. The own risk (in Dutch: eigen risico) doubled in the period from 2011 till 2015, which also might have affected healthcare use in the curative mental healthcare. A plausible hypothesis is that people stick to the primary healthcare for a longer time, because the nurse practitioner of mental health care has no deductibles or personal contribution.

Because of the delay between the delivered care and the invoice of the healthcare at the insurer, only the date of delivered healthcare in 2011, 2012 and 2013 are representative for analysis. For 2014, only the numbers of the nurse practitioner of mental healthcare are representative for investigation. To compare the supply and demand in 2015, the realization of 2013 is translated into the expected demand of 2015.

Due to the representation model, the supply of the health insurance company in the period of 2011 till 2013 is regional indistinguishable. For this reason this period will be excluded for the analysis. From 2015 onwards, the health insurance company is able to track the allocation of the budget (production agreement) per location of a healthcare postcode level. For this reason, only the supply of 2015 will be taken into account in this analysis.

In the years 2011 and 2012 there has been a transfer rate. To compare these years better with each other, the transfer percentage is excluded from the realized demand. The revenue allocation is not included in the analysis because it is settled at the macro level.

## The demand of mental healthcare

The analysis over the period 2011 till 2013 shows that realized healthcare costs and the number of insured in the curative mental health has declined in the region Twente. Hereby a sharp decline can be seen in 2012. The region Haaglanden shows an increase in the realized mental healthcare costs and a decrease in the number of insured in the curative mental healthcare form 2011 till 2013. Also this region has a sharp decline in 2012. The decline in 2012 in both regions can be explained by the changes of the personal contribution that took place within the laws and regulations of the curative mental healthcare. However, it cannot be read from these numbers if stabilization took place from

2013 in healthcare use of the insured, because the realization of 2014 is not representative and the data of 2015 are still unknown.

Looking at the reform of the curative mental healthcare in 2014, the demand could be affected in 2014. An analysis shows that it is possible that substitution takes place from the GBGGZ to the nurse practitioner of mental healthcare. As a result, it is likely that the demand in 2014 declines in the GBGGZ. However, this does not mean that this will reduce the realized healthcare costs, as SGGZ has the greatest impact on costs. In addition healthcare which was covered in the supplementary insurance moved to the basic insurance from 2014. For this reason, an increase in the number of treatments and the realized cost of care within in generalistic basis mental healthcare is expected.

To compare the supply and the demand of 2015, the expected demand of 2015 is predicted. For the expected demand in 2015 the starting point is the realized healthcare in the year 2013, because the data of this year are visible for 99 percent. Several adjustments and assumptions have been made for this transformation.

The first correction is a mutation of the number of insured from 2013 to 2015 at the municipal level. Therefore the realization of 2013 is corrected for double declarations that were present in 2013.It is examined whether there has been a decrease or an increase within the two years. The difference in percentage between these two years is multiplied with the realized costs in 2013. As a result, the amount of 2013 has been mutated to the amount of 2015 for insured transactions.

Additionally, the health insurance company has a strong increase in the number of minimum contracts in 2015, whereby additional demand is expected. For this additional demand a correction is made to the amount of 2013. Per claimants of a minimum contract the health insurance company gets an amount of 400 euro's assigned for the additional demand, which is expected for this population. The correction of minimum contracts will therefore well covered by region and municipality, and not at Zip code level.

The inflation, which took place in the period from 2013 till 2015, is not included. After consultation with the financial expert and healthcare purchaser it has become clear that the realized healthcare of 2013 has no adjustment for inflation due the substitution effect. If substitution takes place, it is plausible that the mental healthcare has become more efficient. This efficiency streaks away the inflation. There may have been two substitution effects. The first is the shift of insured between secondary mental health care (SGGZ) and primary mental health care (GBGGZ). The care in the GBGGZ is generally much cheaper than in the SGGZ. The second substitution effect is the shift of insured of primary mental health care (GBGGZ) to the nurse practitioner of mental health.

In comparison with the realized healthcare costs of 2013, 2015 represents a slight increase in Twente and a slight decrease in the region Haaglanden.

For the expected number of insured in the curative mental healthcare in the year 2015, the number of 2013 has been corrected for the insured mutations. This shows that a slight increase occurs in the number of expected insured in mental healthcare from 2013 to 2015 in both regions.

It is remarkable that the number of insured at the health insurance company in the region Twente and the Haaglanden decreases in 2015 compared to 2013, as shown by the analysis. However, during this period the number of insured using curative mental healthcare will grow instead.

An analysis of population characteristics per region shows that the years 2011 till 2013 have no major differences and the years are comparable. The average cost per insured vary, but without a trend. The realized healthcare costs in the period from 2011 to 2013, are not influenced by the population characteristics of age, gender, social economic status (SES) and urbanization. The probability that an insured is one year in the curative mental healthcare is the greatest. If an insured is more than three years in the mental healthcare, this can be a good predictor of healthcare costs in coming years (de Bruin, 2015).

## The supply of mental healthcare

At this moment, the health insurance company has only insight in the Diagnosis Treatment Combinations (DBC) (in Dutch: Diagnose Behandeling Combinaties) that have been submitted. Diagnosis Treatment Combinations is the manner how mental healthcare can be claimed at the healthcare insurer. The information of the DBC is used for the realized demand. Because the health insurance company has no other information in de database of the DBC, the delivered healthcare is the same as the realized healthcare of mental health.

To determine whether the delivered care (declared DBC) is also the realized demand of the patient, it is important that a will be made comparison between the realized demand and the delivered healthcare. Since 2014 the health insurance company has the possibility to see the separation between the direct and indirect time, but this information is still not present in the database. However, it is important that such separation will be added to the database in the future, since up-coding may affect the image of the realized healthcare. If many healthcare providers use up-coding, the expected demand will be higher than the estimated necessary demand.

To compare the regional demand of 2015 with the regional supply of 2015, it is important that there is regional insight in the supply of 2015. The supply includes institutions, independent diagnostic

center (in Dutch: zelfstandig behandelcentrum (ZBC)), self-employed and non-contracted healthcare. The mental healthcare institutions have the greatest impact on the overall realized healthcare costs. Healthcare purchasers can control the institutions the best.

## The distribution of the purchasing budget

There is a remarkable difference between the demand and supply. Probably, this difference can predominantly be explained by the allocation of the supply between the locations of the healthcare provider. Until now, this allocation had no control, which makes it possible for healthcare providers to make only a rough estimate of the allocation. Through a large number of locations and the general allocation of the healthcare provider, this can lead to very large differences in the demand and supply of mental healthcare.

To distribute the procurement budget of 2016 over the regions, the contracting space will be determined. The contracting space means the amount that should be reserved for those insured in a given municipality. The contracting space is only meant for the healthcare institutions, since purchasers have most control there. It is important that this amount does not have to be delivered in the same town. The budget of the independent healthcare providers and non-contracted care is deducted from the projected demand for 2016. The independent healthcare providers are not included in the contracting space, because they are routinely contracted by TOZ, a department within the health insurance company. This shows that the supply of Twente in 2016 rises. In region Haaglanden it exceeds the supply of healthcare institutions (and rises).

A feasibility test has been created to determine in which way the budget can be used effectively across the regions and whether the health insurance company can satisfy with the new budget. The feasibility test is created and performed by purchasers, which showed the realized costs of mental healthcare in a community. Next to this, the share of an institution in numbers of insured and budget is calculated in a municipality. The numbers of the feasibility test are compared with the production agreement in 2014, production agreement in 2015, and production monitor

The results of the test show that the budget of the health insurance company is very sharp inserted for 2016. In general, the prediction from 2013 to 2016 of the realized healthcare is good. However, if the health insurance company analyzes at the institutional level, the forecast can vary widely.

Despite the health insurance company having the process of information management embedded in healthcare procurement model, which is a positive development, there are some areas for improvement. The process of converting the data into management information from a national level

to the regional level can be more efficiently. The health insurance company suggests that the introduction of a management information programme will reduce the problems surrounding the management information. However, some problems may persist after the introduction of SAS-VA.

## Discussion

For this research, the discussion is of importance because some numbers are not definitive, but will be included in the conclusion. Therefore, the main issues will be discussed in this discussion. Firstly, the adjustment of the demand in 2013 to the demand in 2015 is expected to be a good prediction on municipality level. However, it can be hard to use the converted information of the expected mental healthcare demand at institutional level. This is because the predictions at this level are less reliable and small adjustments can have a big impact.

In addition, in this study the expected demand for 2016 is based on the budget from 2016.If the budget was inserted higher, the expected demand will also be higher. Hereby the expected demand in 2016 is a less objective picture.

Another point of discussion is the supply being analyzed from the Zip code of the healthcare institution and the demand being analyzed based on the zip code of the insured. This difference can create a difference between the demand in 2015 and the supply in 2015.

Another point of discussion is the reliability of the data being used in the offer agreement. The data are considered as the truth for this research. However, it appears that the offer agreement is not necessarily controlled by the health insurance company and therefore the reliability of these data cannot be determined. The allocation of supply to locations within the institutions is often globally and sometimes not being done by the healthcare providers. Because of this, large differences may occur in the analysis between supply and demand. Finally, the business analyst has estimated the non-contracted healthcare in 2015 from previous years. In this study, these numbers are considered as the truth and may include some error margins.

## Conclusion

The analysis shows that there is a big difference between the supply and demand in both regions. To purchase mental healthcare in an effective manner, it is important that the health insurance company determines a regional budget based on the realized demand from the past. An advice to the health insurance company is to establish the budget on the basis of regions rather than issuing budgets by result responsible teams. Next to this, a further analysis is desired to check whether the health insurance company has to deal with up-coding.

To purchase healthcare efficiently, the advice is to implement a comprehensive data management system, through which mental healthcare providers and the health insurance company can exchange necessary information. In addition, it is important that the areas of improvement should be tackled. Next to this, the supply of mental healthcare should be assigned in a different way among the locations of the healthcare provider. Improvement can occur when the health insurance company bases the budget allocation on a regional level, instead of basing the budget allocation on the given numbers of the mental healthcare provider. The allocation should be based on the share of the realized healthcare of a healthcare provider in a region.

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## Appendix 1

| Original situation | Changes and/or processes | New situation |
|---|---|---|
| **In the research all insured will be included who are treated in the curative mental healthcare in the years from 2011 till 2015.** | Insured in the curative mental healthcare under eighteen are no longer covered under the Health Insurance Act from 2015 onwards. | To increase the comparability between the relevant years, only insured above the age of eighteen will be investigated. |
| **The agreed supply in the period of 2011 till 2015 is included in the research.** | In the period from 2011 till 2013 the representation model were applied. Since 2014, the representation model is expired, which changed the method of healthcare purchasing. | Due to the representation model, the supply of the health insurance company in the period of 2011 till 2013 is regional indistinguishable. For this reason this period will be excluded for the analysis. |
| **The agreed supply in the period of 2011 till 2015 will be analyzed regionally.** | Since 2015, mental healthcare providers should allocate the supply among the locations of the healthcare provider. | From 2015 onwards, the health insurance company is able to track the allocation of the budget (offer agreement) per location of a healthcare postcode level. For this reason, only the supply of 2015 will be taken into account in this analysis. |
| **The demand in the period of 2011 till 2015 is included in the research.** | There are delays between the delivered care and the invoice of the healthcare. This is party due the long duration of the mental treatment. | Because of the delay between the delivered care and the invoice of the healthcare, only the date of delivered healthcare in 2011, 2012 and 2013 are representative for analysis. For 2014, only the |

| | | |
|---|---|---|
| | | numbers of the nurse practitioner of mental healthcare are representative for investigation. To compare the supply and demand in 2015, the realization of 2013 is translated into the expected demand of 2015. |
| **This is not determined in the original situation and became clear during the research** | There are changes in the supplementary insurance in the period of 2011 till 2015. | To increase the comparability between the relevant years, only the number of treatments and realized healthcare costs covered by the basic insurance are included in the analysis. |
| **This is not determined in the original situation and became clear during the research** | Contract of the independent healthcare providers are without the numbers of treatments. Contract of mental healthcare institutions are with the numbers of treatments. | The agreed number of treatments are not included in the research. Only the agreed budget is included in the research. |