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Traffic Calming as Retail Planning

THE CASE OF NØRREBROGADE

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Abstract

Traffic calming is often recognized as an effective policy to create sustainable and vibrant urban environments. The techniques of traffic calming does however challenge the often assumed aspect that an effective accessibility for cars is essential for successful retail spaces. By observing the retail mix before and after the implementation of traffic calming on a Copenhagen high-street, Nørrebrogade, as well as investigating the perceptions of expected and actual impacts from traffic calming by different stakeholders, the thesis provides a broad perspective on the relation between traffic calming and development of retail structures. The thesis firstly shows that the different assumptions of the impacts from traffic calming is based on different understandings of what attracts customers, secondly that the traffic calming has been paralleled by a considerable high percentage of business circulation, thirdly that the majority of retailers, four years after the completion of the project, has a positive perception of the retail conditions of Nørrebrogade, and fourthly that the perceptions of retailers although differs between retail categories. With these aspects in mind, traffic calming is discussed as a policy tool for retail development.

Key words: traffic calming, retail development, retail planning, urban transportation

Number of words: 18.326

Table of Content

1. Introduction

Increased public awareness about problems caused by modern car use on environmental aspects and the livability of cities has led to a rising critic against the domination by the car in urban environments. This has caused urban planners to seek for new planning methods to create environments that offers urban spaces that is not planned based on the needs of cars, but instead after the requests from human persons. One such technique is traffic calming.

Traffic calming as a concept summarizes a mix of techniques to reduce the domination of cars in the urban space, and instead prioritize pedestrians, cyclists and transit usage, depending on the project, and to overall improve urban qualities. It can be done through restrictions for the car traffic, widening of sidewalk, installation of separated bicycle lanes, or by other objectives and combinations that calms the traffic and shifts the priority order (Newman & Kenworthy, 2014).

A common assumption is that a good accessibility for cars is necessary for urban commercial businesses such as retailing to be successful, and that traffic calming thus would damage retail conditions. However, while some argues that this is the case, other argues that successful business conditions is created by urban liveliness, and that traffic calming therefore not only is a technique to improve the urban qualities, but also to create attractive and successful retail spaces.

On the inner-part of Nørrebrogade, the main-road of the dense inner-city area Nørrebro in the Danish capital Copenhagen, a traffic calming scheme was implemented and finished in early 2012. In this project cyclists, pedestrians and buses was prioritized while restrictions was implemented for car usage, with, for example, bus sections prohibiting motorists to use the street for passing through. Today, Nørrebrogade has become one of the city's prides, with the up to four meter wide separated bicycle lanes stretching along each side of the road, being a common objective as a representative for the Copenhagen context. However, a question has risen about the projects impact on retail conditions on Nørrebrogade. While some argues that it has damaged retail conditions, other argues that it has improved.

In this thesis, the development of the retail structure on the inner part of Nørrebrogade (stretching from Dronning Louises Bro to Kapelsvej/Peter Fabers Gade) will be investigated in relation to the traffic calming project.

1.1 Purpose and Research Questions

The overall purpose of the thesis is to investigate how traffic calming, as a technique to reallocate urban space in favor of cyclists and pedestrians, can affect the retail structure and retail development. The purpose is also to investigate different perceptions of how traffic calming can affect the retail structure and retail development, and which elements it is that is perceived to impact on what.

The focus on Nørrebrogade as a case study is based on two overall aspects: Firstly, the quantity of cyclists using Nørrebrogade after the traffic calming each day, in average 42.000 in 2014, is considerable high. Above that, the width of the bicycle lanes, ranging from 3 to 4 meters (City of Copenhagen, 2013), is also notable high compared with other cities. The implemented restrictions for car traffic was also considerable, since measurements has shown that the car traffic was reduced with 60 percent after the implementation (City of Copenhagen, 2013). How these conditions and changes impacts the retail structure and retail development, is of great interest to deepen the knowledge about how retail development is related to transportation and street life. *Secondly*, one of the main official purposes of the project is that Nørrebrogade should evolve as a "shopping strip", as it is stated: "…where it is nice and exciting to be, safe for cyclists and pedestrians to travel, and with a good accessibility for bus transit and buss transit users" (City of Copenhagen, 2006) [my translation]. In the ambition of the City of Copenhagen there therefore seems to be a strong connection between the prioritization of cyclists, pedestrians and busses on the one hand, and the retail conditions on the other.

With these two aspects in mind, Nørrebrogade constitutes an appropriate case study for the purpose, and the ambition is that it should be interesting as a study of Nørrebrogade but also that it should provide new knowledge on the relation between pedestrian and bike friendly traffic planning on one side, and retail development on the other.

The research questions is as following:

1. How has the retail structure and retail development along Nørrebrogade changed with the city's prioritization of bicycles, pedestrians and bus transit?
2. Which elements of the retail structure is affected by this type of traffic prioritization and how?
3. How did the City of Copenhagen intend to use this traffic prioritization as a tool to influence the retail structure?

The three questions are divided in three different themes and the answer to them will provide knowledge of different aspects of the development of the retail structure. The first question surrounds the *actual change* and is answered through two observations where the businesses along the inner part of Nørrebrogade has been noted and categorized. The first observation was done through Google Street View photos from April 2009, and the second was done through an on-site observation conducted in December 2015.

The second question is answered by investigating *perceptions* by different stakeholders. The stakeholders are firstly the retailers themselves, which has been investigated using a questionnaire. The second stakeholder is *Nørrebro Handelsforening* (English: Nørrebro Retail Association), which is a retail association covering businesses in the Nørrebro district. Their perceptions has been researched by looking at publications in their website archive. The intention is that the investigation of these stakeholders will reveal perspectives of how traffic calming is perceived to impact and on which elements.

The third question, regarding the intentions by the city, has been investigated in an interview with two Copenhagen officials who has been working with the project.

1.2 Disposition

The thesis consists of seven chapters. In the first, *Introduction*, the subject has firstly been introduced, secondly has the purpose and research question been presented, and finally has the research question been operationalized with short description of the data collecting methods and data delimitations. Chapter number two, *Literature Study – Retail and Transportation*, aims at providing a better knowledge of urban retail development as an academic subject, and also to discuss how traffic calming and retail development could be expected to relate, based on earlier studies on the subject. The third chapter, *Approaching the Case Study – Methodological Choices*, provides a description on the methodological basis the investigation design is based on, as well as a discussion about its relevance. In the fourth chapter, *Copenhagen and Nørrebrogade*, a background to the Nørrebrogade project as well as the traffic context of Copenhagen is provided. Some findings about impacts from the traffic calming found by the City of Copenhagen will also be presented. The fifth chapter, *Data Results*, will consist of the results found in the data collection. These will be presented and shortly discussed. In the sixth chapter, *Data Analysis*, the findings will be discussed in comparison to each other and also with the literature study. Based on this will the research questions be answered and conclusions drawn. This will constitute the last chapter of the thesis, *Conclusions*.

2. Literature Study - Retail and Transportation

2.1 The Logic of Attracting Customers

Since the days of Christaller the question of retail localization and customer attraction has been a contested academic field, with various conflicting explanations and theories (Brown, 1993). Christaller constructed his own theory, the central place theory, with the purpose to compose a general, positivistic law on the spatial distribution of towns and settlements over rural fields (Brown, 1993; Wood & Roberts, 2011). He based the theory on an abstraction of an isotropic plane where population was evenly distributed over a rural landscape, and where travel time and cost of travel was equal to distance, independent of road access, congestions or other factors (Brown, 1993; Wood & Roberts, 2011). However, even though the context of the theory is inherently different than the context of the thesis, it does provide a logic of the question on customer attraction that visualize an important aspect of the thesis, namely that the perception of the impacts from traffic calming in general is different and that the difference is based on conflicting assumptions of how customers are attracted.

Christaller founded his theory on a twofold logic. Firstly he assumed that the decision of customers of where to perform their shopping was entirely based on which center that could offer the easiest accessibility yet the demanded goods. The accessibility, however, was *only* measured in distance, and distance was also equal to time. His assumption of where customers performed their shopping was thus that they always would chose the closest shopping center possible, since this meant that this area also could offer the easiest access, and the best accessibility (and thus the cheapest transportation cost, in according with the cost-minimizing principle Christaller assumed) (Brown, 1993)

Secondly he meant that the spatial relation between centers of different sizes would be based on the *threshold* and *range* of the goods offered by the centers (Brown, 1993; Wood & Roberts, 2011). Centers offering *higher-order goods* (which means more expensive goods that are purchased rarely, such as cars, furniture and electronics) and thus has a high *threshold* (the needed number of customers within its catchment area to supply its business), and a high *range* (the distance customers are willing to travel to purchase the demanded good) will thus be distributed infrequently on the map. This because Christaller assumed a perfect market-reality, and that retailers thus always locates to the optimal location in terms of avoiding competition of catchment-areas. Which, in its turn, leads to the fact that centers offering goods with a high

threshold is spatially distributed infrequently over the map, in order to avoid the competition with centers offering the same goods (Brown, 1993; Wood & Roberts, 2011).

For centers offering *lower-order goods* (which means cheaper goods that are purchased often, such as milk and bread) the spatial distribution is the opposite. Since customers are willing to travel shorter distances to purchase this type of goods, and that the threshold thus is lower, centers only offering this type of goods will be spatially distributed over the map more frequently. The result from the logic is thus that there will be a spatial distribution pattern with a four-layer center hierarchy ranging from regional capitals which threshold stretches over larger multiple medium and small-sized centers, to village centers only covering neighboring areas (Brown, 1993).

Since neither of these factors is changeable, it can be said that Christaller founded the theory on a static and calculable understanding of customer's decision of shopping areas, which is assumed to only be based on a pre-defined interpretation of accessibility.

However, even though the logic provided by the theory does visualize an important aspect in the subject of the thesis, there is in fact nothing from the context of the theory that is usable to understand the problem of the thesis. Although, it can be noted that the logic of the theory was recognized by Berry and Garrison to be applicable also in the internal order within cities, and that the spatial patterns described above for rural areas was found to be paralleled in cities by a pattern with a "numerous small, neighborhood shopping districts selling low order, convenience goods to a local catchment area, and […] a limited number of large, regional shopping districts retailing high order, comparison goods to a citywide catchment" (Brown, 1993, p70).

The usage of the logic for the thesis becomes clear when its foundations is contested by another aspect that other researchers emphasize to be important for the decision by customers of shopping areas, namely the attractiveness of the retail areas. The basic idea of this is that shopping is not a purely economic activity, instead, as is emphasized by Barata-Salgueiro and Erkip (2014, p7), has shopping become more of a "leisure-activity in itself". In a study from larger cities in the UK on customer's willingness to travel further distances to access retail spaces that they considers to be more attractive than others, Dennis et al (2002) found that attractiveness contests the very logic of Christallers theory. This because they found that customers emphasize attractiveness as an aspect above accessibility of where they perform their shopping, and that the static understandings of spatial patterns in Christallers theory needed to be questioned.

2.2 Attractiveness and Accessibility

For the thesis the important aspect of the theory is to find out how the logic of Christallers theory, and how the complementation of it with the question of attractiveness, is represented in the perceptions of the different stakeholders. How is the logic of accessibility represented? How is the emphasizing of attractiveness represented? And how are they both perceived to be affected by traffic calming? However, in order to further discuss the theoretical foundations of the empirical case, we need to understand the aspects that has been shown to influence both the attractiveness and accessibility, and also to understand how this can be affected by traffic calming.

Overall, the literature offers two perspectives of what it is that constitutes attractiveness, and how this is related to accessibility. One is emphasized by Hass-Klau (1999), who studied factors that influences attractiveness of inner-city environments in German larger cities. In it he observed that the success of retail areas seems to be based on the frequencies of human activities and thus the potential customers in the area. This was studied through measurements of social activities such as restaurant visits, shopping, walking and meeting friends in different retail areas. Similar conclusions is also acknowledged by Teller & Reutter (2008), Mingardo & Meerkerk (2012), and Dennis et all (2002), who all has observed in different western countries, however all in a context of a larger city, that successful retail conditions is created by attractive urban atmosphere. However, even though Hass-Klau (1999) and Mingardo & Meerkerk (2012) admits that a certain amount of parking supply near-by retail areas that also acts as regional centers is perceived to be positive by customers (Hass-Klau) and to have a positive impact on sales revenue (Mingardo & Meerkerk), they all draws the conclusion that the impact from this is sheltered by the impact from attractive retail spaces. Out of this Hass-Klau (1999) also draws the conclusion that an effective retail planning should focus on creating livable environments rather than attempting to satisfy retailers demands.

Although they are less common, there are another group of researchers emphasizing the accessibility of cars more than the attractiveness of the retail spaces. These implicates that underprovided parking demands will cause customers to choose other retail areas to perform their shopping, since the low accessibility for cars will decrease the easiness to access the area (Andreu et al, 2006; Alzubaidi et al, 1997).

2.3 Traffic Calming and Pedestrianization

The most common reconstruction scheme of urban public spaces to be researched in relation to

retail conditions is the impact from pedestrianization projects. Pedestrianization is simply the creation of a "pedestrian pocket", where motorized traffic are forbidden and people can walk from store to store without the disturbance from car traffic (Lee, 2008), which does thus differ from the technique of traffic calming where the ambition more is focused on to calm the traffic, and to change the functional prioritizing. Pedestrianization case studies has been carried out in a number of cities around the world and most often draws the conclusion that it is positive for retailing (Lee, 2008). However, studies on the impact on retail from traffic calming projects is less common, and since the philosophy of the two concepts is different they do not necessarily respond.

In Hass-Klaus (1993) studies of impact on retailing from pedestrianization and traffic calming projects in German cities, he observes a tendency that although traffic calming generates increases in sale revenues, it has a significant smaller increase than the one from pedestrianization. Regarding pedestrianization he found that it is not uncommon that pedestrian flows increases by 20-40% in only one year, and that the sales revenue is reflected by this. This has led to retailers localized outside pedestrianized zones urging town planners and officials to expand pedestrian zones to incorporate their own business in the pedestrian zone. On traffic calming, on the other hand, he observed impacts on sale revenues ranging from no observable effect at all to effects similar to the ones from ambitious pedestrianization schemes. His conclusion is that it seems to be of necessity that traffic calming generates a strong improvement in pedestrian-friendliness for it to have a significant positive impact on retailing (Hass-Klau, 1993). This conclusion is supported by Nielsen (1997) who observes that the scope of car reduction in pedestrianization or traffic calming schemes seems to be paralleled by increases in sales revenue generated by the project.

Hass-Klau (1993) has although observed that the changes in retail related to pedestrianization and traffic calming happens over time, during an, what can be called, *adjustment period*. During this period two major changes happens. Firstly, the changed retail condition will affect different stores differently. This means that while some stores will benefit from the implementation, others will not notice it while some will run out of business. Therefore there will be a time after the implementation where some old stores will be replaced by new stores. And, as he mentions, the fact that some stores survives while some disappears is nothing unnatural. Secondly, the opinions of the project will change during the adjustment time. As he writes, the resistance from retailers and retail associations against planned restrictions for car traffic seems to be so common that it could be mentioned as a "law of nature" (Hass-Klau, 1993, p30). However,

during the adjustment period the opinions of the project tends to change, since the most unsatisfied businesses tends to relocate or close, while the stores that adapts, and the newly established ones, adapts to the new situation and either benefits from it or does not notice any larger differences. In fact has he noticed that the advocacy of a pedestrianization and traffic calming project *after* the adjustment period seems to be just as common as the resistance *before* the implementation of the project (Hass-Klau, 1993).

The adjustment period can, most likely, be seen in two case studies of the impact from traffic calming, one in San Francisco and one from Vancouver. In the first one from San Francisco, that was conducted four years after the implementation, the results found that the great majority was in favor of the project. It was even found that they supported more traffic calming. A common opinion was that the project had induced an economic revitalization of the area through street attractiveness improvements such as better conditions for pedestrians and cyclists, and also through reduced traffic speed (Drennen, 2003). In the other case study from Vancouver, where separated bicycle lanes was constructed and turning restrictions for cars and other traffic calming techniques was implemented, the results that was found was that the great majority had a considerable negative perception. The business owners main explanations to the this was that they perceived that the traffic calming had caused increased traffic congestions, reduced availability of parking spots, and reduced pedestrian safety and that this in its turn had caused a decrease in sales revenue. However, which is the main point, this study was conducted less than a year after the completion of the reconstruction (Stantec, 2011). Which most likely is too soon for the adjustment period to have started.

2.4 Perceptions and Assumptions

It has been shown that one major reason that retailers and retail associations in urban contexts tends to have a negative mindset on plans that aims at reducing the accessibility for cars in fact is that the importance of the car for businesses sales revenue often is overestimated (Bent & Singa, 2009; Clifton et al, 2012; Drennen, 2003; Popovich & Handy, 2014; Sustrans, 2006; Sztabinski, 2009). For the first, it is common to overestimate the percentage of customers arriving by car, but also to underestimate the percentage of customers arriving by bicycle or walking (Bent & Singa; Clifton et al, 2012; Popovich & Handy, 2014; Sustrans, 2006; Sztabinski, 2009). In a case study report of Bristol and Graz, the authors found that retailers estimated that 41 and 58% in respectively city of their customers arrived by car, while the customer survey showed that only 22 and 32% in respectively city had arrived by car. For walking, the situation was the opposite: retailers estimated it to 42 and 25% respectively, while

the customer survey resulted in 55 and 44% respectively (Sustrans, 2006). Thus, a large difference in the estimated habits and actual habits is seen.

Secondly, it is also common to overestimate the amount spent by customers arriving by car, and also to underestimate the amount spent by pedestrian customers or cyclists (Bent & Singa, 2009; Clifton et al, 2012; Popovich & Handy, 2014; Sztabinski, 2009). These studies together offer a compelling result, namely that the spending patterns of people using different modes of transportation is rather similar. While motorists usually spends more money per visit, pedestrians and cyclists visit stores more frequently, and thus, in the end, spends a similar amount or even more.

A common consequence caused by the assumption of the high importance of the car is that, as has been written, retailers often requests a high accessibility for cars to the area where their store are located. One such requests is a high supply of parking spots for cars. Often it is also assumed that without this, the conditions will be too bad to run a business in. This is by Mingardo and Meerkark (2012) called the "no parking, no business dogma". However, in a study they investigated how parking supply is related to retail turnover, through an analysis of 80 retail areas in the Netherlands. In contrast to the dogma, they found that there is no significant relationship between retail turnover and parking supply nor parking tariffs, *except* for shopping areas that functions as regional centers (such as central business district shopping streets, shopping malls, etc).

These study results presented brings the common assumption by shop owners in a new perspective, because, there is in fact no academic proof that motorists would be more competitive than other customers, at least not in urban contexts. From a rational point of view, there should thus neither be any reason to resist traffic calming. However, Hass-Klau (1993) points at three facts of why the resistance is as common as it is. First, the knowledge of these kinds of studies is in general low, which is why it is common to judge from preconceptions. Secondly, for a satisfied business owner the safety of status-que might seem more appealing than the uncertainty of changes, and that this could cause resistance against change. And thirdly, which is implicitly pointed out by Hass-Klau, there is, in fact, reason for some retailers to fear traffic calming. As has been written, one of the aspects of the adjustment period is that some stores will benefit while some will go out of business. It is thus understandable that these type of schemes can foster different opinions from retailers, where some retailers envisions increases in sale revenues while some fears a customer flight, bankruptcy and no income. For urban planners it is though important to ask whether the survival of an established store is more

important than an increase in urban qualities as well as planning for more sustainable transportation habits. As Hass-Klau (1991) writes, the competitive environment in the retail sector, where some will win and some will go out of business, is in fact nothing unnatural.

2.5 Conclusions and Expectations

As has been compellingly clear in the literature study, there is a great opinion within the academics that emphasizes the consideration of attractiveness in order to understand the success of retail spaces, and that there thus is a great need to complement the logic of Christallers central place theory. However, it is important to note some aspects of both attractiveness and accessibility, since both of these terms in fact is relative. Firstly can the attractiveness depend on the accessibility, as implicitly is emphasized by Andreu et al (2006) and Alzubaidi et al (1997). If a shopping area is only accessible by using high-ways, then perhaps that shopping area is not attractive for a person preferring to ride by bike. In the opposite, if a street, perhaps Nørrebrogade, is difficult to access by car, then perhaps it is not attractive for at person preferring to travel by car. However, accessibility can also decrease the attractiveness, as emphasized implicitly by Teller & Reuters (2008), Dennis et al (2002) and Hass-Klau (1999), if the allocation of the space is in disadvantage for the potential customers on the street. The importance of this is to remember that the question of what it is that constitutes attractiveness and accessibility, and how they both could influence on the success of retail spaces, is open questions that will lay basis for further questions later in the thesis. For example, how do the different stakeholder perceive that both attractiveness and accessibility can improve the retailing conditions? And how do they perceive that it affects the catchment-area of Nørrebrogade? And how is traffic calming expected to benefit or disadvantage their situation? Could it perhaps be expected that there will be a conflict between these two aspects?

The literature study does also reveal other questions for the thesis. Firstly, in which degree can the time aspect, the adjustment time, be seen in the empirical data? Can it be expected that this the process has been in accordance to Hass-Klaus findings, that today, four years after the completion of the traffic calming on the inner part of Nørrebrogade, there is possible to see in the actual change of the retail mix that former businesses has closed and been replaced by new? That opinions seems to have changed for the better? If that is the case, can a pattern be seen in the general development of the retail structure?

There is also a question on the estimation of the importance of the different modes of transportations. Can it be expected that either the retailers or Nørrebro Retail Association

overestimates the impacts from motorists, as showed by for example Sztabinski (2009)? If this is the case, what can the data reveal of the background to it?

3. Approaching the Case Study – Methodological Choices

The methodological structure needed to answer the research question is five folded. First, to identify the actual change, it was required to identify the total retail mix along the stretch and also to structure it in categories. Two observations was done, one through an on-site observation in December 2015, and one through the photos of Nørrebrogade from April 2009 from Google Street View. The photos was taken only about six month after the start of the trial period of the Nørrebrogade project, and it is therefore thought that possible impacts from the projects would happen after April 2009, and that this methodology therefore is legit to identify a change. Fortunately, the photos from Google Street View was also of a quality good enough to identify if the business on each address was the same as in 2015, as well as to identify which type of goods that was sold if the business on the address was not the same. If a business moved to another address on Nørrebrogade between 2009 and 2015, or if it had changed the name, it was defined as a new store. This was necessary to simplify the amount of work needed to answer the research questions, and my judgement is that it has not created a false picture in the data. All businesses that had a business open for public, had its front facing Nørrebrogade and had its entrance on Nørrebrogade was included in the observation. The included businesses thus consists of sectors such as retail outlets, restaurants and cafés, drink places, coiffeur, bank offices, money exchange, and so on, but not closed facilities such as offices. The three terms businesses, retails and stores will however be used synonymous in the thesis, unless the opposite is stated.

The categorization of the stores has been based on two aspect. Guy (1998) writes that there are two major schools on categorization of retails. One which is based on the trip purpose of visiting the store (that means, if the stores are selling goods that are bought on a daily basis – convenience – or if it bought less frequently - comparison), and one based on the type of goods being sold. The problem with the first is firstly that eat and drink facilities is not included, and he offers no answers of how to categorize them, and also, which was seen when this categorization was tried, the size difference of the categories became too large, with the comparison-category dominating the category-mix. Therefore, the other school was chosen. This decision was also based on that the City of Copenhagen commissioned a study on the development in employments in different business sectors on five Copenhagen high-streets, one being Nørrebrogade (Damvad, 2011). To be able to compare the answers, and to use a proven

categorization, this has been used. This division had four categories: *consumer electronics, culture, recreation, etc*, *clothing and shoes*, *supermarket and special groceries*, *etc,* and *textile and household equipment, etc*. However, in their study eat and drink places as well as service facilities such as bank offices and coiffeur was not included. Therefore, these has been added in two different categories, *eat and drink*, and *service*. All in all, it is thus six categories. The full category scheme is attached in the appendix.

Finally was the observed data been inserted in an SPSS-document and divided in the categories.

The second methodological task was to identify the perceptions, which, as has been written, has been done with two different stakeholders and two different methodologies. The first step of this was, as has been written, to perform a questionnaire survey with the retailers. The decision to conduct a questionnaire survey is based on the fact that it, as Cloke et al (2004) writes, offer a good possibility to collect large data, to quantify and cross-tabulate it, in order to compare answers based on different divisions. The alternative, to conduct interviews with retailers, would perhaps have given a better knowledge on the situation for a few retailers, but would not offer the same overall picture. To questionnaires was made, one for stores that opened before April 2009, and one for the stores that opened after, including a few different questions about either the impact from the traffic calming or the traffic calming as a localization factor. The design of the questionnaire was inspired by the scheme, recommendations and warnings stressed by Parfitts (2005), and both are attached in the appendix.

The survey was carried through by walking from store to store. The respondents was either store owners, store manager or employees. When it was possible the store owner was the respondent, but if it was not the survey was replied by another. All stores that was open during the survey was asked. The survey was replied by 55.3 percent of the stores (57 stores in number). 29.8 percent of the respondents were store owners, 68.4 store managers, 26.3 other employees, and for 5.3% of the respondents there are no data. During the survey I have also discussed the retail conditions and impacts from the traffic calming with some of the respondents. Some of these comments will be mentioned in the analysis.

The answers from the survey was afterwards inserted in the SPSS-document, and have thus been able to compare between categories.

The perceptions of Nørrebro Retail Association has been investigated by looking at publications in the archive on their website from 2005, when the oldest publications that exist in the archive on idea to implement traffic calming on Nørrebrogade was submitted. The usage of publications

instead of interviews does in this case have the advantage that a memory bias situation is avoided. A person's memory is namely, as Parfitt (2005) writes, unreliable, and thus can interviews (or questionnaires, as the case in her warnings) that focuses on situations and aspects from the past suffer from the bias that it is the respondent's perceptions from the day of the interview, and not from the actual situation, that is represented in the answers.

The last methodological task was to investigate the intentions by the City of Copenhagen. This was conducted through one interview with two city officials who has been working with the project, Anders Ruby Hansen and Klaus Grimar. Both of them are working at the technique and environmental administration, and has been involved in the Nørrebrogade project since the beginning. This interview was made as a complement to the official publications by the City of Copenhagen, where the Nørrebrogade project is mentioned. The reason to do the interview is that in the official publications by the City of Copenhagen, the ambitions about retail is briefly described, while questions about how they should be fulfilled remains unanswered. In the interview, however, this topic was able to discuss more thoroughly. The interview was structured as a semi-structured interview, which means that the interview scheme was planned in advanced although that it was changeable and co-constructed between me as a researcher and the interview respondents during the progress of the interview (Cloke et al, 2004). That means that it only included main topics and main questions, and that this served as foundation for further discussions. The advantage with this structuring is that it enables the interview to be formed by the words and knowledge of the interviewees, rather than the presumptions of the researcher. The interview guide is attached in the appendix.

4. Copenhagen and Nørrebrogade

4.1 The City of Cyclists

Copenhagen is a city famous for its bicycle culture and bicycle infrastructure. Of all trips done every day to work or university located inside the city boarders, 45% is done by bicycle while only 23% is done by car. When only including people living inside the city boarders, the bicycle stands for 63% of the trips to jobs and schools (City of Copenhagen, 2014). The infrastructure includes 368 kilometers of bicycle lanes, most often stretching along both sides of the roads, and so far there are 28 kilometers of “super cycleways” (City of Copenhagen, 2014). It should also be noted that bicycling has a longer history in Copenhagen than in many other cities. During the post-second world war era, Copenhagen as well as other cities attempted to implement a full motorization of the city structure. In Copenhagen however, this work did not fully start until the 1960's, while it in many other cities started during the 1950's, and in that time the bicycle had gained an apparent role in the modern everyday life of the city population. During the 1970's, anti-motorization protest were common, and these protesters were also advocating the bicycles role in the transportation system. These protests gained the politicians attention and since the 1970's the bicycle has been a prioritized mode of transportation (Emanuel, 2012). Today the City of Copenhagen has an ambition to become the best bicycle city in the world, with ambitions to increase the percentage of trips done by bicycle, reduce the trip time for cyclists, expand the bicycle infrastructure and increase the security and sense of security, to mention a few (City of Copenhagen, 2011a). The ambition regarding bicycle is a part of the city ambition to become one of the first CO2-neutral larger cities in the world until 2025 (City of Copenhagen, 2011b).

4.2 Nørrebro and Nørrebrogade

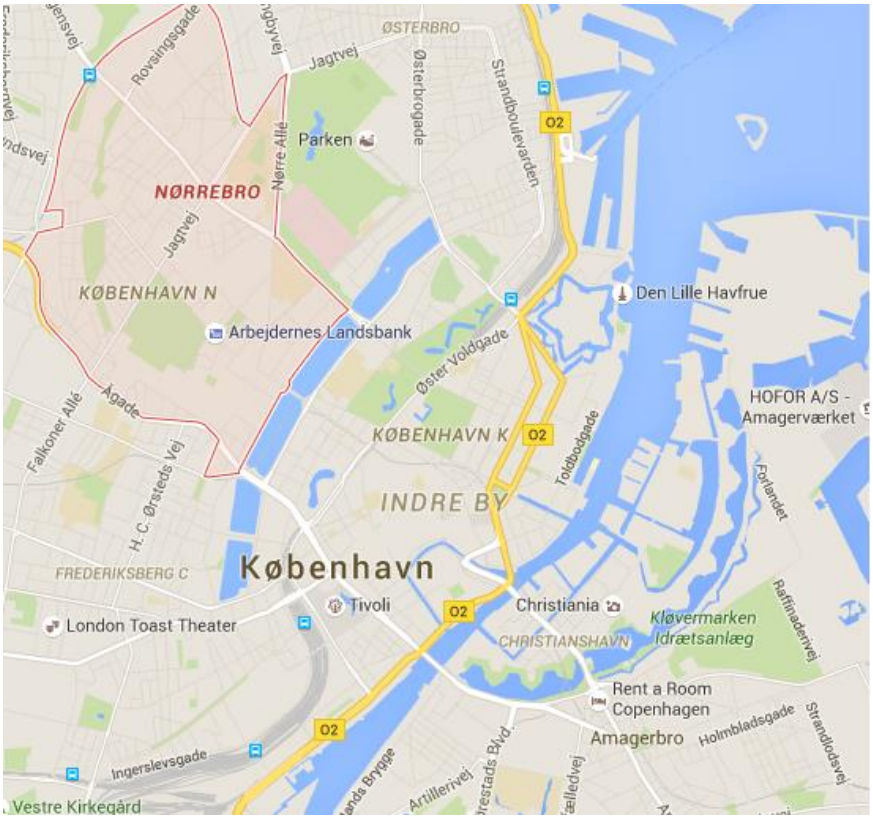

Figure 1. Copenhagen and Nørrebro. Source: Google Maps

Nørrebro district is located just outside the traditional city line, which followed the lakes right next to Inner Nørrebro. Until the area was started to be built in the mid-nineteenth century it was a part of the rural hinterland stretching around the city. From the 1850's, when the district was started to be built, the growth of the area happened in a very high pace. In 1852 Nørrebro had around 10.000 citizens, 52.000 in 1880 and 105.000 in 1901 (City of Copenhagen, 2006). In 2012 Nørrebro had 76.609 citizens and was also the district in Copenhagen with the highest density. One dominant reason for the high density, though, is the limited space for parks and places (City of Copenhagen, 2012a). Since the beginning of the districts construction, Nørrebro has been a working-class neighborhood with not only a high density but also over-crowded living accommodations (City of Copenhagen, 2006). While the living-condition in other parts of Copenhagen increased during the 20th century, the bad conditions on Nørrebro remained. But since the 1970's urban renewal schemes has increased the living standard. Today, Nørrebro has a diverse demography where there are a large mixture in ages, incomes, education and ethnicity, which is reflected in the variety of restaurants, cafés and stores (City of Copenhagen, 2006).

Nørrebrogade has since the starting point been the hub of Nørrebrogade, containing a high share of the districts traffic, retailing and city-life. In the early 20th century, the traffic on the street contained bicycles, trams, pedestrians as well as horses and carriages. During the 1960's the cars increased in numbers all over Copenhagen, and as an attempt to improve the conditions for cars the city replaced its tram system with busses. The rails on Nørrebrogade was thus torn up in 1972 and since then the street has been a main route for the city busses, containing among others line 5, which is the line that carries the most passengers on a daily basis in all of Copenhagen (City of Copenhagen, 2006).

Figure 3. Old photo of Nørrebrogade. Cyclists dominating the street usage. Source: City of Copenhagen, 2006.

In 1982-1984 the first bicycle lanes was built along the street, and the street more or less got the look and allocation it would keep until the Nørrebrogade project started in 2008 (Mortensen, 2009).

Figure 2. Photos of Nørrebrogade from the early 20th century. Source: City of Copenhagen, 2006.

Nørrebrogade is one of Copenhagen's *brogader*, which is a concept of the citys inner-city high-streets located outside the traditional city-line, in the city's *bro*-areas. The Nørre*bro* district is located outside Nørreport (english: north gate), which is located inside the traditional city-line and used to be one of a few gates to access the city. Nørrebrogade is thus not a traditional downtown main-road, with the characteristic of a central business district, and at the same time it is not a suburban high-street.

The impressions from Nørrebrogade is that it is vital, vibrant yet narrow. All facades is covered by store fronts which is mostly occupied by small shops. A walk up and down the streets gives an impression of diversity, both in the mix of businesses and the persons who are using the street. Many businesses seems to be independent with only a few larger chains, there are also many stores selling foreign goods, such as muslim clothing and imported African goods, and also many businesses with foreign names. There are a considerable large number of cyclists on the street, which is hard not to notice, but there are also many pedestrians and busses. On some parts, the car traffic is not insignificant either.

Figure 6. Buses during rush hour. Photo: Tobias Gustavsson.

Figure 7. Nørrebrogade. Source: Google Street View, 2014.

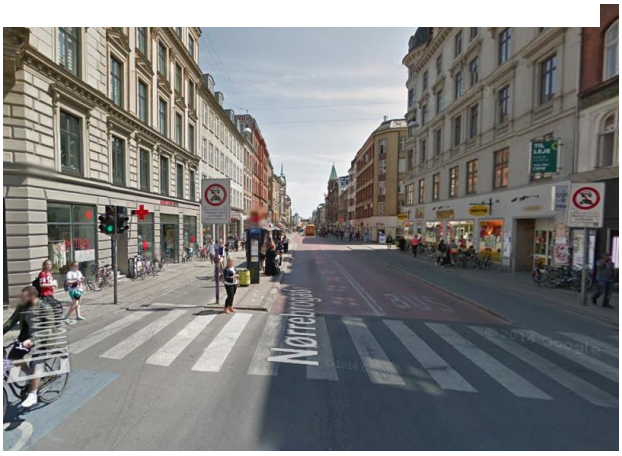

Figure 5. Nørrebrogade. Source: Google Street View, 2014.

Figure 4. Nørrebrogade. Photo: Tobias Gustavsson.

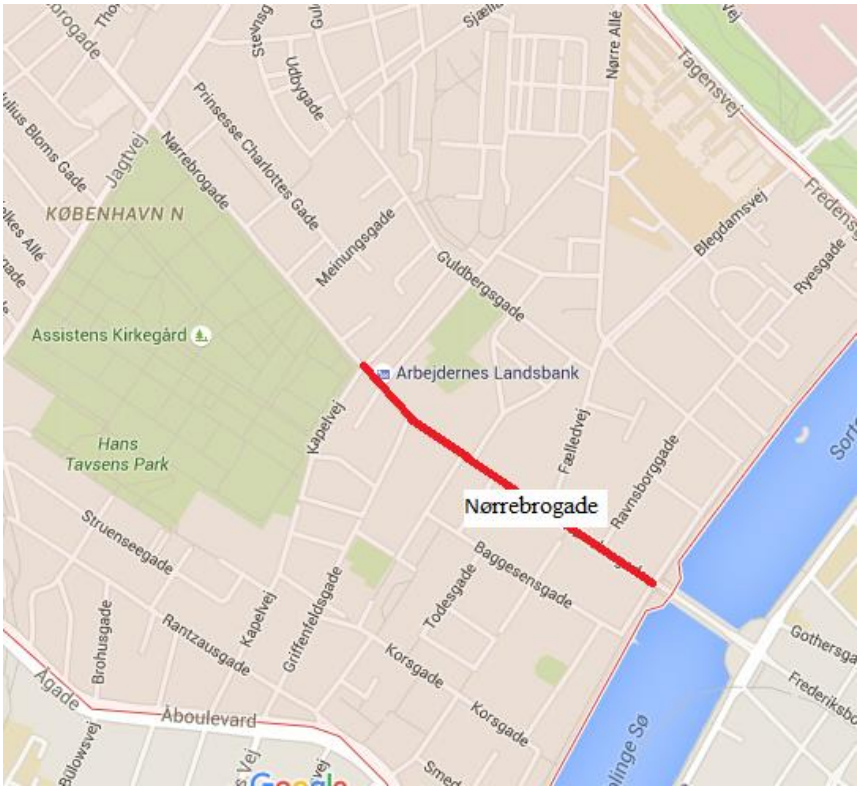

Figure 8. The investigated part of Nørrebrogade. Source: Google Maps.

4.2.1 The Nørrebrogade Project

The idea to reconstruct Nørrebrogade has been a part of several ambitions by the City of Copenhagen. It was first discussed in 2003 when the city in collaboration with the region released a new bus strategy, in it Nørrebrogade was pointed out as one of the main-streets where higher accessibility for busses would have significant positive effects on the overall bus net (Freudendal Pedersen & Koefoed, 2012). However, the city officials also wanted to widen the perspective and therefore ordered a report in 2005 on Nørrebrogades urban-environment and urban-life. In the presented report, Gehl Architects concluded that the street was to narrow to contain the high amount of road users it did, and that this resulted in chaotic conditions for all modes of transportation (Freudendal Pedersen & Koefoed, 2012). In a clearly speaking quote, they wrote that:

> Pedestrians struggles for the space on the narrow sidewalks under noisy conditions, where it is difficult to even talk to each other. The more than 10.000 cyclists bikes dangerously closely on the over-crowded bicycle paths, and for the motorists Nørrebro is a maze most prefer to avoid. (cited in Freudendal Pedersen & Koefoed, 2012, p34)[1]

They also concluded that:

[1] Translation from Danish by the author.

> Nørrebrogade is a unique street with a vibrant urban environment and an enormous potential for development. Though, today the streets seems more as a result out of compromises between numerous opposing desires. (cited in Freudendal Pedersen & Koefoed, 2012, p32)[2]

There was thus an opinion about Nørrebrogade that was chaotic. In 2006 the City of Copenhagen therefore released a project plan for Nørrebrogade in order to solve the problems. There were three overall ambitions stipulated in it: (1) "The urban environment shall be beautified and the urban life enhanced", (2) "The conditions for cyclists shall be improved on congested sections", and (3) "The conditions for public transportation shall reduce the travel time and increase the regularity for busses" (City of Copenhagen, 2006,p5f).[3] It can thus be said that the project plan was based on two major problems and two major solutions. The first (1) included the traffic conditions: cyclists, pedestrians and busses was to be prioritized on the behalf of motorists. The second (2) included the urban qualities of the street: Nørrebrogade should be a more livable street where it would be more attractive to spend time.

The purpose regarding the traffic conditions has a background that can seem somewhat logic: When the plan was written in 2006, Nørrebrogade was on a daily basis used in average by around 16.000 cars, 30.000 cyclists and 26.500 bus passengers (City of Copenhagen, 2006). At the same time, busses had to share the space with cars, and the bicycle lanes was thought to be to narrow. It was thus thought that the allocation between the modes of transportations was unfair and impractical. Nørrebrogade was (and still is) also an important link in both the bus net and bicycle net of Copenhagen, but not for the car net. As been mentioned, the busiest bus line in the city, line 5, which during rush hour drives with 5 minutes interval, goes along Nørrebrogade. Also other busy bus lines goes here, and as can be seen in figure 6, the busses can still today challenge the streets capacity, even though the restrictions for cars today is implemented. Nørrebrogade is also a part of the super cycleway *Ballerupruten* (english: Ballerup route), which connects the suburb Ballerup with inner Copenhagen (City of Copenhagen, 2012c, Supercykelstier.dk). Except for being a part of the super cycleway, Nørrebro is in itself dense, and Nørrebrogade is the natural link for many cycling Copenhageners to access central Copenhagen or to reach a destination within Nørrebro.

The second ambition, the one regarding urban qualities, was from the beginning of the project an important aspect. In the plan from 2006, there were two overall visions written (and these were summarized in the three main ambitions written above):

[2] Translation from Danish by the author.
[3] Translation from Danish by the author.

> Nørrebrogade shall be the gathering hub of Nørrebro, where the Copenhagen pulse is felt, and where it is room for variability, and where Copenhageners and visitors lives and breathes. (City of Copenhagen, 2006, p5)[4]
>
> Nørrebrogade shall be a retail strip, where it is nice and exciting to be, safe for cyclists and pedestrians to travel, and with a good accessibility for bus transit and bus transit users. (City of Copenhagen, 2006, p5) [5]

It is therefore clear that the improvement of Nørrebrogades urban qualities was an important aspect. In 2009 this was also stipulated in the master plan of Copenhagen. In it Nørrebrogade was pointed out as one out of twelve "*strøggader*" (English: *stroke streets*) in Copenhagen (City of Copenhagen, 2012a). The characteristic of a *strøggada* was stipulated to contain high quality conditions for pedestrians, concentration of stores, cafés, restaurants, and other destinations, and an overall calmed motor traffic as well as good conditions for cyclists and bus transit. All of these criteria aimed at making the *strøggade* into urban hubs in their districts (City of Copenhagen, 2012a). Thus, the plan for Nørrebrogade also became part of a larger urban development plan for the whole city.

The opinions on the Nørrebrogade project has however from the beginning been two-sided. There were first people supporting the plans. For example, the Facebook group "Ja tak till bilfri Nørrebrogade" (english: Car-free Nørrebrogade – yes please), had for a while more than 3.000 members, and the plans was supported by the Danish Bicycle Association (Danish: Cyklistforbundet), residents of Nørrebro, and of course officials and politicians in the city administration (Mortensen, 2009). There were however people and organizations strongly disagreeing on the plans. These people and organizations meant that the chaotic traffic conditions on Nørrebrogade best could be handled with other objectives than the one proposed by the city. Among many ideas, Søren Pind, the then sitting mayor of planning and engineering, proposed in 2005 that the bicycle lanes should be removed completely from Nørrebrogade and instead be moved to a paralleling street, which he thought would be better for both cyclists and other road users (Mortensen, 2009). Also others expressed negative opinions to the plans, Mortensen (2009) gives some examples of articles written by residents as well as others who, for example, expressed their fear that the plan would put an end to the retailers along the street, that it would reduce the employee opportunities in the area, and that it would make life harder for families, who, according to the writer, could not perform their shopping without a car. More

[4] Translation from Danish by the author.
[5] Translation from Danish by the author.

will be written about this in the empirical section.

4.2.2 The Implementation

The changing of Nørrebrogade was divided in two phases and was carried through in stages. Phase one covered the part of Nørrebrogade that is located in Inner-Nørrebro (e.g. from Dronning Louises Bro to Jagtvej), and phase two covered the part located in Outer-Nørrebro (e.g. from Jagtvej to Nørrebro Station). The first stage of the implementation of the project plan was a trial period, which started on phase one in October 2008 and successively expanded and in the end covered the whole street in November 2009. During this period bus sections was created which blocked cars from using the street as a thoroughfare passage. Lines was drawn on the roadway to move the bicycle lanes further away from the buildings and therefore release space for the sidewalks, which was widened (Hansen & Grimar, 2015). Nothing was however rebuilt. In the next stage the street underwent the reconstruction. On phase one this happened between September 2010 and January 2012, and on stage two from 2013 to the autumn 2015 (City of Copenhagen, 2013). As has been mentioned, only one part of the first phase is included in the empirical case of the thesis, and therefore the focus onwards will be on the first phase only.

The reconstruction included several elements. On Dronning Louises Bro, the bridge connecting Nørrebrogade with Fredriksbrogade and Nørreport (which was part of phase one of the Nørrebrogade project), both the bicycle paths and sidewalks was widened. The bicycle paths was widened from 2.25 meters to 4 meters in each direction, and does even contain a turning lane on both sides. Also the sidewalks on the bridge was widened to 5.3 meters and benches was installed to make the bridge more vibrant. It has been measured that the amount of people spending time on the bridge, and not just passing through, has tripled since the reconstruction (City of Copenhagen, 2013).

On the part that the empirical case study includes, from Dronning Louises Bro to Kapelvej/Peter Fabers Gade, the bicycle paths was widened from 2.5 meters to between 3 and 3.5 meters, also in each directions. Parking spaces for bicycles has been installed on side streets. The sidewalks on this stretch was not widened everywhere, but after the reconstruction the width is at least 3 meters, and the quality has been improved (City of Copenhagen, 2013). The conditions has also been improved for busses and bus users. First, one bus section has been installed which blocks passing through car traffic, and secondly bus stops has been installed.

On the last part of the first phase, which is not part of the empirical case study, the bicycle lanes

was widened from 2,5 to 3 meters, while the sidewalk on one side (the opposite side is bordered to a cemetery wall) was widened from 3.25 to 6.5 meters (City of Copenhagen, 2013). However, since this part is not included in the empirical case study nothing more will be said about it.

On the whole stretch of the inner part of Nørrebrogade there restrictions for car traffic has been implemented. The main restrictions is the bus sections where it is prohibited to drive with a car, which forbids motorists to drive through the whole street (and therefore eliminates the use of Nørrebrogade as a passing through street for motorists). Secondly the speed limit has been reduced from 50 km/h to 40 km/h, and turning restrictions to access and leave Nørrebrogade has been implemented on some spots. Also, the traffic lights has been adapted to the travel speed of bicycles, 20 km/h, which creates a *green wave* for cyclists. Above this 1.000 on-street parking spots has been erased on the inner Nørrebro, that means, the area around the investigated part of Nørrebrogade (on Nørrebrogade it has actually never been allowed to park, however, as stated by Grimar (Hansen & Grimar, 2015), the edges of the street was de facto used as short time on-street parking frequently before the traffic calming). At the same time, 4.000 parking spots all over Inner Nørrebro was at least planned to be constructed in the plan from 2006, however not on street level (City of Copenhagen, 2006). Thus, the reduction in the accessibility for cars has thus mostly been to decrease the easiness to enter Nørrebrogade by car, and not in fact to make it impossible to access by car.

4.2.3 Measured Impacts

The effects on the traffic has been notable. The number of cars passing Dronning Louises Bro everyday has decreased from on average ca 15.000 per day in 2008 to ca 6.000 per day in both 2011 and 2012, in other words, a reduction of 60%. In all of Inner Nørrebro, there has been a car reduction of around 10%. However it was expected that the car traffic on Dronning Louises Bro would increase again and stabilize at around a 45 percentage reduction since the start of the project. The number of cyclists passing Dronning Louises Bro increased by 10% from the start of the project until 2012, when on average 36.000 cyclists passed there (City of Copenhagen, 2013). In 2014 however, the average number of cyclists passing a measure point on Nørrebrogade was 42.600, which means an even larger increase (City of Copenhagen, 2014). The growth of the bicycle traffic has in fact been steeper on Nørrebrogade than on other main cycle streets of Copenhagen. For example, the bicycle traffic on *Langebro*, a bridge close to the central station, increased from 30.000 per day in 2010 to 33.500 in 2014 (City of Copenhagen, 2010; City of Copenhagen, 2014). Today, Nørrebrogade is the most busy bicycle street in Copenhagen and, according to some, in the whole world (City of Copenhagen, 2014; Mejlvang,

2011).

It has been observed that there has become more people spending time at Nørrebrogade, such as sitting on Dronning Louises Bro or using the outdoor servings along the street, however that the amount of pedestrians using the street for actually walking only has increased on the Dronning Louises Bro-part. The conclusion is thus that the urban qualities has been improved and that people therefore are more eager to use the space provided on it for leisure (City of Copenhagen, 2013). Other effects that has been measured is that the bus travel time along the street has decreased by 10%, that the traffic injuries has decreased by 45% and that the damage degree in general also has declined (City of Copenhagen, 2013).

In 2011 a study was conducted on behalf of the city of Copenhagen where the development of employments from 2005 to 2010 on five different Copenhagen high-streets was examined (Damvad, 2011). The main purpose of the study was to investigate the effects caused by the trial period on Nørrebrogade 2008-2010 by comparing the development with other streets. The results showed that the development in general was more negative for retailing on the inner part of Nørrebrogade than on other streets, but that it differed between retail categories. For stores belonging to the store category *consumer electronics, culture, recreation, etc*, as well as *clothing and shoes*, the development was considerable more negative compared with other high-streets. For stores belonging to the categories *supermarket and special groceries*, *etc,* and *textile and household equipment, etc*, the development was in average better than on the other streets (Damvad, 2011). However, restaurants, cafés, coiffeurs, bank offices and other businesses which not per definition is retailing was not included in the study as a category. Though some of them, such as financial service and travel agencies, was included in the category *other professions*, which in general had a more positive development 2005-2010 then other streets (however, the number of sectors in this category was too large to actually tell anything about the development of sectors included in this thesis) (Damvad, 2011).

4.3 Spending Patterns and Transportation Habits

In 2012 the City of Copenhagen conducted a study on spending patterns by people using different modes of transportation (City of Copenhagen, 2012b). The findings brings perspective to the subject of the thesis. Overall the results was similar to the ones presented in the literature study: while motorists spends more than cyclists per visit, cyclists visit more and in the end spend a similar amount on average. In supermarkets, cyclists spends some more on an average weekly basis than both motorists and pedestrians, and considerable more than transit users. In

the category “other stores”, motorists spends some more than cyclists, and considerable more than both pedestrians and transit users. The difference between motorists and cyclists is however not large in neither of the two categories. For shopping centers, however, there is a considerable difference, motorists spends almost triple the amount as cyclists and transit users, and more than quadruple the amount of pedestrians. In all categories over a year, cyclists consume for 18.1 billion DKK, pedestrians for 12.1, transit users for 9.5 and motorists for 22.1. When only including supermarkets and other stores (that means, not shopping centers), motorists and cyclists constitute a similar percentage of the total sales revenue, around 32 percent each (City of Copenhagen, 2012b).

On Nørrebrogade motorists did spend in average almost double the amount per visit compared to cyclists. However, while cyclists and pedestrians accounted for around 45 percent each of all shop visits, motorists accounted for only around 10 percent, which means that the average spending by cyclists and pedestrians is considerable higher than for motorists. While cyclists accounted for around 45 percent of the total spending on Nørrebrogade, motorists accounted for around 15 percent, pedestrians for around 30 and transit users for around 10. For Nørrebrogade, thus, does cyclists and pedestrians constitute the most important customers in terms of spending, according to the study (City of Copenhagen, 2012b).

5. Data results

In order to answer the research questions and reveal the relation between traffic calming and the development of research structures, the data will in this chapter be presented. First the data on the actual change will be presented. Thereafter, the perceptions of first Nørrebro Retail Association will be presented, and thereafter the results from the questionnaire survey on the retailers perceptions. Finally the interview with Hansen and Grimar will be presented.

5.1 The Actual Change

The results from the observation along the street conducted in December 2015, and from the one done through Google Street Views photos from April 2009 is presented here.

In 2009 there were all in all 103 businesses located along the stretch, in 2015, this had increased to 104. Out of the stores that was located there in 2015, 53.4 percent was also located there in 2009. This means that out of all the stores that was located there 2009, almost half has either closed or relocated. It also means that among the stores that was there in 2015, almost half had opened *after* the traffic calming implementation started.

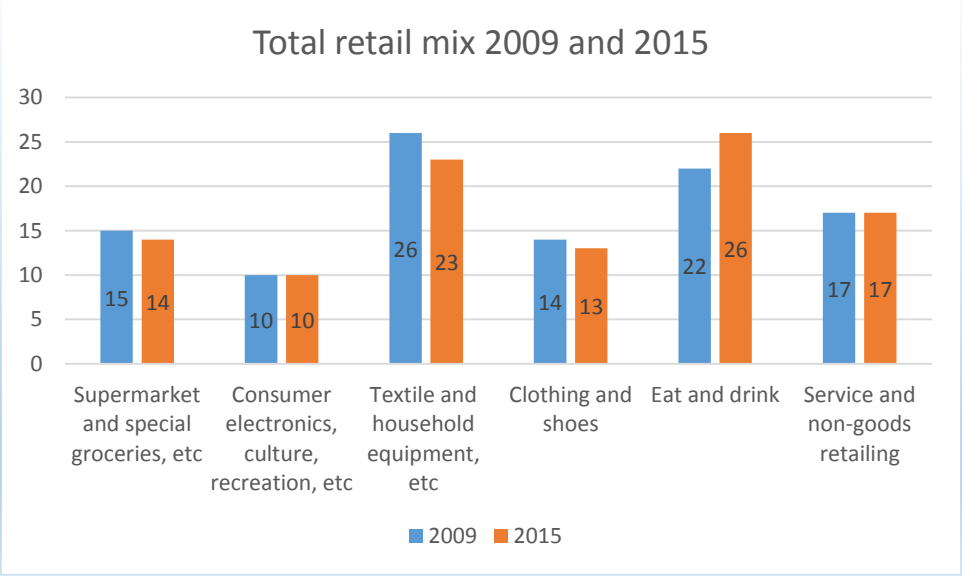

Figure 9. Total retail mix from observations April 2009 and December 2015.

Regarding the retail mix, we can see in figure 9 that there were some less stores belonging to the category *textile and household equipment, etc* in 2015 than in 2009, and that number of eat and drink places had increased some as well. However, the difference is not large, and therefore it can be said that the retail mix (based on the categorization) is rather similar. When we instead look at the business circulation within the categories, that means the percentage of the businesses that has changed between 2009 and 2015, a considerable pattern is visible.

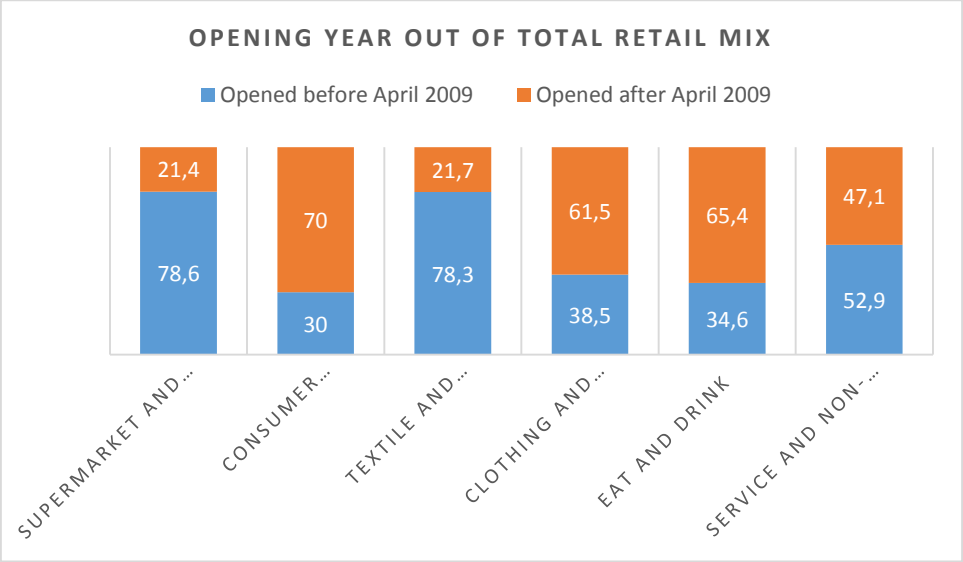

Figure 10. Opening year in percentage within each categories, that existed December 2015

While only around 21 percent of the stores belonging to *supermarket and special groceries, etc* and *textile and household equipment, etc* has opened *after* 2009, 70 percent of stores belonging to the category c*onsumer electronics, culture, recreation, etc*, and 61-65 percent of *clothing and shoes* and *eat and drink* has. There is therefore a large difference in the business circulation between the categories.

To summarize this, it can be said that even though the retail mix has not changed considerably, we can see that the businesses has. We can also see that the development, measured in business circulation, has been different between the categories. However, since we out of this data cannot see similarities and differences between the old and new stores, we can only conclude that the development has been different, and also keep this as an open question to discuss later in the thesis.

Finally, it can also be mentioned that the percentage of business circulation in each categories corresponds to the findings from the City of Copenhagen (2012b) regarding the development within the categories 2005-2010 (although, this only covers cat 1-4, since the last two was not included in their study). The categories that had a negative development measured in amounts of employments 2005-2010, also has had a high business circulation 2009-2015, and vice versa (compare with figure 10).We can therefore draw the conclusion that it is likely that the stores with negative development measured by the City of Copenhagen, also is the ones that has closed or relocated.

5.2 Perceptions about Impacts of Traffic Calming

5.2.1 Nørrebro Retail Association

Nørrebro Retail Association has since the discussion about the Nørrebrogade project started expressed their own perceptions both about the project and also about which impacts it could have on the retail structure on the street in the long run.

The first article published about the project on their website, from 2005, is of interest. When the already mentioned mayor of planning and engineering, Søren Pind, proposed that the bicycle paths would be moved from Nørrebrogade altogether, Nørrebro Retail Association opposed the idea, and wrote that it would cause damage for retailers on Nørrebrogade since people would not be able to use the bicycle to shop there. Thus, even though the opinion by the association during the period most often was car-oriented, they did however not have a negative opinion about the bicycle paths (NHF, 2005).

Nørrebro Retail Association was however not satisfied with the plans that the City of Copenhagen released later. In 2006, they wrote that: "We have seen appalling examples of when urban- and traffic planning has brought comprehensive losses in sales revenue, with business closure as consequence"[6] (NHF, 2006a). Therefore they thought it was important to not change the street in a, to them, bad manner. To them the accessibility of cars was seen as important for the success of the retailers. According to an investigation they referred to, more than 80% of the car traffic in all of Nørrebro had an errand there (which they meant refuted the result from the City of Copenhagen that most of the car traffic on Nørrebrogade was only passing through), and thus, as they wrote, "it must be ensured that these [motorists] can park near-by the stores" (NHF, 2006b).[7] In a statement with the headline "Nørrebrogade as a bicycle street – no thanks" (NHF, 2008e)[8] they wrote that the intentions by the city therefore would make it harder to run a business along the street, since it would make it harder for customers to arrive by car. This was two out of many articles were they stated their opinions on the importance of the car.

The association did from the beginning of the debate often emphasize that Nørrebrogade was unique both as a place as well as a retail strip. They did often write that Nørrebrogade is one of the best retail strips in the whole city (NHF, 2006b). A reason for this, which was pronounced several times between 2005 and 2015, was the diverse character of the street. As they wrote,

[6] Translation from Danish by the author.
[7] Translation from Danish by the author.
[8] Translation from Danish by the author.

the street consisted of four kilometers of retail facade, and that the variations of retail categories as well as mix of ownership and size of the businesses, was unique (NHF, 2007a). However, early on they proclaimed that they thought this was threatened by the plans, and as a consequence, they thought that new stores would open and old one would go bankrupt, with the consequence that the traditional diversity and uniqueness would disappear (NHF, 2007b). This assumed process was articulated in the following quote:

> The new stores, that will be opened, will be prepared for the new situation and adapt to it. But it will in particular be cafés and restaurants, and that kind of businesses, which will dominate the new Nørrebro. The consequence, thus, is that the diversity that Nørrebro is known for, will disappear. (NFH, 2008c)[9]

Thus, their perception was that a new characteristic of the street would be created, and that the new one would contain less retailers selling clothes, shoes, textiles, and other various goods. Instead they thought that the "new" street, after the projects implementation, would be characterized by, what they in another article called, a "caffé latte culture", with a larger range of cafés and restaurants, but also businesses such as ethnic fast food, green grocery's, organic stores and bicycle shops (NHF, 2008b). It was these types of stores only that the association thought had the chance to adapt to the new conditions (NHF, 2008b).

The reason that the association assumed (and still assumes) that the plan by the city will cause the situation described above is expressed several times. First, it is because of the streets catchment area. When people lose the possibility to go there by car (or at least gets a more troublesome time to access by car), the association assumes that customers from other areas than Nørrebro will chose other places (NHF, 2008c). This will also cause stores selling that kind of goods, with larger catchment areas, to close, and that these will be replaced by more local oriented stores, cafés and restaurants, as described above. Also, they did not think that the reconstruction would cause people to change mode of transportation. As said in this quote, about the project plan:

> The customers that arrives from other areas of the city will chose other places to buy their goods. But our politicians expects, that these customers from now on will sit down on a bicycle or use public transportation to go to Nørrebro. That is utopian (NHF, 2008c)[10]

Another aspect that they emphasize is that many goods that are being sold on Nørrebrogade is to heavy or large to carry on busses and bicycles, and that the situation is the same for grocery shopping, and that people thus needs the car to shop at these places. Without this ability, the

[9] Translation from Danish by the author.
[10] Translation from Danish by the author.

association assumed that customers would chose other areas (NHF, 2008d; NHF, 2008c).

At the start of the trying period the critic from the association against the city and the project was massive. The association repeated a number of times that they had not been involved in the process, that the city had neglected requests from retailers, that the objectives of the project would seriously damage the retailers, that the project would not solve any traffic related problems, that the project was a democratic scandal, among many other things (NHF, 2008a; NHF, 2009; NHF, 2010; NHF, 2011; NHF, 2012; NHF, 2013a; NHF, 2015a). According to the association the negative effects from the project was observable soon after the trying period was started. In a survey they conducted during the first months of the project, the sale revenues on Nørrebro had in average fallen by 20 percent, and in some cases 40 to 60 percent. The most common perception among the retailers was, according to them, also that the Nørrebrogade project was the reason (NHF, 2008a). The City of Copenhagen, according to the association, claimed however that these losses mainly was caused by the 2008 financial crisis, and not by the traffic calming (NHF, 2008b). As a response to this, the association released numbers showing that the average sale in the country had declined by 2,1 percent, which they thought was notably less than the 20 percent decline on Nørrebrogade (NHF, 2008a). However, the debate still go on and the opinion still differs (NHF, 2015b). The association did also initiate a petition against the test period and the locking of the street, which gathered 1.299 signatures from business owners, employees and customers (NHF, 2008f).

Since the start of the project, critics against it has been a common subject on the association's website. Many times did they criticize the then mayor of engineering and environment, Klaus Bondam, for having an arrogant attitude towards the retailers, among many things. For example, they wrote that Bondam criticized the store owners on the street for not adapting to the new conditions, and that he meant it was their own fault that their sale revenues went down, which the association described as arrogant (NHF, 2013b). The assumption that the project would end the old characteristic on the street also remained, for example, in 2012, in an article called "Death of a street",[11] they proclaimed that the old retail strip Nørrebrogade was at the edge of dying (NHF, 2012), and in 2013 that the diversity of the street was seriously declining (NHF, 2013b).

Overall, Nørrebro Retail Association feared that if the conditions on Nørrebrogade was changed in a disadvantage way for cars, the possibilities for the old retailers to remain on the street would

[11] Translation from Danish by the author.

be highly limited, which in the long run would lead to a decrease in the diversity.

Since we since before now that the retail mix on Nørrebrogade did not change much between 2009 and 2015, however that there was a considerably large circulation of businesses, this leads to the question if Nørrebro Retail Association either has been wrong, or if there are changes that cannot be seen from the observation data. This will be further discussed.

5.2.2 The Perceptions of the Retailers – The Questionnaire Survey

The next results on perceptions to be presented is the retailers, which is the ones that has been collected in the questionnaire survey. These results will first be presented as a general picture: what is the perceptions of the general respondent on the different questions? Thereafter it will be presented based on category: does the answers vary based on category? If it is so, then how? Is there perhaps respondents from specific categories that have a considerably different opinion then respondents from other categories? Finally, it will be presented based on opening year. Is there a different in the answers based on the fact if the business opened before or after April 2009?

A question that has received considerable convincing answers is the one if the retailers overall perception of being located along Nørrebrogade is positive. As seen in figure 11, the answers are remarkable clear for being in favor of Nørrebrogade as a retail location.

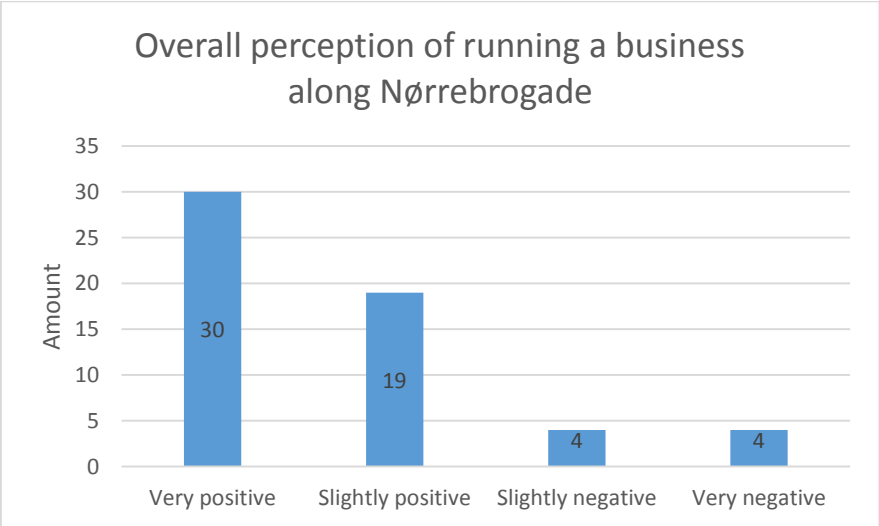

Figure 11. What is your overall experience of running a business on Nørrebrogade?

While altogether only eight respondents have left a reply saying they have a negative perception of any degree about being located along Nørrebrogade, 30 has replied they have a "very positive" perception, and 19 that they have a "slightly positive". It is thus clear that no matter what the rest of the answers implicates, the overall satisfaction-degree is considerable high.

However, the respondents from businesses that has been established since before April 2009 was also asked if they perceived that the reconstruction have had a positive impact on the businesses turnover. These answers were actually pointing in another direction, namely that it have had a negative, as seen in figure 12.

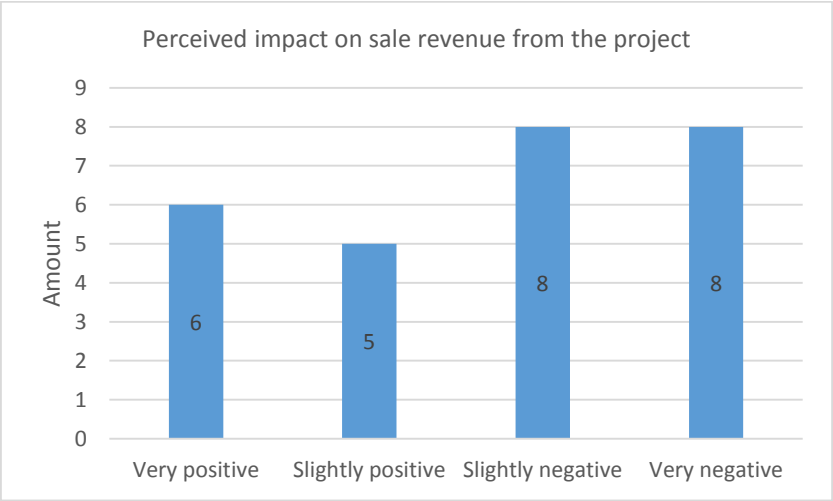

Figure 12. How do you experience that the reconstruction of the street has impacted on the business sales revenue? Only asked to retailers that has been established since before April 2009.

Though, two things should be noted. Firstly, the amount of respondents that has replied this question is low, and that this result therefore should be carefully used to draw conclusions based on. Secondly, even though the majority answers that it have had a negative impact, it is a considerable smaller majority then in the last before.

The respondents was also asked, in two different questions, if they think it was a good priority that the bicycle lanes and sidewalks was widened *even though it was at the expense of the car traffic*. The answers to this questions does also offer convincing answers, namely that this actually was the most of the respondents opinion. However, it should be noted that there has only been questions asked about this on the topic traffic calming techniques, no questions has been asked for example about turning restrictions of bus sections.

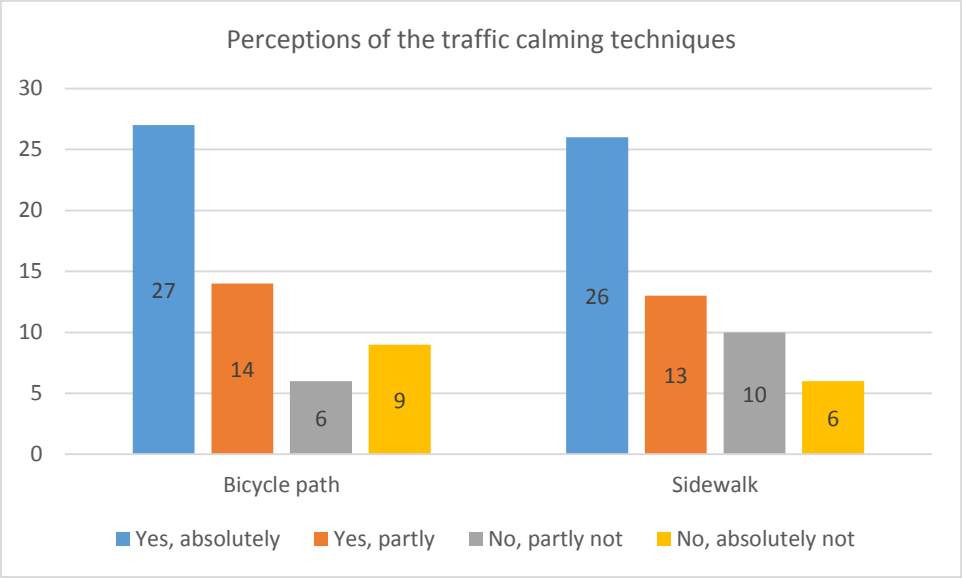

Figure 13. Was it a good priority to widen (1) the bicycle paths, and (2) the sidewalks even though it was at the expense of the car traffic?

As seen, there is a dominant majority that believes it was a good priority regarding both the bicycle lanes and the sidewalks, with only a small difference on the answers of each question.

On the questions were the respondents were asked to estimate at which percentage their customer arrived by walking, cycling, driving a car or by bus, the answers were also in favor of the prioritized functions on Nørrebrogade. As can be seen in figure 14, the most respondents estimated that the most common transport modes were cycling and walking, and that the least common was the car.

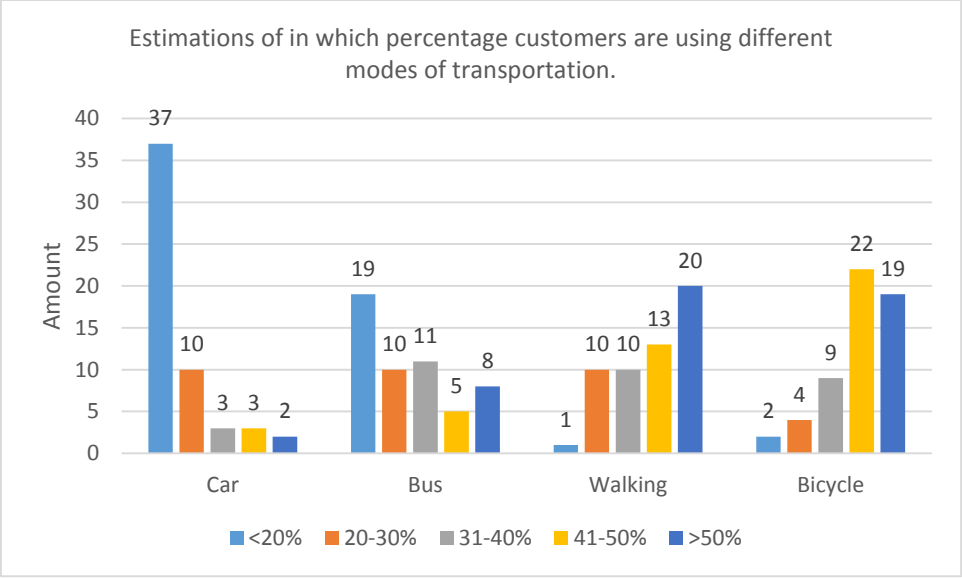

Figure 14. Estimations of in which percentage customers are using different modes of transportation when visitng the store.

We can therefore see that this estimation is in line with the study done by the City of

Copenhagen (2012b), which also shows that walking and cycling is the most common modes of transportation for shopping trips on Nørrebrogade. However, two things should be noted here. First, there were many respondents giving answers to the four estimation-questions that in total added up to much more than 100 percent. That means, an answer saying for example that more than 50 percent of their customers arrived by bicycle, at the same time as more than 50 percent also arrived by walking, and 20-30 percent arrived by bus. The answers should therefore be seen as a hint towards the estimations by the respondents. Secondly, there were respondents commentating that the alternatives did not fit their estimation, because, as some commented, they did not believe a notable percentage at all arrived by car. While one mentioned that the possibility for customers to arrive by car simply was too limited, others implicated that they had a more local catchment area, and that people therefore did not arrive by car.

On the questions if the respondents believe there are too few parking spots for bicycles and cars, it was clear that they thought there were too few of both. Although, as seen in figure 15, it was more common with answers saying there are too few parking spots for cars, although the difference was not considerable.

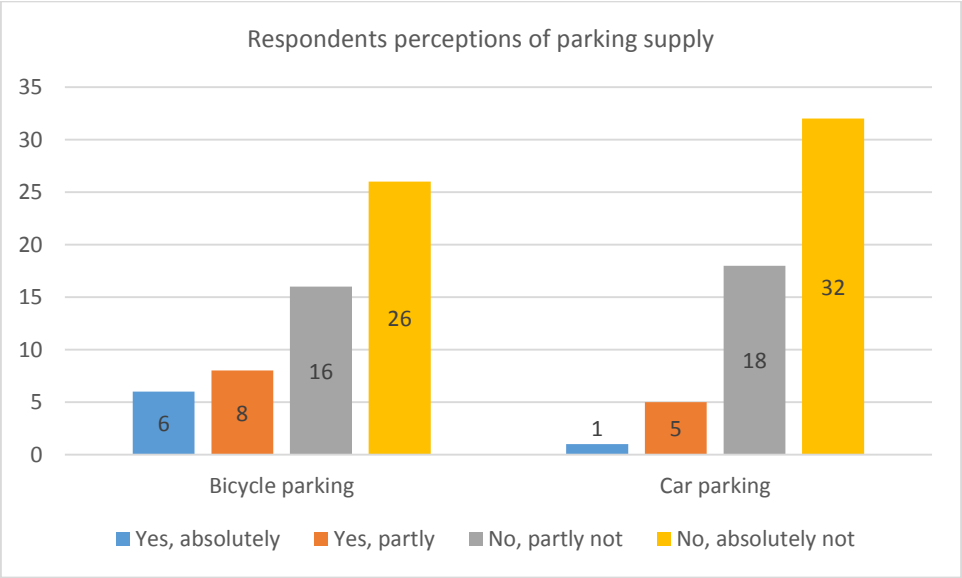

Figure 15. Is it enough parkings for (1) bicycles and (2) cars close to the store?

Compared between opening years

When the answers is overly compared between stores that was opened before and after April 2009, the only notable differences in the answers is that the stores that has opened after April 2009 have a partly more positive attitude towards the priority of bicycle lanes and sidewalks. This can be seen in figure 16 and 17. Except for this, there is no larger difference

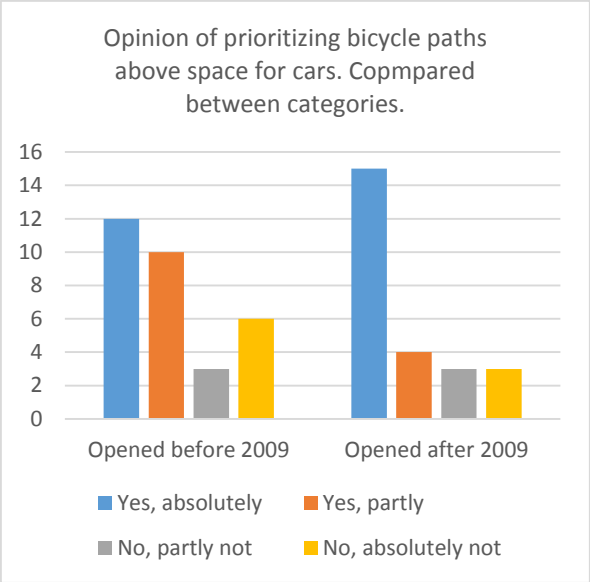

Figure 16. Was it a good priority to widen the sidewalks, even though it was at the expense of the car traffic?

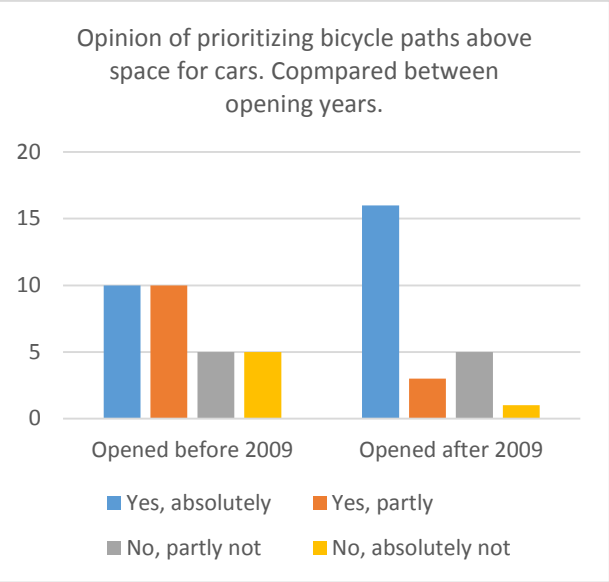

Figure 17. Was it a good priority to widen the bicycle paths even though it was at the expense of the car traffic? Compared between opening years.

Compared between categories

When comparing the answers of the first question between categories, the one if the respondent has an overall positive perception of being located along Nørrebrogade, we can see that there is a difference (figure 18). The most notable is that the most that has a negative opinion belongs to the category *textile and household equipment, etc*. However, a positive answer for a respondent from the category *textile and household equipment, etc,* was more common than a negative. On the other side, we can see that the categories *supermarket and special groceries, etc* and *clothing and shoes* at a further extent than others has answered that they had a very positive perception of being located along Nørrebrogade.

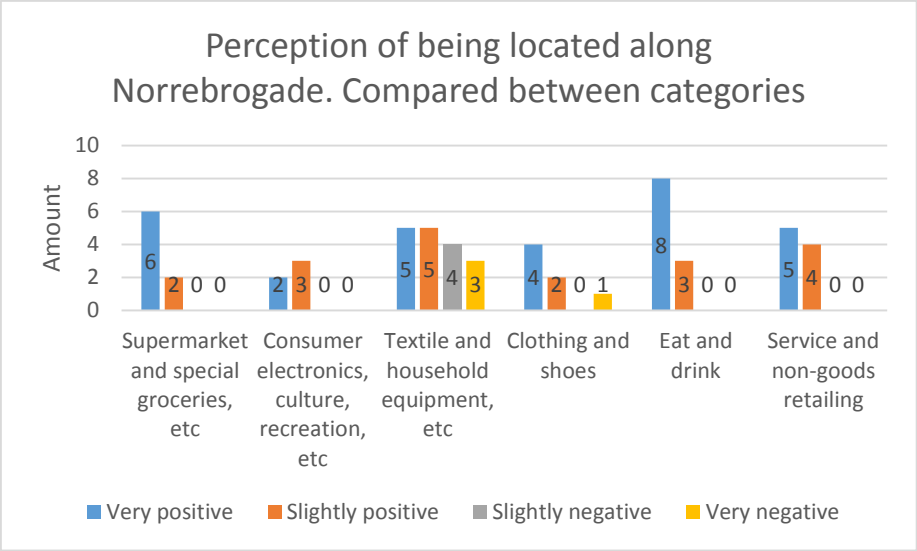

Figure 18. What is your overall experience of running a business on Nørrebrogade? Compared between categories.

On the other question if the respondents perceive that the reconstruction has had a positive impact on the sales revenue, the most notable difference is once again that *textile and household equipment, etc* had the most negative opinions.

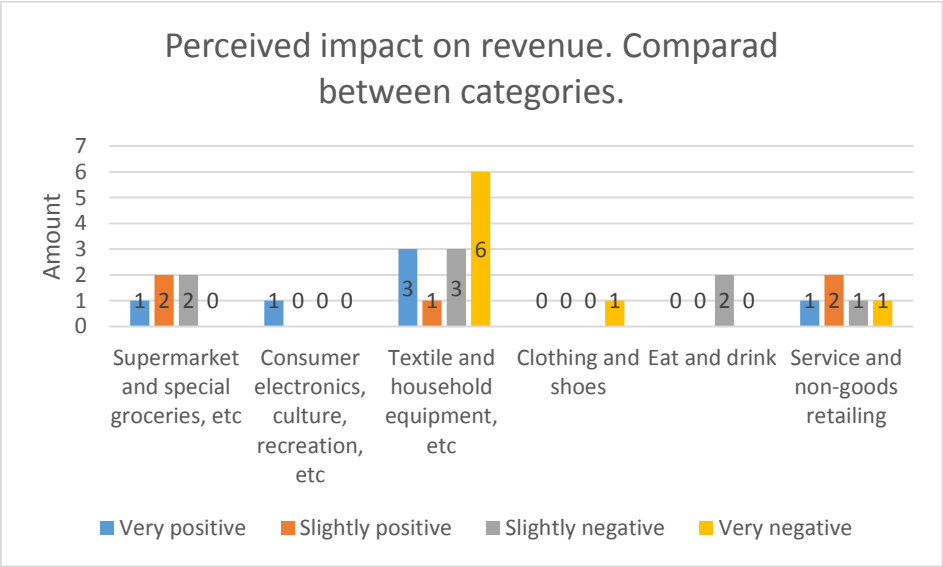

Figure 19. How do you perceive that the project has impacted on the business sales revenue? Compared between categories.

On the two questions about if it was a good priority to widen the bicycle lanes and sidewalks, we can once again see that the category *textile and household equipment, etc* gives the most negative answers. We can also see that the category *eat and drink* in general is much more positive than the others, even though also the categories *supermarket and special groceries, etc* and c*onsumer electronics, culture, recreation, etc* delivered compelling positive answers on

regarding bicycle lanes, and the same for the category *service and non-goods retailing* regarding the sidewalks.

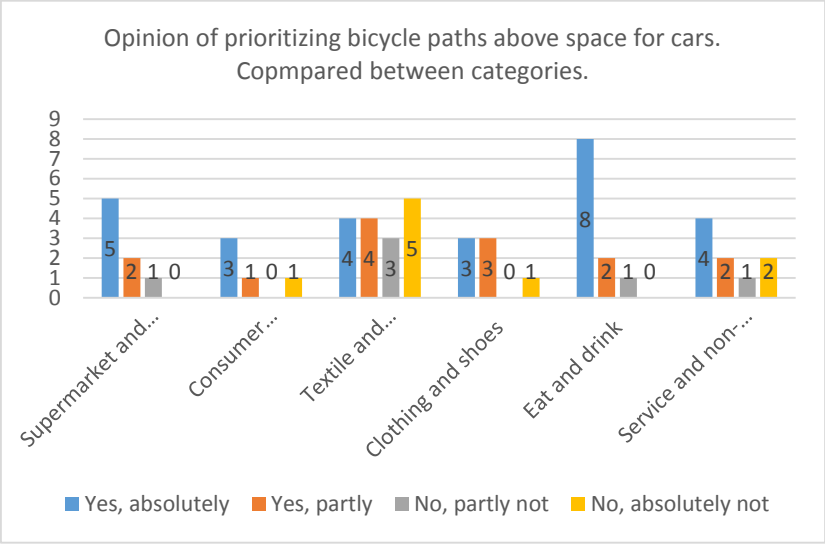

Figure 20. Was it a good priority to widen the bicycle paths even though it was at the cost of the car lanes?

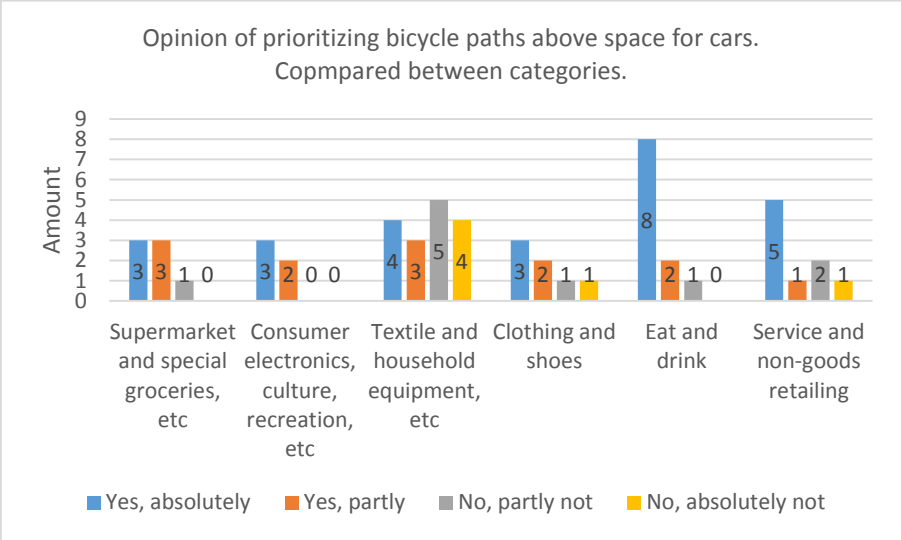

Figure 21. Was it a good priority to widen the sidewalks even though it was at the cost of the car lanes?

Summary

In opposite of what we could expect from Nørrebro Retail Associations publications, the findings presented here actually shows that the most of the retailers has an overall positive experience of being located along Nørrebrogade, and also believes it was a good priority to widen both the bicycle lanes and the sidewalks, even though it was done on the expense of the car traffic. However, as also can be seen, there is a difference in the answers the categories. For example, while *eat and drink* places and *supermarket and special groceries, etc* tends to be

more positive, *textile and household equipment, etc* tends to be more negative. In the analysis it will be discussed what this can tell us about the change in the retail structure on Nørrebrogade.

5.3 Intentions by the City of Copenhagen

As was emphasized in the documents by the City of Copenhagen, Hansen and Grimar underlines that the old conditions on Nørrebrogade was problematic: the sidewalks was to narrow, there was a shortage of trees and benches, the bus stops was not safe since bus passengers had to get off in the middle of the bicycle paths, and the bicycle paths was so narrow that cyclists had problems passing the green lights, causing congestions on the bicycle paths. Grimar pointed out that before the start of the project there were each day on Nørrebrogade thirty thousand cyclists, thirty thousand bus passengers and only seventeen thousand cars, and yet cars had two thirds of the streets space. All this was according to them, a problem (Hansen & Grimar, 2015).

From the beginning they decided that it would not be enough to address the streets problem by only adding benches or trees, widening the bicycle paths or other similar unilateral techniques. Instead, as Grimar said, "in order to do all that, to make it better for cyclists, to make it better for pedestrians, to make it better for shop owners, to make a better urban living there", they had to see it as an wholeness, and, as Grimar emphasized explicitly: the numbers of cars, and the space reserved for cars, had to be reduced. Thus was the ambitions to improve the urban environment, including to make it better for shop owners, as well as to improve the conditions for other modes of transportation than cars, highly integrated with each other, as well as thought to be depended on the reduction of cars (Hansen & Grimar, 2015).

Since the start of the Nørrebrogade project there has according to Hansen and Grimar been an ambition to improve the conditions for retailers located along the street. The idea was that more trees, more public benches, wider sidewalks and less motorized traffic would create a better urban environment where more people are willing to stay a longer time, and thus be more eager to shop and visit cafés and restaurants. However, as they said clearly, it has always been up to the shop owners to actually benefit from the changed conditions. The city's job, they said, is to work with the conditions for retailing, such as the street environment and accessibility for customers and delivery goods. But the next step, everything that happens afterwards, is not a job for the city: "We make a room for dancing, and then people can happy themselves", as Hansen said (Hansen & Grimar, 2015).

Another aspect they hoped to reach was that business owners along the street would expand

their businesses out on the street, by moving out their goods, servings or other activities on the sidewalk, and that this would create both better possibilities for the shop owners as well as increasing the urban qualities. However, on the question if they hoped to benefit some special sort of shops, cafés or restaurants more than others, for example that more "modern" cafés would be preferred above mobile repair stores or DIY-stores, they said clearly that that is a political question and not something they have discussed (Hansen & Grimar, 2015).

Hansen and Grimar said there were many concerns from the shop owners along Nørrebrogade that the reconstruction would damage their business possibilities, and that many shop owners therefore did not agree on the project. There was a fear that new stores would establish and that old ones would run out of business when the new conditions was created. However, even though Hansen and Grimar admitted this risk, and that it has actually happened on some places, they did not evaluate it. Instead, they firstly saw it as natural that stores selling heavy goods, such as furniture, got a harder time when the accessibility for cars was reduced, but they did not neither expressed it as a problem that some stores closed and was replaced by others. The importance for them, they implicated, is instead that the conditions should create an overall good climate for retailing, not that specific stores, cafés or restaurants should be located there (Hansen & Grimar, 2015).

Moreover, they did say that they have seen a tendency towards a change in the retails, cafés and restaurants located along Nørrebrogade. As they said, places with a more modern character have replaced older ones. As an example they mentioned that a fast food-restaurant chain had been replaced by a more modern bakery. According to them does this depend on the demographic mixture of Nørrebro, more young people, more people with a non-Danish heritage as well as people with more money do request new types of stores. Although, as have been written, they have not considered changes in the retail outlets as something good or bad, and they did neither not express any opinions about the "modernization" of the stores. If any, they implicated this was a sign of good conditions for retailing along the street, and that that is a positive judgment of the reconstruction (Hansen & Grimar, 2015).

Hansen and Grimar said they noticed that the attitudes from shop owners towards the reconstruction was different when phase two started in 2013 from when the first started in 2010. During the first phase the city had tried to work with the shop owners to brand Nørrebrogade as an environmental-friendly street. The idea was to spread knowledge about Nørrebrogade, such as the large amount of cyclists, the attractiveness for pedestrians, which types of stores are located there, to emphasize the diverse retail setting, and to create market days, and so on.

According to Hansen and Grimar they received positive opinions about this, although, during phase one the shop owners did not want to participate because they did not want to give their approval to the Nørrebrogade project, and they thought the branding would make it look like they had given their approval. However, this had according to Hansen and Grimar changed until phase two started. Then they had a focus group with shop owners who thought they could benefit from launching the street as an environmental-friendly street, and thus from the reconstruction project. Hansen and Grimar also said they saw a change in the opinions from Nørrebro Retail Association, where they during phase one was strongly against the project, but during phase two were more positive. Hansen and Grimar have therefore seen a change in the opinions from the retailers, from a more negative to a more positive (Hansen & Grimar, 2015).

6. Data analysis

The results presented above provides a further understanding of the problem and is a good basis to answer the research questions. We can see from the observations that the actual development of retail mix, when seen through the chosen categories, has not changed that much. If we would conclude that there therefore had been no major changes in the retail structure based on this, we would though ignore the fact that almost half of the businesses that was located there in 2009 had closed or relocated until 2015, which could imply that there has been a change within the categories. We would also ignore the fact that Nørrebro Retail Association has strong perceptions about the project, and believes the traffic calming has killed the diversity on the street. However, if we would chose to only listen to Nørrebro Retail Association and draw the conclusion that the project has had a bad impact on the street as a retail strip, and ignore the perception by the retailers, we would miss the fact that a compelling majority of the respondents actually was in favor of the traffic calming techniques that was included in the survey (that means, the priority to widen the sidewalks and bicycle paths on the cost of the car traffic), and also that a more compelling majority is satisfied with the retail conditions along Nørrebrogade.

The questions to be answered in this chapter is therefore what we can conclude about the changes in the retail structure based on the data. Which elements have been affected and how? How are the perceptions of the different stakeholders regarding this? Also, how does the development correspond with the plans by the City of Copenhagen, and what can be said about traffic calming as planning policy when it comes to retail development?

6.1 The Elements of Change in Retail Structure

Overall, the literature study did provide two conflicting expectations about how the retail structure should be affected by traffic calming. The first, emphasized by Teller & Reuters (2008), Drennen (2003), among others, was, summarized, that it should have an overall positive impact since they emphasizes the attractiveness of retail spaces as an important aspect for successful retail spaces. The other, emphasized by Alzubaidi (1997) and Andreu et al (2006) implied that it would have a negative, or at least not necessarily a positive impact, since they consider the accessibility for cars to be important for retail success. However, as has been clear in the data results, the question has not only been if the effects by traffic calming is positive or bad, instead has one of the major critics by Nørrebro Retail Association is that the street changes into something new, to a street where there no longer is room for the old stores. And since almost half of the stores on Nørrebrogade has opened after April 2009, this could be the

situation. This topic, of what the change in fact consists of, besides being positive or negative for sales revenue, is only, partly, discussed by Hass-Klau.

Based on the findings of Hass-Klau, there were an expectation drawn on the *time aspect*, *adjustment period*. He mentions two elements that tends to change during the time after implementations of traffic calming, firstly, it is the business outlets. As he writes, there will be stores succeeding to adapt to the changed conditions, that will experience growth and better days, and then there will be businesses that notice no notable difference, and finally businesses that will not be able to adapt and therefore in the long run be replaced by new businesses. Secondly, he has observed that the attitudes towards the traffic calming will change for the better during the adjustment period, since the most unsatisfied business owners will leave, and the ones who remains either has benefited or have not seen a large change at all. The expectations that was based on this, thus, was that we would see a similar pattern. Therefore, the question is, based on the data of the actual change and the perceptions of the project, can we see that this is true? That there is a pattern where new stores open and replaces old stores that was not able to adapt? And if it is so, how is the change manifested? Could it be that Nørrebro Retail Association is right, that there is a "caffé latte"-developing happening, and that stores selling more traditional goods got there business conditions worsened?

In fact, based on the data collected, a process seems to happening which benefits stores selling convenience goods (such as grocery, candy and tobacco) and eat and drink places and is in disadvantage for more traditional comparison goods (such as textiles, household goods, clothing etc). This is firstly seen in the retail mix. Even though there are no considerable differences between 2009 and 2015, we can see that there has opened more eat and drink places, and that the number of stores from the category *textile and household equipment, etc* (which are more traditional comparison goods) has decreased, even though only a little. We can also see it in the variations of the respondents replies based on category. While the majority of *supermarket and special groceries, etc* and especially the category *eat and drink* presented a very positive perception of the project, the respondents from the category *textile and household equipment, etc* answered much more often that they had a negative perception of both being located along Nørrebrogade as well as on the traffic calming techniques overall.

We can thus see that the expectations drawn based on Hass-Klaus writings seems to be true, there are firstly a process going on where many of the older stores have been replaced by new ones, and also that the stores still located there has an overall positive attitude of being located on Nørrebrogade as well as on the traffic calming techniques. Above that we can also see that

businesses such as restaurants, cafés and grocery's seems to do better than businesses such as textile, pharmacies and mixed goods, which could implicate that these have had a higher ability to adapt to the changed conditions. This means that stores that sells comparison goods at a larger extent (though not a majority) is unsatisfied with the traffic calming and also the retail conditions than especially stores selling convenience goods and eat and drink places. And this also implies that Nørrebro Retail Association could be right in their expectation that the old retail structure is changing into what they call a caffé latte-culture, or at least into something new.

The conclusion that the retail structure is changing is also strengthened by a conversation I had with a man running a sewing machine store. His perception about the traffic calming was that it had worsened the conditions for their business a lot. Because, as he said, the most of their customers arrived by car from all over Copenhagen as well as from other towns and cities. The problem for them was therefore, according to him, that the reduced accessibility for cars had caused a reduction in the numbers of customers. In his opinion the challenge for stores on Nørrebrogade was today to attract "the hipsters", who he meant has become the most common user of the street. Thus, to do this, to adapt to the new conditions instead of closing the business, they planned to combine their sewing machine business with a café, in order to profit from "the hipsters", as he said, and to be able to continue with the business at all.

Before a conclusion is drawn that traffic calming per definition leads to displacement of stores selling comparison goods, it should be repeated that the majority of these categories, that means c*onsumer electronics, culture, recreation, etc*, *textile and household equipment, etc* and *clothing and shoes*, actually has replied that they have a positive perception of both the retail conditions and the traffic calming techniques. We also know that there is a lot of stores from these categories that has opened after 2009, and nothing points to the fact that their existence would be threatened on the street, and thus does nothing point to the fact that the diversity on Nørrebrogade either would be in danger. What is notable is the *difference* in the perceptions between the categories, because, it is in general a larger amount in especially the category *textile and household equipment, etc*, but also in the other comparison goods categories, that are unsatisfied, than in the categories *supermarket and special groceries, etc*, *eat and drink* and *service and non-goods retailing*, which are not comparison goods. However, if the change that is happening is either a commercial gentrification, where more expensive stores, often brands, or that it is what some scholars call *hipsterfication* (see Hubbard, 2015), where more modern stores that attracts "hipsters", are replacing independent and perhaps cheaper stores are not

revealed by the data. This could instead be a topic for a future study.

There is also another aspect that is important to note. As was written in the literature study, retailers and retail associations tends to overestimate the importance of cars, and also underestimate the importance of pedestrians and cyclists. The attention given to the question of accessibility for cars by Nørrebro Retail Association points to the fact that this is also the case for them. Especially when this attention is compared to the findings by the city of Copenhagen (2012b), that motorists actually only accounts for 15 percent of the sales on Nørrebrogade, while cyclists accounts for 45 percent, and pedestrians for 30 percent. This therefore points to fact that Nørrebro Retail Association does overestimates the importance of cars (at the same time, since the retailers estimations of their customers transportation habits was in line with the study by the city (see figure 14), nothing points to the fact that this would be the case for the retailers). However, the study by the City of Copenhagen was conducted 2011, which was *after* the traffic calming. This leads to the question if the shopping patterns by different mode of transportation users could have changed during implementation of the traffic calming, and that this thus has led to problems for older businesses that used to attract more customers arriving by car? Another possibility is in fact that motorists has never been important for the businesses on Nørrebrogade (and since the study by the city of Copenhagen points to the fact that this shopping pattern is a trend on all Copenhagen high-streets, it is likely so), that the attention given to this aspect is only based on an overestimation, and that the changes in the retail mix depends of an external factor rather than the traffic calming, which Hass-Klau (1993) emphasizes could be the case related to this sort of projects. One example could be that at the same time as the traffic calming has been implemented, the demography of Nørrebro could have changed, with a changed demand as a consequence. In that case the new population of Nørrebro perhaps requests cafés more than household equipment, for example, and that this change in request therefore has happened independent of the traffic calming. If this would be the case, than the traffic calming might not have had a large impact on the changes in the retail mix from 2009 to 2015 at all. However, since this is not revealed by the data, this is only speculation, and the one thing we can actually conclude from this is that Nørrebro Retail Association overestimates the importance of cars, in line with other studies discussed in the literature study.

6.2 Attractiveness and Accessibility

It was written in the literature study that the different expectations of the impacts on retail conditions from traffic calming is based on two conflicting perceptions of what creates

successful conditions for retailing, one emphasizing the attractiveness of retail spaces and one the accessibility to the area. From analyzing the elements of the actual change on Nørrebrogade above, we can draw the conclusion that when the two different aspects are being prioritized it affects the retail structure. However, the analysis above contains the elements of change related to different retail sectors, and how the retail mix is influenced by the traffic calming. There is also a question of why, for example, Nørrebro Retail Association believes that some customers will stop visiting the stores on Nørrebrogade when the attractiveness is prioritized above the accessibility for cars. These customers could in fact just change the mode of transportation to a bicycle (or, since the amount of parking spaces has in fact not been reduced – just park in other parts of Nørrebro and walk the last distance). And how does the perception of Nørrebro Retail Association differs from the perception by the City of Copenhagen, or from the retailers?

Nørrebro Retail Association expresses a clear picture that they believe a sufficient parking supply for cars, and an overall high accessibility for cars, is important for customers to arrive from other areas of the city. Firstly, this is based on the fact that they see the car as an important mode of transportation for these customers. But secondly, without a sufficient accessibility for cars, they believe that the stores that requires a large catchment-area (in the words of Christaller: that has a high *threshold*) will go below their required threshold, and thus go bankrupt, since they believe customers from other parts of the city will shop somewhere else. In the long run they believe that only stores that has a local catchment-area can survive under these conditions. It can thus be said that they values the *accessibility* as a major aspect of successful retail spaces, at least regarding comparison, more traditional retailing goods.

The City of Copenhagen on the other hand, sees it from another angle. In their view it is not the accessibility for cars that enlarges the area where customers arrives from. They say this is done by other techniques. They gave one example, the project of branding the street as an "environmental-friendly street". The main idea of this was to spread the word about Nørrebrogade and therefore to make people come from other parts of the city. One idea was to make a pamphlet with information about stores, cafés, restaurants, as well as other things to do in Nørrebro. This was based on two logics, firstly, to increase the easiness for people to find around there, which would make a visit to Nørrebro more convenient, and secondly, to make people find out about the attractiveness of the street (Hansen & Grimar, 2015). Their agenda was thus based on a more dynamic understanding about attracting customers. Instead of providing space for cars (in other words, increasing the accessibility), they think urban qualities, easiness and attractiveness does this. And based on the respondents answers on the questions

of the traffic calming techniques, it seems that a large amount of the retailers share this perception, even though it is in opposition to Nørrebro Retail Association.

Nørrebro Retail Associations understanding of accessibility reminds of the idea of a *static accessibility*, one that is both calculable and compulsory. This reminds of Christallers understanding of threshold and range, with the difference that in the opinions by Nørrebro Retail Association, the threshold and range is not only measured in distance, instead it is relative to the accessibility for cars. In this understanding, attractiveness also depends on accessibility: without a sufficient accessibility for cars, this understanding implicates that the attractiveness is neither way enough for business to benefit from the street, since it will decrease the *attractiveness to access* the street and thus prevent customers to arrive from other areas, and that the street therefore is determined to change in a certain, more local oriented, way. The opinions expressed by the City of Copenhagen, however, is more based on the dynamic understanding in line with the findings of Hass-Klau (1993; 199) and Teller & Reuters (2008): customers are attracted by the attractiveness of the retail area, which in the next line is not affected by the accessibility for cars. This type of retail planning is also in line with Hass-Klaus policy recommendations, that effective retail planning should focus more on creating good conditions for retailing rather than trying to satisfy requests by retailers (such as parking spots for cars).

There is however another aspect that Nørrebro Retail Association stresses, while the City of Copenhagen imply that the large number of cyclists using the streets provide a good customer potential, Nørrebro Retail Association emphasize that the cyclists are just passing through on their way to jobs, schools or other activities, without an intention to stop and consume (NRA, 2013b). However, it does not appear with clarity *why* they believe the cyclists do not stop, and neither why this would differ from the car traffic. One aspect could be the lack of parking spots for bicycles, which they emphasize in some articles.

A similar theme was expressed by an owner of a newly opened clothing store, in his perception, the cyclists did provide a large customer basis, and also that this was one of the major attractions with running a business along the street. However, as he said, the visibility of the stores was too low, and that this led to that cyclists did not note the stores that they could find interesting and, either, stop and shop during the trip or that they would notice the store and later come back. According to him this was caused by the fact that there are too many businesses which by-passers in general is uninterested of, such as falafel and shawarma restaurants. When Hansen and Grimar was asked about the question of how to attract cyclists into the stores, they were

more relaxed and said that it is easy to park a bike, implicating that if customers wants to stop, they can do it. And also did they implicated that the question to attract customers actually is a question for the retailers, not the city.

We can thus conclude that there are different perceptions about the impacts from traffic calming on attractiveness and accessibility, and that the expectation that a conflict between different understandings would be visible can be confirmed. While Nørrebro Retail Association believes traffic calming will decrease the catchment area because it decreases the convenience of arriving by car, and that it thus damage the retail conditions for sectors that has a higher threshold, the City of Copenhagen on the other hand believes that the attractiveness of the street actually can attract customers from other areas in itself, that the catchment area therefore not of necessity is decreased, and especially that an attractive retail space is more beneficial for retailing than an effective accessibility.

6.3 The Intentions

The major intention by the City of Copenhagen was as has been seen to address the former traffic conditions on Nørrebrogade which they understood as problematic. Included in this ambition was to increase the urban qualities on the street, and in that context also to improve the conditions for retailing. In both the background chapter and in the presentation of the interview with Hansen and Grimar, it has been compellingly clear that the retail ambitions has been focused on the fact to improve the overall retail conditions, and not to benefit some specific retail sectors or stores. The analysis has so far concluded two aspects on how this has corresponded with the actual development. Firstly, it is considerable clear that a majority of the retailers has a positive perception of being located along Nørrebrogade, and secondly, that there has never been a critique that the overall retail conditions has decreased, only that it has decreased for some specific sectors and stores. Therefore it can be concluded that the usage of traffic calming as a retail planning tool has corresponded with the ambitions it was set to achieve.

7. Conclusions

The thesis has shown that in the case of Nørrebrogade, there is many and conflicting perceptions of the impacts from traffic calming on the condition for retailing. These perceptions is in the next line rooted in different perception of what it is that constitutes successful retail conditions. The two major frontlines is the perception that successful retail conditions is created by attractive retail spaces, and that the development on Nørrebrogade thus has been positive, based on the opinion that the attractiveness of the street has increased. The other is the perception that successful retail conditions is depended on the accessibility of cars, which, in this case study, has been mostly based on the assumption that larger catchment areas needed by certain stores, only can be offered when the conditions allows customers to arrive by car.

While the thesis stipulates that the number of stores that have closed and opened between April 2009 and December 2015 has been considerable high after the implementation of traffic calming, there is actually nothing that points to the fact that the conditions for retailing would have decreased. In opposite does a compelling majority of the retailers along Nørrebrogade have a positive experience of running a business along the street. Instead it is likely that an *adjustment period* has operated, which means that businesses that has not been able to adapt to the new retail conditions offered by Nørrebrogade, has closed, and that new stores has opened instead which have succeeded to benefit from the change. However, there is a great chance a pattern is hidden in the large frequency of business circulations.

In the thesis it has been concluded that it *seems* like the traffic calming has benefited different store categories differently. The questionnaire survey on the retailers perceptions points at the fact that businesses such as supermarkets, bakery's, restaurants and cafés has managed to benefit *more* from the traffic calming, and that they thus are more satisfied, than retailers of goods such as textile, household equipment, clothing and shoes. However, the data offers no significant result in this aspect since many stores in these categories also has opened after the implementation of traffic calming, and that there in fact is a majority of the respondents among these categories that has a positive experience of being located along Nørrebrogade. An important step to develop more knowledge on the relation between traffic calming and development of retail structures would be to find another way to investigate more thoroughly how traffic calming impacts on different store categories, both divided by goods sold but also by for example customer groups. Is there perhaps a general pattern that more young people are being attracted to traffic calmed spaces, and that the retail mix thus adapts to that? Only more

investigations can tell. Another future study of great interest would be to see how Nørrebrogade further develops after this date, of how the adjustment period acts after that an almost four year long period already has passed. Is the retail mix changing further? Is the diversity increasing or decreasing? What does this say about the impacts on retailing from traffic calming?

A purpose of the thesis has also been to bring perspective on traffic calming as a retail planning policy, to understand the foundations behind the City of Copenhagen's usage of it, and to examine how this has corresponded with the actual impact. It has been concluded that the Copenhagen ambition relating to retailing has not been to benefit some specific store or store categories, but to increase the overall conditions for retailing along the street. Neither has the ambition been to benefit the stores that was already established on Nørrebrogade when the project started, instead, as stated by Hansen, "we make a room for dancing, and then people can happy themselves". With this metaphor, he implicated that the task for retailers to benefit from the traffic calming, and also not to run out of business, is a task for the retailer themselves, which also seems like the foundation of the retail planning. It has also been concluded that their ambition to increase the retail conditions in fact has corresponded with the actual development on Nørrebrogade.

Although, a legit question is if it is fair to implement planning policies that affects different businesses differently, that no doubt will damage for some, perhaps small independent, businesses, and benefit others. To some this might seem like a moral dilemma, that an official policy can threaten the income of some citizens, while other can profit from it. However, as implicated by Hansen and Grimar, and also by Hass-Klau, the circulation of businesses is an inherent part of the market economy, and the fact is that businesses everywhere, in every sector, always has had a constant task to adapt up to changing conditions. Sometimes this requires an innovative change of a firm's former thinking, sometimes it requires a completely new business strategy, and sometimes old firms are doomed to fail. Retailing is not an exception. And especially in projects such as traffic calming, where the ambition is to improve the quality of life for urban residents, and to increase the environmental sustainability of cities, it could be said that it is a reasonable cost that some businesses, which do not find the solutions to adapt to new conditions, goes bankrupt?

My own opinion is that the moral question whether it is right or wrong to implement environmental sustainable planning policies, on the basis that it might alter damage for some business owners, is sheltered by the positive impacts traffic calming has on both the urban environment and actual environment. It is also to focus on the wrong side of the problem.

Rather, it should be asked how a sufficient urban based supply of stores that sells goods with higher thresholds, goods which is necessary and requested but however not frequently purchased, goods such as tools, household equipment, textile and electronics, can be guaranteed in urban contexts even if they are not able to rely on customers arriving by car? In other words, how can a sustainable planning for urban transportation avoid the consequence that these types of businesses relocates to external, car-orientated shopping malls and areas? Perhaps innovative business strategies such as combining a sewing machine business with a caffé is one possible solution. Or perhaps this question best is solved on a city-wide level, and that a sustainable urban planning always needs to consider the needs of the retail sector, in every plan on every level, in order to make a car-free, sustainable urban living easier? For advocacies of sustainable alternatives to cars in general, and for the bicycles role in urban transportation systems in particular, this is an important question to investigate.

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Appendix

Appendix A. Store category scheme[12]

Supermarket and special groceries, etc:

Supermarkets

Kiosks

Discount stores

Other retailers from non-specialized retailing

Green groceries

Meat and cold buffet retails

Fish retails

Retail sale of bread, confectionery and sweets

Retail sale of beverages

Tobaccos

Other retails with special grocery

Consumer electronics, culture, recreation, etc:

Retail sale of computers, hardware and software

TV and radio retailing

Book stores

Retail sale of papers and magazine equipment

Retail sale of music and video recording equipment

Sport and camping equipment businesses

Bicycle and moped businesses

Businesses of yachts and related equipment

Retail sale of games and toys

Textile and household equipment, etc:

Retail sale of dress fabrics, yarn, embroidery, etc

Retail sale of paints and wallpaper

Construction markets and tool retailers

Retail sale of carpets, wall coverings and flooring

Retail sale of electric household equipments

Furniture retailing

Home textile Stores

[12] All categories except for "Eat and drink" and "Service and non-goods retailing" is translated from Danish by the author.

Retail sale of kitchenware, glassware, crockery, cutlery, vases, candlesticks and more.

Musical instrument stores

Retail sale of lighting equipment and household goods

Pharmacies

Retail sale of medical and orthopedic goods

Retail sale of cosmetic and personal care products

Florists

Plant stores and garden centers

Pet shops

Retail sale of watches, jewelery, and gold and silver items

Optician

Photo stores

Dealers of gift items and handicrafts

Arts and gallery

Second hand stores

Clothing and shoes:

Clothing stores

Infant and child clothing

Shoe stores

Leather stores

Eat and Drink

Restaurants

Cafés

Bars

Take away

Fast food

Service and non-goods retailing

Bank offices

Money exchange offices

Travel agencies

Gambling facilities

Cooking course business

Hotel

Theatre

Appendix B. Questionnaire given to stores that opened before April 2009

Butikkens name:_____ Id: *E1*_____
Respondentens titel: ☐ Ejere ☐ Store manager ☐ Anden employee(:_____)

Spørgeskema af handlende på Nørrebrogades opfattelser af Nørrebrogade som handelsstrøg.
Svarelserne vil blive anvendt som materiale til en bachelor essay ved Lunds Universitet.

1. Hvilken påstand passer dig bedst?	☐ De fleste af butikkens kunder kommer fra lokale områder af Nørrebro.
	☐ De fleste af butikkens kunder kommer fra enten Nørrebro eller nabo områder
	☐ Butikkens kunder kommer fra hele indre København
	☐ Butikkens kunder kommer fra hele Storkøbenhavn
2. Hvor stor andel af butikkens kunder oplever du kommer til Nørrebro med bil og parkerer i området?	☐ <20% ☐ 20-30% ☐ 31-40% ☐ 41-50% ☐ >50%
3. Hvor stor andel af butikkens kunder oplever du kommer med cykel?	☐ <20% ☐ 20-30% ☐ 31-40% ☐ 41-50% ☐ >50%
4. Hvor stor andel af butikkens kunder oplever du kommer til fods?	☐ <20% ☐ 20-30% ☐ 31-40% ☐ 41-50% ☐ >50%
5. Hvor stor andel af butikkens kunder oplever du kommer med bus?	☐ <20% ☐ 20-30% ☐ 31-40% ☐ 41-50% ☐ >50%

	Meget positive	Lidt positiv	Lidt negativ	Meget negativt
6. Hvad er din overordnede oplevelse af at være butiksdrivende på Nørrebrogade?	☐	☐	☐	☐
7. Hvordan oplever du at ombygningen af gaden har påvirket butikkens omsætning?	☐	☐	☐	☐

	Ja, fuldstændigt	Ja, delvist	Nej, delvist ikke	Nej, absolut ikke
8. Var det godt at cykelstierne på Nørrebrogade blev gjort bredere på bil trafikens bekostning?	☐	☐	☐	☐
9. Var det godt at fortovene på Nørrebrogade blev gjort bredere på bil trafikens bekostning?	☐	☐	☐	☐
10. Syntes du der er nok cykelstativer tæt på butikken?	☐	☐	☐	☐
11. Syntes du der er nok parkeringsplatser til biler tæt på butikken?	☐	☐	☐	☐
12. Tror du flere cykelparkeringer tæt på butikken ville være positivt for butikkens omsætning?	☐	☐	☐	☐
13. Tror du flere parkeringer til biler tæt på butikken ville være positivt for butikens omsætningen?	☐	☐	☐	☐
14. Syntes du Nørrebrogade er en attraktiv gade at røre sig på.	☐	☐	☐	☐
15. Opleverer du at det har blevet mere attraktivt at røre sig på Nørrebrogade efter gadens omstillning?	☐	☐	☐	☐

16. Er der mere kommunen burde gøre for at forbedre situationen for butiksejere langs gaden? ☐ Ja ☐ Nej Hvis ja, hvad? (kort kommentar)
_____
_____
_____
_____

Appendix C. Questionnaire given to stores that opened after April 2009

Butikkens name:_____ Id: *E2*_____

Respondentens titel: ☐ Ejere ☐ Store manager ☐ Anden employee(:_____)

Spørgeskema af handlende på Nørrebrogades opfattelser af Nørrebrogade som handelsstrøg.
Svarelserne vil blive anvendt som materiale til en bachelor essay ved Lunds Universitet.

1. Hvilken påstand passer dig bedst?	☐ De fleste af butikkens kunder kommer fra lokale områder af Nørrebro.
	☐ De fleste af butikkens kunder kommer fra enten Nørrebro eller nabo områder
	☐ Butikkens kunder kommer fra hele indre København
	☐ Butikkens kunder kommer fra hele Storkøbenhavn
2. Hvor stor andel af butikkens kunder oplever du kommer til Nørrebro med bil og parkerer i området?	☐ <20% ☐ 20-30% ☐ 31-40% ☐ 41-50% ☐ >50%
3. Hvor stor andel af butikkens kunder oplever du kommer med cykel?	☐ <20% ☐ 20-30% ☐ 31-40% ☐ 41-50% ☐ >50%
4. Hvor stor andel af butikkens kunder oplever du kommer til fods?	☐ <20% ☐ 20-30% ☐ 31-40% ☐ 41-50% ☐ >50%
5. Hvor stor andel af butikkens kunder oplever du kommer med bus?	☐ <20% ☐ 20-30% ☐ 31-40% ☐ 41-50% ☐ >50%

	Meget positive	Lidt positiv	Lidt negativ	Meget negativt
6. Hvad er din overordnede oplevelse af at være Butiksdrivende på Nørrebrogade?	☐	☐	☐	☐

	Ja, fuldstændigt	Ja, delvist	Nej, delvist ikke	Nej, absolut ikke
7. Var det godt at cykelstierne på Nørrebrogade blev gjort bredere på bil trafikens bekostning?	☐	☐	☐	☐
8. Var det godt at fortovene på Nørrebrogade blev gjort bredere på bil trafikens bekostning?	☐	☐	☐	☐
9. Syntes du der er nok cykelstativer tæt på butikken?	☐	☐	☐	☐
10. Syntes du der er nok parkeringsplatser til biler tæt på butikken?	☐	☐	☐	☐
11. Tror du flere cykelparkeringer tæt på butikken ville være positivt for butikkens omsætning?	☐	☐	☐	☐
12. Tror du flere parkeringer til biler tæt på butikken ville være positivt for butikens omsætningen?	☐	☐	☐	☐
13. Syntes du Nørrebrogade er en attraktiv gade at røre sig på.	☐	☐	☐	☐
14. Har ombygningen af Nørrebrogade, hvor cyklister, fodgængere og busser blifvet prioritet på bekostning af biler, haft en betydelig påvirkning på valget til at etablere butikken på Nørrebrogade?	☐	☐	☐	☐

15. Er der mere kommunen burde gøre for at forbedre situationen for butiksejere langs gaden? ☐ Ja ☐ Nej Hvis ja, hvad? (kort kommentar)

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Appendix D. Interview guide for the Hansen and Grimar interview

- Tell a bit about the Nørrebrogade project and your role within it
- In the plan for the project, it is written that: "Nørrebrogade skal være et handelsstrøg, hvor det er rart og spændende at opholde sig, sikkert at færdes for cyklister og fodgængere, og med god fremkommelighed for busser og buspassagerer."
  - From this quote I get a sense that there is some sort of ambition regarding the retail along the street, could you tell a bit about this ambition.
  - Why develop retail? (Street life, economy, other aspects?)
  - Is there an perception from your side about the present store characteristic, with a lot of smaller local stores, that a change is desirable, for example that more unique stores, more chains, more restaurants, etc, should establish at Nørrebrogade?
- Modes of transportation and hinterland (catchment-area)
  - The prioritization of different modes of transport and its relation with the retail
  - Who are supposed to shop at Nørrebrogade and with which modes of transport are they intended to arrive with?
    - Including aspects:
      - Where are costumers intended to arrive from? Neighboring area, from areas from where people pass Nørrebrogade, from the entire city, etc
      - Is the ambition that cyclists and pedestrians who passes through should feel invited to stop and buy at the street, and that they therefore should provide a costumer basis for the stores?
      - General perception from the City of Copenhagen about cyclists as consumers.
- Ideas about retail today and before
  - Problems: **Bike** and car parking. **Low** attractiveness?. **Low** viability of the stores (can't see the forrest cause of all trees)? **Competition** with other retail areas?
    - What is/has been the intention with these problems, has it been solved with the reconstruction?
- Different assumption about these investments impact on the retail than for example Nørrebro Handelsforening. What makes the City of Copenhagens assumption more correct than Nørrebro Handelsforening?