A Master's Thesis on

HEALTHY STREETS

In a Danish Planning Context

AALBORG UNIVERSITY

ODDER KOMMUNE

AALBORG UNIVERSITY

STUDENT REPORT

Title:

Healthy Streets
- In a Danish Planning Context

Project:

Master Thesis

Project period:

From 1/02/2024 to 7/06/2024

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Edition: 1. Edition
Number of pages: 120
Appendix: 2
Exhibits: 0
Finished: 7/06-2024

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Abstract:

Health and planning are two fields of great complexity that are connected and therefore influencing many aspects of planning the society. An approach that embeds health into planning is the Healthy Streets Approach, which is why the basis for this research is to examine *In which way can the Healthy Streets Approach be utilized in the Danish planning context of Holsteinsgade in the city of Odder, and how can this approach help planners take part in promoting and improving public health?* To investigate this a paradigmatic case of Holsteinsgade in Odder has been utilized. First, the theoretical framework is based on a literature review that highlights the connection between health and planning, changing planning practice, and strategic planning. These aim to analyze the complexity of linking health into planning practice for which a transdisciplinary approach is relevant as health and planning involves many professions. By utilizing the Healthy Streets Design Check tool the existing design of Holsteinsgade is assessed and in continuation, a total of three design scenarios for a redesign is suggested. These suggestions are discussed and based on this a fourth and final scenario is put forward that holds actions that for instance promote active transport and road safety. The convertibility to Danish planning is likewise discussed as well as considerations relevant to do if the approach should be implemented. Thereby, it is identified and concluded that the Healthy Streets Approach is an applicable tool for planners to provide redesigns of streets that prioritize health.

Preface

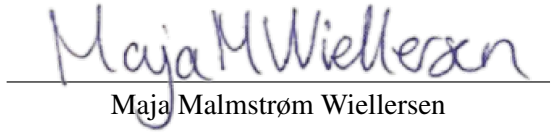
This master's thesis has been produced by the two Urban Planning & Management master students Maja Malmstrøm Wiellersen and Laura Viktor Andreassen from Aalborg University. The thesis has been produced in the period of the 1^{st} of February to the 7^{th} of June and the main focus of the thesis is health in planning and the Healthy Streets Approach. In addition, there is a great focus on the connection between health and urban planning, and how urban planners can contribute to promoting public health, which has been investigated through the case of Holsteinsgade in Odder.

Throughout the project period supervision consisting of sparring, support, and knowledge sharing has been provided by Birgitte Hoffmann to whom an expression of gratitude is levelled at. Furthermore, gratefulness is also pointed towards Odder Municipality, including Louise Holmegaard, Marie Kolind Laustrup, and Gitte Rasmussen, for the collaboration, attendance in interviews, and data sharing. Finally, a gratitude is likewise pointed at Lucy Saunders, Lars Dyve Jørgensen, and David Lindelöw for participating in interviews and through that provided knowledge and information for the investigation of the Healthy Streets in Danish planning.

Reading Guide

In this master's thesis the method for referencing is the Harvard Method meaning that all references will be written (author(s), year) and 'n.d.' if the year is unknown. When referencing to a specific citation it will be written (surname, year, page of citation/time in interview) - in citations that have been translated 'own translation' will be added to the citation. The time will only be shown when the reference is from an interview made by the writers of this master's thesis. In a few citations (ed.: clarifying words) have been added to create a better reading experience. Transcriptions of interviews are available, but can not be found in appendix. Pictures without a reference was taken by the authors. Figures made by the authors are made within Miro and maps are made in ArcGIS.

Laura Viktor Andreassen



Maja Malmstrøm Wiellersen

Master Thesis Summery

Omdrejningspunktet for dette speciale er koblingen mellem sundhed og planlægning, der er undersøgt gennem brugen af den britiske tilgang Healthy Streets, som omhandler hvordan den generelle folkesundhed kan forbedres gennem planlægning. Her ses det både nationalt og internationalt, at der er udfordringer på sundhedsområdet, hvor der er en generel tendens til at befolkningen døjer med livsstilssygdomme, overvægt og mentalsygdom. Dette er udfordringer, som vil kunne blive forbedret ved at inddrage fysisk aktivitet og muligheder for sociale interaktioner som en del af borgernes hverdag. Her kan planlægning byde ind med designs af gader, der sætter de bløde trafikanter i fokus, og hvor omgivelserne inviterer til ophold. Med udgangspunkt i denne problemstilling ønsker dette speciale at undersøge: *På hvilken måde kan Healhty Streets-tilgangen anvendes i en dansk planlægningskontekst gennem casen, Holsteinsgade i Odder, og hvordan kan denne tilgang hjælpe planlæggere med at fremme og forbedre folkesundheden?*

Dette speciale er blevet undersøgt ved brug af flere forskellige metoder med henblik på at opnå en bred viden og indsigt i perspektiver, der relaterer sig til sundhed i planlægning og Healthy Streets-tilgangen. Specialet tager udgangspunkt i en case, Holsteinsgade i Odder, der er udvalgt på baggrund af gadens alsidighed og de sundhedsproblematikker, som Odder Kommune står overfor. Disse sundhedsudfordringer er i stort omfang generelle for flere kommuner i Danmark, hvorfor det er muligt at generalisere undersøgelsens resultater så længe der tages højde for de stedsspecifikke forhold. I den forbindelse er der blevet foretaget flere observationer af Holsteinsgade for at opnå en forståelse af området i Odder ligesom der er foretaget observationer i London, hvor tilgangen er opstået og anvendt i større grad end i Danmark. Med formålet at opnå viden om sundhed i planlægning, Healthy Streets tilgangen, og implementering af nye paradigmer i planpraksis er der foretaget interviews med eksperter, der beskæftiger sig med henholdsvis Healthy Streets, mobilitet og urban design, samt med tre kommunalt ansatte fra Odder Kommune, der beskæftiger sig med henholdsvis byplanlægning, trafik og sundhedsudvikling. Foruden observationer og interviews er der ligeledes foretaget dokument analyse, hvilket bidrager med sekundært data i form af viden om blandt andet kommunale planer og baggrundsviden om Healthy Streets tilgangen. Slutteligt er værktøjet Healthy Streets Design Check blevet anvendt til at undersøge, hvordan tilgangen kan anvendes og implementeres i dansk planlægning gennem casen af Holsteinsgade.

For at besvare undersøgelsesspørgsmålet bliver den teoretiske baggrund for koblingen mellem planlægning og sundhed beskrevet. Her præsenteres et historisk tilfælde af saneringen af København som startede i 1850'erne, hvor der var udfordringer med befolkningens sundhed og hvor planlægning - i form af nedrivning og efterfølgende genopbygning - var løsningen. Efter denne gennemgang bliver teorier, om hvordan planlægningspraksis kunne blive ændret fremlagt. Her præsenteres det at tværfagligt samarbejde kan være et værktøj planlæggerne kan bruge til at arbejde med den komplekse planlægning, når sundhed involveres i sammenspil med traditionel planlægning. Afslutningsvis præsenteres en planlægningsteori, som arbejder med at planlægge med et strategisk formål for øje - et formål som her er at forbedre folkesundheden. Herefter præsenteres Healthy Streets-tilgangen og det bliver beskrevet, hvilke værktøjer man som planlægger kan bruge til at ændre det fysiske rum med henblik på at invitere til ophold og aktiv transport, såsom at gå, cykle eller lignende. Det beskrives også, hvordan tilgangen har 10 indikatorer, som har til formål at visualisere hvilke aspekter der kan arbejdes med på en gade for at forbedre folkesundheden. De 10 indikatorer er:

- Alle føler sig velkommen
- Let at krydse
- Skygge og læ
- Steder at stoppe og hvile
- Ikke for larmende
- Folk vælger at gå og cykle
- Folk føler sig trygge
- Ting at se og gøre
- Folk føler sig afslappede
- Ren luft

Efter denne præsentation af Healthy Streets-tilgangen bliver Odder Kommune, Odder by og Holsteinsgade introduceret, da sidstnævnte udgør casen for dette speciale. Herunder bliver Odder Kommunes visioner på sundhedsområdet, byplanlægningsområdet og trafikplanlægningsområdet fremlagt, samt Holsteinsgades funktioner, udfordringer, fysiske udtryk og potentialer gennemgås.

Som nævnt anvendes værktøjet Healthy Streets Design Check til at undersøge en pågældende gades designs sundhed, hvilket er baseret på de 10 indikatorer og 19 forskellige målinger. Her identificeres Holsteinsgades eksisterende design med udgangspunkt i sundhed, og der præsenteres tre forskellige design scenarier. Disse scenarier varierer i ambitionsniveau og nødvendige ressourcer. Fælles for dem er at de hver især har til formål at forbedre folkesundheden gennem fysiske ændringer i gadens design. Dette kan være tiltag, der fremmer aktiv transport, sikkerhed og tryghed. I forlængelse af de fremsatte scenarier bliver der foretaget en diskussion og vurdering af de foreslåede tiltag og på baggrund af dette præsenteres et fjerde og endeligt design scenarie for redesign af Holsteinsgade til Odder Kommune. Slutteligt vil det blive diskuteret, hvilke overvejelser der er nødvendige for en planlægger at gøre sig, når en tilgang som Healthy Streets skal implementeres i dansk planlægning, samt om det er muligt at implementere denne.

På baggrund af dette kan det konkluderes, at Healthy Streets-tilgangen er konverterbar til dansk planlægningspraksis. Dog vil det være nødvendigt at foretage enkelte justeringer således, at det tilpasses dansk kultur. Ydermere er det identificeret, at Healthy Streets-tilgangen er et brugbart redskab for planlæggere, der ønsker at indarbejde et større sundhedsfokus i den fysiske planlægning. I denne henseende kan det være fordelagtigt at benytte en tværfaglig tilgang, da Healthy Streets-tilgangen er holistisk og kræver involvering og perspektiver fra flere forskellige fagligheder.

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Introduction 1

This research concerns the complexity of improving public health through planning by examining the British Healthy Streets Approach's utility within Danish planning practice. In this sense the approach is being applied on a Danish case, Holsteinsgade in the city of Odder, to investigate if such a new planning paradigm, which it is in a Danish context, is applicable through a strategic planning approach and if so how it can contribute to planners taking part in promoting public health. Additionally, the greatest focus is on the design as the approach concerns the health of a street design, however, focus is likewise on considerations necessary when wanting to adopt the Healthy Streets Approach into Danish municipalities.

1.1 The Complexity of Connecting Health and Planning

Health is a complex field as it affects and is affected by many aspects in society such as planning both in terms of urban and transport planning. The built environment that people live in affects health and quality of life as well as urban structures. This can be exemplified by urban structures influencing people's choice of transport means and use of public spaces (World Health Organization, Europe, n.d.; World Health Organization, 2022; Townshend, 2022; Gehl, 2010). Well-designed communities that amongst other ensure good conditions for physical and mental well-being are therefore important for the public health (World Health Organization, Europe, n.d.). The health and well-being of citizens are by the World Health Organisation (WHO) viewed as the most essential asset of a city (World Health Organization, n.d.). However, urban areas are often considered as unhealthy places to live for example due to heavy traffic, pollution, and social isolation and in continuation noncommunicable disease are increasing in cities (World Health Organization, Europe, n.d.). Noncommunicable disease can for instance be due to poorly designed urban transport systems that can create threats such as accidents, air and noise pollution, and barriers towards physical activity (World Health Organization, 2021). Furthermore, it is highlighted that:

> *"Noncommunicable diseases like heart disease, asthma, cancer and diabetes are made worse by unhealthy living and working conditions, inadequate green space, pollution such as noise, water and soil contamination, urban heat islands and a lack of space for walking, cycling and active living."* (World Health Organization, 2021)

A way to tackle the health challenges in urban areas are through planning, as planners of today have the opportunity to guide the urban development trends to protect and promote health (World Health Organization, n.d.) as well as *"The planning system has a significant role to play in promoting healthy lifestyles."* (Rabe, 2019). An example of such is planning for making it intuitive for people to transport themselves actively (Rabe, 2019). Considering the societal issues regarding

the mental and physical health of the citizens of today planners must take action and take part in the redesigning of cities to benefit the overall public health of citizens and thereby benefiting the current crisis of the Health System (World Health Organization Europe, 2023). By creating this link between health as a societal issue and urban design and structure, planners are able to work on improving the overall health of the public in the future planning. It might be possible to improve these current health issues by for example ensuring that people can spend time outdoor and do exercise. Thereby, it is crucial for planners to understand the before mentioned link and bring knowledge from other professionals into the planning of cities (Transport for London, 2017; Ede and Morley, 2023; Smith, 2023; Børne- og Undervisningsministeriet and Danmarks Evaluseringsinstitut, 2019).

Globally, more than half of the population are living in cities as of today - a number expected to rise to 68% by 2050 (World Health Organization, 2021). This development and tendency of continued urbanization creates demands for the planning of the cities as the urban environment and structures has great impact on the overall societal health as well as it can lead to cities being epicentres for transmission of disease (Townshend, 2022; World Health Organization, 2021). To accommodate this demand an approach could be creating cities that supports the choice of living a healthier lifestyle - for example one where citizens choose active transportation over passive transportation and where there is a heightened focus on decreasing car traffic leading to less emissions of polluted air. In this connection, a shift in thinking is necessary as it is not enough for planners to provide for example sports facilities - activity should also be built into people's everyday routine (Rabe, 2019).

Due to the complexity of working with and embedding health in planning there is a need for developing cities through a holistic approach. As previously mentioned health is affected by multiple aspects both of social, environmental, and economic character, which makes it relevant to include health in a wide range of decision-making. This is for example evident from the strategy 'Health in All Policies' that aims for ensuring that health considerations are part of decision-making in all sectors that impact health, for which reason health promoting and prevention should be implemented in problem solving across departments, administrations, government agencies, and the like (Centers for Disease Control and Prevention, 2015; World Health Organization, 2014). Politicians and planners have a role in terms of ensuring that health is incorporated within the planning practice as they are the ones able to administrate the opportunity to create better environments for people and thereby improve their health when decisions on the built environment are made.

Cities and urban areas in the global north has previously been planned and shaped based on the most dominating transport system. This means that for the previous hundred years trains and tramps were the transport system that was in focus, and later from the mid twentieth century cars began sprawling and became dominant for city shaping and thereby also the everyday life of people. The car-centric planning of cities has brought along some different problems of which one is health impacts such as low level of physical activity (Newman and Kenworthy, 2015). However, in terms of seeking to accommodate the need for connecting health and planning it calls for a paradigm shift in planning practice towards one that is based on healthy structures to a greater extent. An argument for a paradigm shift is that less car-centric cities are often more healthy as a car dominance worsen the air and the public health (Stevenson, 2020), which can be evident from car ownership being a great factor in influencing peoples choice between active and

passive transport despite the fact that most car trips could be either cycled or walked (Transport for London, 2017). In this connection, out of all car journeys in Europe 30% of them is less than 3 km and 50% is less than 5 km (World Health Organization, Europe, n.d.), which can be considered manageable distances to walk or cycle in most cases.

In the present societal practice different approaches to planning that aims for incorporating sustainability and health are arising internationally. This is for example explored by Jan Gehl who: *"... experiencing a paradigm shift in urban development, where cities must be Living, Sustainable and Healthy."* (Gehl in (Sandahl, 2019)). A way to embed this health in planning to a greater extent is through the Healthy Streets Approach, which is a human-centered and cross-disciplinary framework developed by Lucy Saunders, who is a public health specialist, urbanist and transport planner (Healthy Streets, n.d.b; Transport for London, n.d.; Healthy Streets, n.d.d). Furthermore, it is an international approach that already has been successful in linking health and planning - for instance in London. The purpose of this framework is to plan for healthy streets for everyone based on 10 indicators that all are focused on the human experience of being on streets (Healthy Streets, n.d.b). Thereby, the Healthy Streets Approach is the focal point of this research as it is a tool for addressing the health challenges through urban planning. Furthermore, it is considered a central front-runner framework for working with the complexity of health in planning.

The Healthy Streets Approach has been utilized in few planning projects in Denmark, but it has not become part of the planning practice yet as well as the use of it in Denmark has not been of much focus. The main goal with this research is to identify how the Healthy Streets Approach can be applied in Danish planning practice through a case on street level and be a tool for Danish planners to utilize in order to promote and improve public health and the quality of peoples everyday lives. The research is based on a Danish municipal case to produce recommendations of designs for improvements of the existing street design's health with the aim of improving public health. The investigated case is the street Holsteinsgade in the city of Odder, which is experiencing some of the most common health issues in Denmark. Furthermore, it is examined how public health can be worked with in a Danish municipality through transdisciplinarity. Therefore, the research seeks to implement the Healthy Streets Approach into a Danish planning context for the purpose of ensuring more holistic work on health in the built environment. The following section deepens the content of the research as the research design is being presented.

1.2 Research Design

This section is centered around the research design, which involves a review of the planning of this research that has been shaping the subsequent conduction of the research (Farthing, 2016). Therefore, the justification and rationale for the key decisions that were made in advance for the actual conduction will be presented and clarified as well as the research questions. Furthermore, the assumption of the nature of the world - the philosophy of science approach - is likewise presented.

1.2.1 Research Questions

The basis for this research is the research questions as they structure the content as well as the direction and focus of the research. Furthermore, the research questions are influential in all design decisions, which for example includes the choice of data collected and the way in which

the research questions are answered (Farthing, 2016). Within this research there is a great focus on the connection between health and planning and planners role in promoting public health. A framework that focuses on these aspects and is centered around embedding public health in for example planning is the Healthy Streets Approach, which therefore is examined. This is illustrated through a Danish case, the street Holsteinsgade in the city of Odder, which amongst other has been chosen based its diverse use and the fact that Odder is facing some of the general health issues like the rest of Denmark. The main research question is therefore:

> ***In which way can the Healthy Streets Approach be utilized in the Danish planning context of Holsteinsgade in the city of Odder, and how can this approach help planners take part in promoting and improving public health?***

This main research question initiate a need for a shift in planning practice towards thinking and embedding health more into planning by utilizing the Healthy Streets Approach. However, this is not necessarily an unproblematic manoeuvre as health in planning is a complex and many faceted problem area. Therefore, there are different areas of interest to investigate and in order to support as well as investigate the above-stated main research question, four sub-questions are posed:

1. *In which way can urban planning impact public health, and how can changes in planning practice support the work with the complex health-oriented urban development?*
2. *What is the Healthy Streets Approach, and how has it been implemented in London?*
3. *How is the existing design of Holsteinsgade scored using the Healthy Streets Design Check tool, and which planning actions can be implemented to improve the healthiness of the street's design?*
4. *How can the proposed actions for a redesign of Holsteinsgade be assessed, and what considerations should be included when converting the Healthy Streets Approach to a Danish municipal planning context?*

These sub-questions are each structuring a certain part of the research and all directed in connection towards providing an answer for the main research question. The four sub-questions are respectively structuring the theoretical framework, the pre-analysis, the analysis, and the discussion of this research. Figure 1.1 is a visualization of this research's design and the connection between each chapter - and parts of the research - as well as the methods used to generate data are brought out. Thereby, the figure visualize the logic of the approach that is the basis for answering the above-mentioned research questions. This will be further elaborated below the figure.

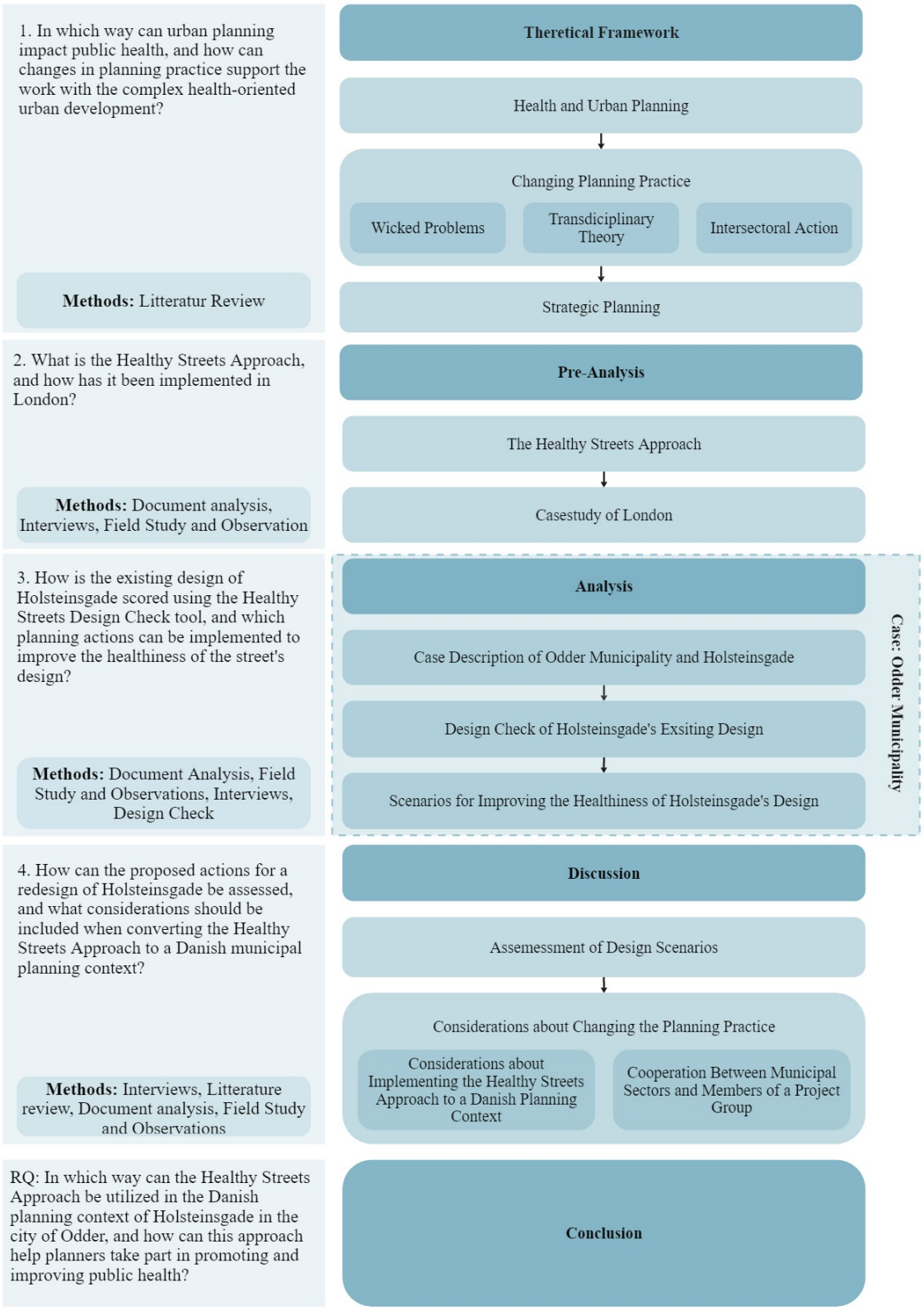

Figure 1.1. Illustration of this research's design.

Overall, the research is focused around health in planning through examining how the Healthy Streets Approach can be utilised in Danish planning and help planners improve public health. The first sub-question is structuring the theoretical framework, which is based on a literature review,

that aims to review the state of academic knowledge on respectively the connection between health and urban planning, aspects on chaining planning practice, and strategic planning. The purpose of the theoretical framework is to investigate the connection between health and urban planning and planners window of opportunity to affect the field of health as the Healthy Streets Approach provides opportunities for planners to make improvements of public health through changes in the built environment (Healthy Streets, n.d.b). However, it is challenging implementing a new paradigm, the Healthy Streets Approach, into the current planning practice and therefore, the theoretical framework delves into how it can be changed through different lenses. The first lens is wicked problems as planners are working in the face of those, the second lens is transdisciplinarity as planning for promoting health demands a comprehensive approach due to the field's complexity, and the third lens is intersectoral actions as it is important to understand how municipal sectors are working and potentially can work across disciplines. Finally, the theoretical framework introduces the strategic planning approach as it is considered the driving force in terms of planning for and implementing the Healthy Streets Approach. Thereby, the content of the theoretical framework provides knowledge related to health in planning and changing planning practice and which influences how the generated data are analysed as the scope of the theory is used in the analysis and discussion.

In continuation of the theory and prior to the analysis is the pre-analysis, which overall purpose is to present the Healthy Streets Approach in depth in terms of its origin, its aim, the involved stakeholders, the 10 Healthy Streets Indicators, and an couple of examples on how the approach has been utilized in its original context, London. This part provides an understanding of the approach that the research is based upon and is therefore influencing the analysis and discussion.

The analysis is based on answering the third sub-question and as the Healthy Streets Approach especially is dealing with the built environment there is great focus on assessing the health of the street design of Holsteinsgade. Prior to this investigation a case description of Holsteinsgade and Odder Municipality is carried out to provide context-based knowledge as the subsequent analysis is context dependent. Thereby, a greater understanding of the municipal plans, visions, and goals as well as characteristics of Holsteinsgade are identified. Besides from a case description, the analysis aims for investigating the health of Holsteinsgade's existing and future street design by utilising the Healthy Streets Design Check, which is a tool for assessing the health of a street based on 19 metrics and the 10 Healthy Streets Indicators (Healthy Streets, 2021). First, an assessment of the existing street design is carried out and second, based on the first assessment three different design scenarios for a redesign of Holsteinsgade with changes that varies in extent in terms of ambitiousness and resource heaviness are generated to exemplify how the Healthy Streets Approach can be utilized in a Danish context and how it can be a tool for planners to promote and improve public health though changes in the built environment.

The fourth sub-question is the foundation for the discussion that is two parted. First, the discussion aims to carry on the work from the analysis, as the proposed actions for a redesign of Holsteinsgade is assessed as well as a fourth scenario based on the discussion is put forward as being a final proposal for a redesign of Holsteinsgade to Odder Municipality. However, changing ones practice to utilizing the Healthy Streets Approach and implementing the proposed designs at Holsteinsgade is not an easy task for planners, which is why the second part delves into considerations about changing the planning practice as well as considerations about converting the Healthy Streets Approach into a Danish municipal planning context. Through the knowledge

provided in the theoretical framework on the connection between health in planning and changing planning practice - and in connection with the data generated from interviews and document analysis - it is possible to achieve a greater insight to the considerations on implementing Healthy Streets as a new planning paradigm in Danish municipalities.

Lastly, the conclusion of the entire research aims to gather the threads of the research and each sub-question and based on that provide a conclusion on the main research question holding the most essential perspectives identified. Obviously, the research could have been carried out or planned differently, which would have provided different findings. A delimitation within this research is for example that the investigation of the Healthy Streets Approach usability in Danish planning has only been based on the case of Holsteinsgade, even though it is acknowledge that the single street is part of a greater network of streets and paths. Thereby, a redesign of Holsteinsgade will affect the mobility of the surrounding areas, but this has not been taken further into account as the focus is on utilizing the approach on street level. Another relevant delimitation to address is the focus of the proposed design scenarios, which could have had many other determinants - for instance a greater focus on target groups, blue and green structures, or the like - would have produced different results.

Besides the structure and content of the research, Figure 1.1 is likewise pointing out the primarily used methods to generate data for investigating each research question. Overall, the research approach of this study is mixed methods as the complexity of health in planning demands different data both of qualitative and quantitative character to achieve the most nuanced perspective on the research. This is due to that *"More often than not, a combination of qualitative and quantitative methods will do the task best."* (Flyvbjerg, 2006, p. 242). Here, the methods of interviews, document analysis, observations, Design Check measurements, and literature review are used to generate data aiming to support different parts of the research and support the investigation of the problem. Through the methods used for generating data context dependent knowledge is provided (Flyvbjerg, 2006), which is essential when examining a case.

1.2.2 Holsteinsgade: A Paradigmatic Case

With the aim to examine the Healthy Streets Approach's legitimacy within Danish planning practice the research is based on a thorough single case-study, which is a scientific method (Neergaard, 2007; Flyvbjerg, 2006). A case-study is defined as *"... an empirically based study that explores a contemporary phenomenon in a temporal context."* (Yin in (Neergaard, 2007, p. 17, own translation)). A thorough case-study research is necessary when dealing with a complex issue (Flyvbjerg, 2006), for which reason a case is used to improve the understanding of the complex area, health in planning. In this research a paradigmatic case has been selected, which purpose is *"To develop a metaphor or establish a school for the domain that the case concerns."* (Flyvbjerg, 2006, p. 230). The Healthy Streets Approach is not implemented in Danish planning practice which is why this research can be considered being a paradigmatic case. The choice of the paradigmatic case is likewise that a shift in planning paradigm or norm is assessed as needed to achieve a greater ambition in terms of addressing public health issues through planning (Flyvbjerg, 2006). Thereby, it is examined how a paradigm, the Healthy Streets Approach in Danish planning, can be utilised through the case of Holsteinsgade. Therefore, the findings can be useful when examining if it is relevant to develop a new direction for planning and whether the approach should be utilized in Danish planning or not.

In this research the street Holsteinsgade in the city Odder has been selected, despite any Danish street in principle could have been selected as the Healthy Streets Approach are applicable at any streets at any place (Healthy Streets, n.d.b). The choice of Holsteinsgade as the case has been a purposeful and information oriented selection which was in order to achieve the maximum information (Neergaard, 2007; Flyvbjerg, 2006). The selection has to a certain extent been based on intuition, which is crucial for paradigmatic cases (Flyvbjerg, 2006). This is amongst other due to Odder Municipality having appointed it being in need of a redevelopment and having great potential. However, the selection is also based on more rational causes as the street has diverse characteristics that holds different uses and are targeting a broad spectrum of people. Thereby, it becomes a case of showcasing that it is possible to apply the approach to different streets. Furthermore, the health challenges that Odder Municipality experiences are also some that are faced nationwide, which makes Holsteinsgade a case of how planning can contribute to accommodate health challenges that several others Danish municipalities besides Odder faces. Thereby, it is assessed that the case has been selected purposeful as there is accordance with the problem area, health in planning, and the case, Holsteinsgade (Neergaard, 2007). In addition, according to Flyvbjerg (2006) it is possible to generalize from a single case due to the force of example and through that contribute to development of knowledge. Therefore, it is possible to transfer the findings of utilizing the Healthy Streets Approach in Danish planning to other contexts as long as attention is paid to the potential differences. Generally, this research's findings can be guiding for what is possible in other situations (Neergaard, 2007).

1.2.3 Philosophy of Science

It is important to understand the philosophy of science of this research as it provide insight to how the researchers interpret *"... what the social world is like, that is, what it is composed of (ontology), what one can know about the world (epistemology) and how to go about investigating it (methodology)."* (Farthing, 2016). The research starts with the belief of what the social world is like and then creates the basis for how the world can be known (Farthing, 2016). Within this research the view on the world can be described using critical realism. Here the ontological view on the world is categorised into two dimensions; the visible (transitive) dimension and the invisible (intransitive) dimension (Egholm, 2014). In these two dimensions are three levels; the empirical level, the actual level, and the real level. The relations between these two dimensions and the three levels are visualized as an iceberg model and can be seen on Figure 1.2 as well as examples of what the levels could be in relation to this research.

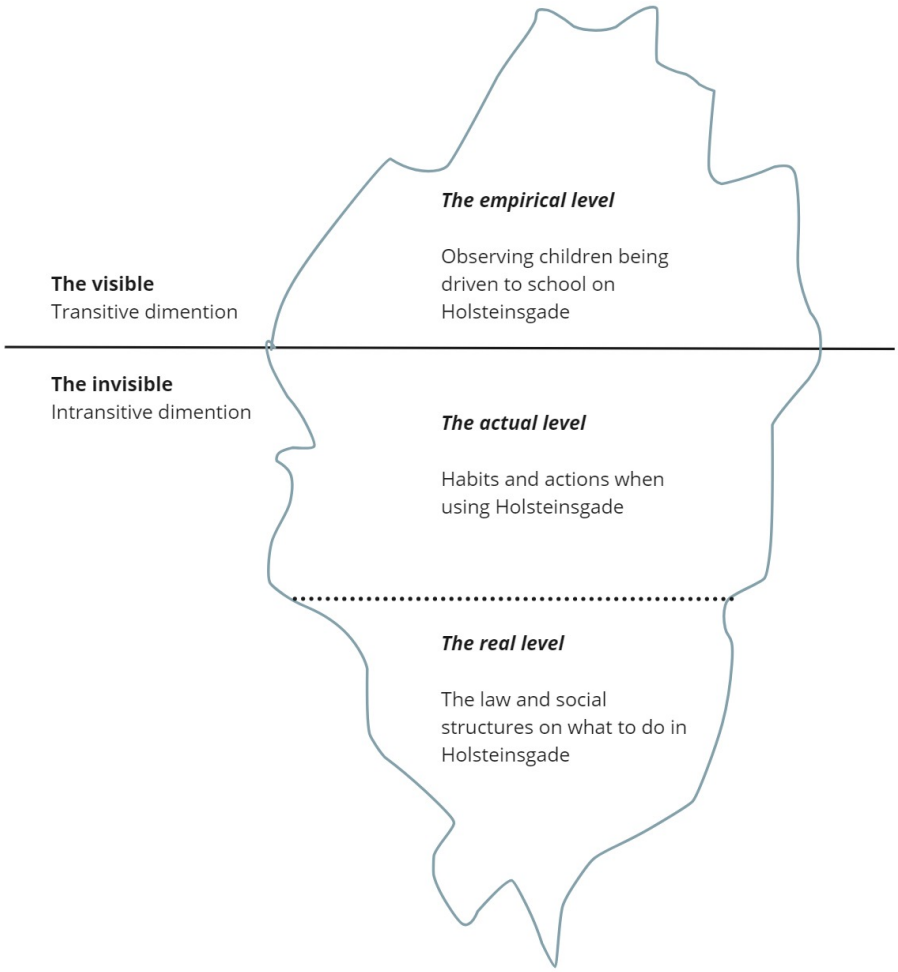

Figure 1.2. Illustration of the dimensions and levels within the research. The illustration is inspired by Egholm (2014).

The visible dimension consists of phenomenons that can be observed where as the invisible dimension consists of phenomenons that cannot be seen (Egholm, 2014). Within the visible dimension is the empirical level which is defined as events that can be observed or perceived (Egholm, 2014; Danermark et al., 2019), and could within this research be children being driven to school by parents in cars or citizens walking or cycling on Holsteinsgade. In the invisible dimension there are both the actual level and the real level (Egholm, 2014). The actual level is the events and non events that are generated by the real world and is the level where events and non-events are happening regarding of whether it is being observed or not (Danermark et al., 2019; Egholm, 2014). In this level some of the events could be habits and actions of the citizens using Holsteinsgade, as their habits are based on structures within the real level and their following actions are happening regardless of them being observed (Danermark et al., 2019). The real level is the mechanisms and structures in which society is built upon (Egholm, 2014) and could in this research be the laws and unwritten social structures regarding the use of Holsteinsgade. Within this research the aim is primarily to influence two levels: the actual level and the empirical level. In the actual level within the invisible dimension the aim is to influence the habits and actions of the citizens using Holsteinsgade through actions in the built environment. The empirical level aims based on a redesign of Holsteinsgade to be able to physically see that the use of the street is different and has more active transport and social activities.

Hultafors
Sweden

Methods and Data Collection 2

This chapter covers the methodological approach of the research, which imply the data collection that aims for supporting the investigation of how the Healthy Streets Approach can be implemented in Danish planning and contribute to a paradigm shift in practice. Overall, this chapter introduces each method and the preparation, conduction, and subsequent processing of it as well as reflections and potential biases. The methods used for collecting data and the structure of this chapter are; Interviews, Field Study and Observations, Design Check, Document Analysis, and Literature Review.

Previously, it has been identified that health in planning is a complex field, which is why the research approach is mixed methods as it contributes to provide a nuanced and diverse view on the research and the data (Ahrenkiel, 2020). To answer the research question different data is required. Johnson et al. (2007) has provided a general definition claiming that:

> *"Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration."* (Johnson et al., 2007, p. 123)

For the purpose of achieving broad and nuanced perspectives on health in planning as well as the Healthy Streets Approach's justification in Danish planning both qualitative and quantitative methods has been used for collecting empirical data. Thereby, the problem of interest has been expounded by more than one angle (Ahrenkiel, 2020), and the data collection has provided both in-depth knowledge and measurable knowledge. This is due to the fact that a combination of methods has been used to study the phenomenon of health in planning (Brown, 2015). Thereby the empirical data is based on multiple sources of evidence that provide credibility as *"... the researcher can corroborate findings across data sets and thus reduce the impact of potential biases that can exist in a single study."* (Bowen, 2009, p. 28). Overall, this mixed-method approach has meant that each methods has provided and contributed with unique insight and knowledge to the investigated phenomenon as well as the methods across each other has helped generating a mutual enhancement of the individual method by some of the other methods, which likewise is an expression of triangulation (Liamputtong, 2020).

2.1 Field Study and Observations

Initially, this research is based on a field study of both London and Holsteinsgade in Odder, due to London being the Healthy Streets Approach's place of origin and Holsteinsgade being the chosen case in terms of investigating how the approach can be incorporated in Danish planning. In that respect, field study and observations has been done at both locations. Field study has been done for the reason of getting a sense of place and visual impression of the areas, which both implies observations of the physical and mental environment and structures. Furthermore, the Healthy Streets Approach is about *"... the human experience of being on streets."* (Healthy Streets, n.d.b), which is why observations of how humans uses selected streets as well as how the observers interpret being on the streets has been conducted. Observations is defined as *"... the act of experiencing the world through the senses..."* (Williams, 2018, p. 149) and the ones done both in London and Odder has characteristics of the participant observation method. As the name indicates this method implies both participating in and observing the society and its surroundings (Clifford and Valentine, 2003). Thereby, *"The basis of this approach is to get, and stay, as close to the spatial phenomenon being studied as possible..."* (Clifford and Valentine, 2003, p. 133). However, when doing this sort of field work the observer can adopt different roles that varies from complete observer to complete participant (Davies, 2007), and within this research the two observers that has conducted the observations has mainly been observer-as-participant. The exact execution and locations for the observations will be elaborated in the following section.

2.1.1 Execution of Observations in London and Odder

The data generated by the observations are applicable to understand and make sense of the problem of interest, health in planning, which might be abstract (Clifford and Valentine, 2003). In this research the observations has generally provided place specific knowledge on the two places that helps understand and make sense of the Healthy Streets Approach and its potentials as well as understanding the context of Holsteinsgade in terms of its current use and design. Therefore, during the project period several observations has been done both in London and at Holsteinsgade in Odder. Field work and observations in London was done in between Thursday the 4^{th} of April 2024 and Saturday the 6^{th} of April 2024. Various observations has been done in the street of Holsteinsgade in Odder often in continuation of or in connection to other methodological purposes in the city. The dates that the observations were made was:

- Friday the 15^{th} of March 2024
- Wednesday the 3^{rd} of April 2024
- Monday the 8^{th} of April 2024

Figure 2.1 illustrates the two areas in which observations mainly were made in London, which is Lower Marsh and Shoreditch. These two areas was identified respectively through document analysis on where the Healthy Streets Approach has been applied in London and through recommendation by Lucy Saunders, who is the founder of the approach. Shoreditch and specifically Leonard St. were only observed at Friday the 5^{th} of April 2024 at the morning and noon, whereas Lower Marsh were observed all three days during different times including, mornings, noon's, and evenings. Besides this, cycles were used as transport mean to get around in London to experience the active transport culture and facilities as well as to explore different places or elements in the city that was inspired by the Healthy Streets Approach as well.

Figure 2.1. Map of the street Lower Marsh and the area of Shoreditch, where observations were done. The base map is provided by ArcGIS.

On the basis of the two locations the observations transferred into drifting, which has not been mapped. Urban drifting is by Daniilidis (2016) defined as *"... the process of being part of an urban environment through long walks or detours, with an ulterior aim to comprehend the specific urban locus and all its characteristics..."* (Daniilidis, 2016, p. 418). Thereby, in continuation of the planned observations the drifting took the observers around in the surrounding urban environment by being attracted to elements or places that seemed inspired by the Healthy Streets Approach.

Figure 2.2 illustrates the areas that has been covered throughout the observations in Odder. This indicates that it is mainly Holsteinsgade that has been observed, however, some few other streets, the station, and the surrounding environment of Holsteinsgade was observed as well. The street has both been observed by walking the street as well as driving slowly through it.

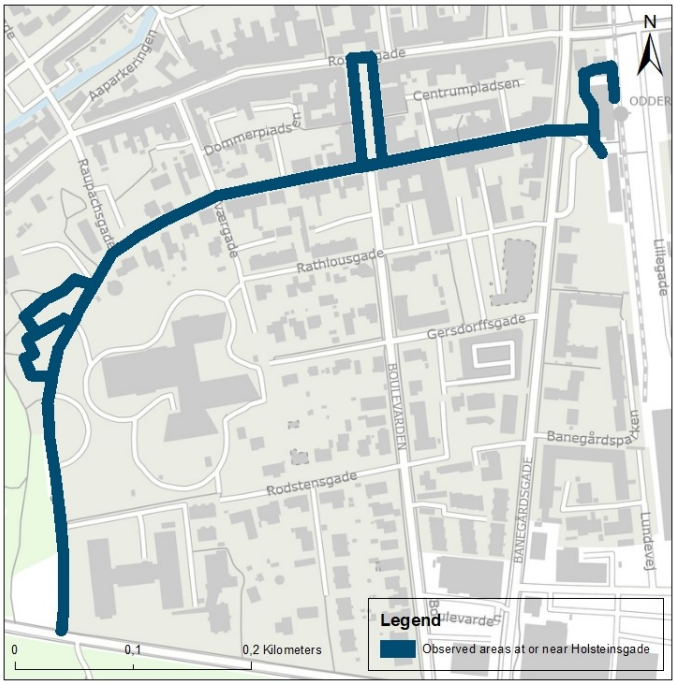

Figure 2.2. Map of Holsteinsgade in Odder and the areas where observations was done. The base map is from Dataforsyningen: Styrelsen for Dataforsyning og Infrastruktur (n.d.c).

All observations both in London and Odder has been carried out unstructured, which means that no systematic observation scheme has been done previously and followed. However, as the aim with the observations was to obtain a general and contextual sense of place of the areas, it was assessed that unstructured and free (however with background understanding of the Healthy Streets Approach) observations would provide the most detail rich knowledge. One reflection that is essential when doing participant observations is the observers role and being critical towards their participation (Davies, 2007). In this research, two observers has conducted each observation, by which there might appear two different individual senses of place. However, the observations were mainly conducted through photos but also through conversation among the observes. Thereby, the photos covers the objective and visual aspects of the observations, while the conversations covers the subjective and more emotional aspects of the observations.

Furthermore, there is a strong connection between the methods used in this research, which for example includes that the sense of place has impacted the collection of other empirical data. An example is that some of the observations both in London and Odder gave rise to additional questions in the interviews both of explaining and wondering character.

2.2 Interviews

As initiated above, interviews has been carried out as well. Within this research qualitative interview data has been collected both through in-depth interviews and a focus group interview. Thereby, detailed and in-depth knowledge on health in planning has been gained to support the investigation of the research questions.

2.2.1 Conduction of In-depth Interviews

Qualitative in-depth interviews is a major contributor to the empirical data within this research, and qualitative interviewing is considered as a way of collecting data about the world, how it is viewed, and learn from it with a great level of depth. An interview can be describes as *"... an interchange of views between two persons conversing about a theme of common interest.*(Liamputtong, 2020, p. 54) and the aim of in-depth interviews are *"... to elicit rich information from the perspective of a particular individual and on a selected topic under investigation."* (Liamputtong, 2020, p. 54). Here, the aim with the interviews was amongst other to gain the selected interviewees perspectives on different themes related to health in planning based on their life-world from their professional values and experiences (Kvale and Brinkmann, 2014). The interviews can be considered as a conversation with an agenda (Liamputtong, 2020), and in this case the agenda was to obtain information and knowledge about how to implement an awareness of health, more precisely the Healthy Streets Approach, within planning.

Totally, six interviews has been conducted of which three of them was with consultants from different companies and the remaining three was with employees from different departments of Odder Municipality. Information on the interviews can be viewed at Table 2.1. The three first-mentioned are considered experts primarily on respectively the Healthy Streets Approach, urban design, and mobility. However, they all were familiar with the connection between health and planning for which reason they were able to provide information and knowledge on this from the view of their professional background. The three last-mentioned are municipal employees at Odder Municipality, and they work respectively with development of health, urban

planning, and traffic. Thereby, they were able to provide context specific knowledge on the case of Holsteinsgade, insight into the current planning practice, and knowledge on municipal work. Common to the selection of all six interviewees was that the selection was based on their professional background and areas of responsibility as well as it was assessed that they had essential and specific knowledge on different aspects of health in planning, which in this case is the basis from which they have provided knowledge and insight. It was attempted to reach other interviewees from the Great Britain that have been part of the implementation of the Healthy Streets Approach in London to gain knowledge on that process, but the attempt was unsuccessful.

Date	Interviewee	Interviewee's Background	Interview Form, Type, and Language	Duration [h:m:s]
Experts				
03.06.24	David Lindelöw	Transport planner at WSP, Sweeden	Online (MS Teams), Semi-structured, and English	00:54:42
03.19.24	Lars Dyve Jørgensen	Urban designer at Rodeo Architects, Norway	Online (MS Teams), Semi-structured, and English	00:30:34
04.05.24	Lucy Saunders	Public health consultant and founder of the Healthy Streets Approach	Physical, semi-structured, and English	00:46:06
Odder Municipality				
04.11.24	Louise Holmegaard	Urban planner at Odder Municipality eg. working with area renewable at the city center	Physical, semi-structured, and Danish	00:37:23
04.11.24	Gitte Rasmussen	Transport employee at Odder Municipality working with public transport, road safety, and authority	Physical, semi-structured, and Danish	00:33:40
04.03.24	Marie Kolind Laustrup	Development consultant at Odder Municipality working mainly with the health area	Physical, semi-structured, and Danish	00:36:18

Table 2.1. Overview of the information about the collected interview data.

As Table 2.1 indicates all interviews has been collected face-to-face (Liamputtong, 2020) with the presence of one interviewee, one researcher that interviewed, and one responsible for taking notes and record the interview. The execution of the interviews was through an open approach mainly involving a meaning-making effort, which involved that the interviewing researcher directed the conversation by asking questions as well as both researchers listened carefully to the interviewees response about the persons lived and professional experience of which knowledge was constructed (Liamputtong, 2020; Kvale and Brinkmann, 2014). The language of the interviews were either English or Danish, which means that four of the six interviews were done in the interviewees native language. This choice was made to provide the best possible conditions for gathering depth, nuanced, and precise knowledge and make the interviewees feel comfortable. However, attention to the interviews in Danish should be given as there might appear some abstractions in the translation of quotes from Danish to English. Furthermore, the interviews with Lindelöw and Jørgensen, was done in English, which is not their native language, but it is assessed that despite some few challenges and thinking of words their messages and points were delivered clear enough to make sense of it.

Furthermore, Table 2.1 shows that all six in-depth interviews was semi-structured, which means that interview guides has been utilized, the flow of the conversation was very natural as there was a good balance between structure and non-structure, and the interview in some cases went into unexpected directions (Liamputtong, 2020). Interview guides were produced as a semi-structured scripts for each interview containing themes to cover and proposals for questions aiming to guide the interview (Liamputtong, 2020; Kvale and Brinkmann, 2014).

The interview guides has been structured in advance and sent to each interviewee giving them the opportunity to read through the overall themes and questions for the interview. It was experienced that the majority of the interviewees acted as they were well-prepared as they were clear and precise in their arguments. However, a few of the interviewees seemed a bit more overwhelmed by the questions and struggled to provide accurate answers. It seemed as if some of the interviewees were affected by being recorded and that this affected their answers and their ability to elaborate on their answers. However, due to the semi-structured approach, to accommodate the before-mentioned challenges, and to gain valuable data - both the interviewer and the interviewees used the opportunity for respectively asking follow-up questions of importance for the research based on active listening and elaborating on issues and concerns (Liamputtong, 2020; Kvale and Brinkmann, 2014).

In this research the content of the interview guides were different for the three consultants whereas they were almost identical for the three interviewees from Odder Municipality. Table 2.2 present the themes within the interview guides, which therefore indicates what has been investigated and what knowledge has been collected amongst the interviewees. The identification of themes and questions were based on a document analysis and the interviewees professional background and their knowledge on health in planning, which contributed to a broad set of themes aiming to conduct nuanced insight on health in planning.

Interviewee	Interview Themes
Lucy Saunders	• The background for the Healthy Streets Approach • The implementation process of the concept in the UK and abroad • Transdisciplinarity • Changing planning practice
David Lindelöw	• Sustainable mobility • Walkability, cycling, and public transport • Health in planning • Behavior
Lars Dyve Jørgensen	• Health and design • Design for all • Transdisciplinary work
Odder Municipality Employees	• Health in their work • Transdisciplinary work and their experiences • Holsteinsgade • The Healthy Streets Indicators

Table 2.2. Overview of the themes in the interview guides of each interview.

Throughout the interviews different types of questions were asked, which includes; introductory questions aiming for encouraging the interviewees to talk at great length and choose what they want to emphasise, follow-up and specifying questions aiming to make the interviewee elaborate on an answer, probing questions aiming to prompt the participants to further discussion, and structuring questions that aimed to move on the next theme of questioning by which it was made clear that the previous theme of questions have been dealt with (Liamputtong, 2020). Furthermore, it was a focus to ask open-ended questions, avoid leading questions, and listening actively (Liamputtong, 2020). The first minuets of an interview are important for an interview to turn out successful (Kvale and Brinkmann, 2014), which is why the first questions of the interview had the character of warming up both the interviewer and the interviewee and generate a relaxed atmosphere where the interviewee felt comfortable and engaged to speak openly and honest. Additionally, prior to the interview a short briefing (Kvale and Brinkmann, 2014) containing informal talk, the aim with the interview, consent to the use of the interview, etc. were done.

2.2.2 Conduction of Focus Group Interview

Apart from the in-depth interviews a focus group interview with the three interviewees from Odder Municipality has been done. The purpose with a focus group interview is to gain a range of perspectives on the concerned subject (Liamputtong, 2020) and it is describes as: *"... an organized discussion among a selected group of individuals with the aim of eliciting information about their views."* (David E. Gray in (Liamputtong, 2020, p. 78)). Within this research the aim with the group interview was two-parted: 1) obtaining the interviewees response and feedback on the

design scenarios for improving Holsteinsgade, and 2) identify how the interviewees, who have different professional backgrounds, work across disciplines and communicate about the topic. On Table 2.3 information's on the focus group interview are highlighted.

Date	Interviewee	Interviewee's Background	Interview Form, Type, and Language	Duration [h:m:s]
05.06.24	Louise Holmegaard Gitte Rasmussen Marie Kolind Laustrup	Urban planner, Odder Municipality Transport employee, Odder Municipality Development consultant, Odder Municipality	Physical Semi-structured Danish	01:16:50

Table 2.3. Overview of the information about the collected focus group interview data.

As mentioned the three participants that have been selected to participate in the focus group are from different departments in Odder Municipality. The participants was recruited by one contact person in Odder Municipality who brought together a group of people from the requested three departments. As the participants are familiar with each other and have a shared workplace they can be considered as a homogeneous group, which meant that they were more open to talk and interact with each other as well as individuals dominating or withdrawing was avoided and the maximum interaction between the participants was obtained during the interview (Liamputtong, 2020). It is enhanced that *"... an ideal focus group interview is when the participants do not know each other in advance, so that a free dialogue can be facilitated."* (Liamputtong, 2020, p. 85). However, here it is assessed that it is more valuable that the participants know each other as one of the aims with the interview was to observe their collaboration. Throughout the interview it was experienced that the dynamic between the interviewees were good and balanced as they were listening to each other and asked each other questions. In continuation, as expected the urban planner, Holmegaard, was slightly more leading while the two others, Laustrup and Rasmussen, was more adding perspectives from their expertise and knowledge, which is considered as how an actual planning process would look like within a municipality where the urban planner will be the project leader.

During the interview there were two moderators playing a role in terms of obtaining the desired knowledge, facilitate discussion, guiding the conversations, and encourage to interaction (Liamputtong, 2020). One of the moderators had the role of facilitating the discussion by briefing about the interview and presenting the proposed design-scenarios and questions, while the other moderator had the role of being note-taker, which likewise is essential in a focus group interview. Besides the note-taker being responsible for recording, the note-taker did also put emphasis on the interaction between the participants in terms of how they work and discuss across disciplines, recorded key issues, and recorded non-verbal responses (Liamputtong, 2020). To ensure the best possible data collection the main moderator sought to be respectful towards the participants, non-judgemental, open-minded, well prepared with adequate knowledge, listening, observational, and patience as the moderator is influential on the quality of the data collection (Liamputtong, 2020).

Prior to the focus group interview a PowerPoint had been made to introduce the aim and instructions of the interview, to introduce the participants to the Healthy Streets Approach, and to present the result of the Design Check of the existing design as well as the three proposals for designs of Holsteinsgade. Additionally, the questions for the participants to discuss from were likewise present on the screen so it was visible during the whole session. With the purpose of obtaining data on an informed basis the focus group interview started off with a short presentation of the Healthy Streets Approach, the 10 Healthy Streets Indicators, and the Healthy Street Design Check to ensure that the participants all had an understanding of the way the design scenarios has been done.

The settings in which the focus group interview was carried out should be comfortable for the participants in terms of engaging them to take part in a dynamic discussion (Liamputtong, 2020), which is why the settings was a conference room at Odder Town Hall being their workplace. Throughout the whole interview printout of the 10 Healthy Streets Indicators and different maps of the case area were accessible and visual for the participants by which they easily could refer to them if needed. A picture of the setting for the interview are present at Figure 2.3.

Figure 2.3. Picture of the setting of the focus group interview with a PowerPoint presentation, a printed version of the 10 Healthy Streets Indicators, some printed maps, and snacks.

It is assessed that the focus group interview has provided data with great depth and breadth as the participants were able to discuss the scenarios in detail and more perspectives was represented. This was due to the questions being open and that the participants were able to reflect upon the

question while other answering as well as follow up on the other participants answers. The participants were encouraged to act like the interview was a typical meeting between colleges at the municipality despite the researchers presence of course influenced that to some extent.

2.2.3 Subsequent Processing of the Interview Data

In continuation of the collection of all the interviews, both the in-depth interviews and the focus group interview, processing of them has been done by first transcribing and afterwards coding them. The subsequent processing is needed to enable data analysis which is why transcription and coding can be seen as a first analysis of the empirical data (Liamputtong, 2020; Kvale and Brinkmann, 2014).

A requisite for transcribing interview is that it has been recorded (Kvale and Brinkmann, 2014), which is why each interview prior to the transcription has been recorded either by using a dictaphone or through MS Teams. The transcription process is a way to document the knowledge gathered through interviews and can be described as following: *"A transcript is a translation from one narrative form - oral discourse - to another narrative form - written discourse."* (Kvale and Brinkmann, 2014, p. 236, own translation). The transcriptions have been made through two processes. First, the interviews were transcribed by either MS Teams or MS Word depending on whether the interview were conducted on MS Teams or face-to-face. Second, these first produced transcriptions were scrutinized thoroughly to ensure the spoken were translated correctly into written. Within the transcriptions, elements such as repeating words, pauses, tone of voice, etc. has been omitted, as the main aim was to gain knowledge on the Healthy Streets Approach, health in planning, and Holsteinsgade. However, notes from the focus group interview includes interpersonal elements especially focusing on the collaboration between the participants as that interview provided insight into work across disciplines.

In continuation of the transcriptions, all the interviews was coded as well. Coding are defined as: *"Part of the data analysis process where codes are applied to segments, or chunks, of data. Codes are labels that identify general processes and themes."* (Liamputtong, 2020, p. 399). Thereby, the aim with coding the interviews was to structure the written narrative in categories describing the investigated phenomenon, health in planning. The set of codes, which is an indication of the content of and the tendencies within the interviews, are:

- Introduction of the interviewees
- Is there a connection between health and planning?
- Characteristics of Odder and Holsteinsgade
- Current public health challenges in Odder
- Active transport and mobility planning
- Health effects in active travel
- How to create urban life and invite to active transportation
- Choosing the four most important indicators
- Changes in habits of the citizens
- Transdisciplinary collaboration

Within this research the coding process has been inductive and data-driven meaning that non codes were pre-defined and the codes were therefore developed throughout the review of each interview (Kvale and Brinkmann, 2014).

2.3 Document Analysis

To generate the needed data for answering the research questions, secondary data through documents has likewise been collected. This means that document analysis, which by Bowen (2009) is defined as *"... a systematic procedure for reviewing or evaluating documents..."* (Bowen, 2009, p. 27), has been carried out. As this method provides secondary data it also means that it has been done by selecting data rather than collecting it (Bowen, 2009), which by contrast has been the case with the interviews, observations, and the Design Check.

The form of a document can be many and it differs depending on the research and its purpose (Farthing, 2016; Bowen, 2009). Planning documents are often considered as those produced by levels of national and local governments due to them being *"... important parts of the social world which planners inhabit so they are meaningful and have an intrinsic interest for many involved in planning."* (Farthing, 2016, pp. 136-137). In this research, both formal plans, books, webpages, policy documents, strategies, pictures, and background papers was used as these were assessed as important sources of data for developing an understanding of the research's problem area and the Healthy Streets Approach. These documents were chosen as the purpose of the document analysis was to do preliminary research and obtain a basis knowledge on health in planning and the Healthy Streets Approach to support the development of the research design as well as prepare the other methods. Additionally, it also aimed to generate data about the selected case, Holsteinsgade in Odder, and its context both in terms of historical, political, social, and economic information. Thereby, the document analysis has overall provided a knowledge basis and contributed to different phases of the research. The document analysis has likewise contributed to developing themes for interview questions as well as background knowledge for the observations such as what design-related elements can be an example on a Healthy Streets element. On Table 2.4 the documents analysed and the analysed data from these documents are presented.

Documents	**Analyzed Data**
Municipal Plan: *'Kommuneplan 2021-2033'* (Odder Kommune, 2021)	Provides data on the context of Odder Municipality and the municipality's plans, visions, and goals on health, urban development and traffic both for the municipality in general terms and for Odder City.
Development Plan: *'Et stærkt fællesskab i balance: Udviklingsplan 2022-2026'* (Odder Kommune, 2022b)	Data on the Municipal Council's visions for the development of Odder
Development Strategy: *'Odder - en rigtig by'* (Hele Landet, 2019)	The strategy provides data on the development principles for Odder City Center and the challenges and potentials for the city.
Health Strategy: *'Odder Kommunes Sundehsstrategi 2022-2027'* (Odder Kommune, 2023)	Provides data on the health state of Odder Municipality and its visions and goals for development within this area.
Health Profile: *'Hvordan har du det? 2021 – Sundhedsprofil for region og kommuner (Bind 1)'* (Friis et al., 2022)	Primary quantitative data about the mental and physical health state of the citizens of Odder Municipality.

Road Safety Plan: *'Trafiksikkerhedsplan 2022'* (Odder Kommune, 2022a)	Provides data on the traffic in Odder Municipality, the challenges, and the visions and goals within this area.
Road Class Plan: *'Vejklasseplan'* (Odder Kommune, 2014)	Mainly used to provide data about the Odder Municipality's classification of traffic roads.
Route Map: *'Rutekort Odder by 2023/2024'* (Midttrafik, 2023)	Overview of the stretches that the regional, local, and city busses drives within Odder.
Multiple documents related to the Healthy Streets Approach: • The webpages from Healthy Streets (n.d.b), Healthy Streets (n.d.c), Healthy Streets (n.d.d), and Healthy Streets (n.d.a) • The documents from Saunders (2023), Transport For London (n.d.), Transport for London (n.d.), Transport for London (2017), Plowden (2020), and Ede and Morley (2023)	Provides data and knowledge on the Healthy Streets Approach in terms of information of its origin, the founder, its purpose, the actors involved, evaluation, the 10 Healthy Streets Indicators, etc.

Table 2.4. Overview of analysed documents and the analyzed data.

In advance of each document analysis the sources of the documents were assessed to ensure their reliability and applicability to this research (Bowen, 2009). Therefore, as it is expressed at Table 2.4 the majority of the documents are from either the Healthy Streets official webpages, Odder Municipality, or Transport for London (the transport authority in London). To ensure that meaning, understanding, and empirical knowledge, relevant for this research, were developed through the document analysis the documents were all examined and interpreted with the Healthy Streets Approach in mind. The way in which the document analysis was executed was through an iterative process by first skimming a document and identifying its relevance, then thoroughly reading it through, and finally interpreting it (Bowen, 2009). As described the aim with the document analysis was to obtain basis knowledge on for example Holsteinsgade. However, another way to obtain more quantitative data on the case area is through the Healthy Streets Design Check tool, which will be presented in the following.

2.4 The Healthy Streets Design Check

This research aims to assess the street of Holsteinsgade in Odder in terms of its design's level of health with the purpose of providing Odder Municipality with different design scenarios that improves the existing street design to support people walking, cycling, and spending time in the street. For this reason the tool *Healthy Streets Design Check UK* has been used, as it is applicable to make general assessments of both existing streets and design for new street layouts. Therefore, this tool has been used to first assess the existing street layout and with that result in mind, second, generate new design scenarios aiming for achieving a higher score (Healthy Streets, 2021).

The Healthy Streets Design Check has been made with expertise from designers, engineers, policy makers, and public health specialists. In addition, the tool has been made for use in England to suit that context (Healthy Streets, 2021), which means that there can be some biases when using the tool in a Danish context as there are some natural difference in terms of culture, policy, practice, etc. However, it has been assessed that the tool is applicable enough to ensure validity for the results.

The aim with the Design Check tool is to measure how safe, relaxing, and welcoming the street, Holsteinsgade in Odder, is for all people to move actively by foot or cycle as well as spending time within the area (Healthy Streets, 2021). The assessment of the street is made against the 10 Healthy Streets Indicators, which will be presented in Chapter 4, and the Design Check consist of 19 measurements that all has been scored in order to produce a result. The aim with using this Design Check tool is to provide an overall status on how healthy the existing street design of Holsteinsgade. This status is utilized for creating proposals of redesigns for Holsteinsgade (Healthy Streets, 2021). The result of the Design Check is a score out of 100, each of the 10 indicators are contributing equally to the overall score (Healthy Streets, 2021), and *"Each metric is weighted for its role in each of the 10 Healthy Streets Indicators.* (Healthy Streets, 2021). In this context it can be wondered whether this approach is a way of planning for a check list to reach a high score amongst the 10 Healthy Streets Indicators. The 19 measurements and their relation to the 10 Healthy Streets Indicators are present at Figure 2.4.

	Metrics	Everyone feels welcome	Easy to cross	Shade and shelter	Places to stop and rest	Not too noisy	People choose to walk and cycle	People feel safe	Things to see and do	People feel relaxed	Clean air
1	Motorised vehicle speed	●	●			●	●	●		●	●
2	Volume of motorised traffic	●	●			●	●	●		●	●
3	Mix of vehicles	●	●			●	●	●		●	●
4	Cycle safety at junctions	●					●	●		●	
5	Ease of crossing side roads	●	●				●	●		●	
6	Ease of crossing between junctions	●	●				●	●		●	
7	Priority of crossing at junctions	●	●				●	●		●	
8	Navigation of crossings for people with visual impairments	●	●				●	●		●	
9	Quality of the footway surface	●					●			●	
10	Space for walking	●			●		●	●		●	
11	Quality of the carriageway surface	●				●	●	●		●	
12	Space for cycling	●			●		●	●		●	
13	Public seating	●			●		●		●	●	
14	Cycle parking	●			●		●			●	
15	Trees	●		●			●		●	●	
16	Green infrastructure	●					●		●	●	
17	Lightning	●					●	●		●	
18	Reducing convenience of driving short journeys	●	●			●	●	●		●	●
19	Bus stops	●		●	●		●			●	

Figure 2.4. Illustration of the 19 metrics for assessing the street against the 10 Healthy Street Indicators from Healthy Streets (2021). It likewise shows how each metric is weighted for its role in the 10 indicators (Healthy Streets, 2021).

Each metric is scored on a scale from 3-0, where 3 indicates a well performing street with a healthy and welcoming environment for all, whereas 0 indicated a street design with serious issues and a street that to some or many people feel unsafe, unhealthy, or inaccessible (Healthy Streets, 2021). When each metrics has been giving a score the tool generates a result, which is present in the Chapter 6. There are differences throughout the 19 metrics in terms of how they are gathered:

- Metrics 1-3 has been assessed from traffic data
- Metrics 4-12 has been assessed from the weakest point on Holsteinsgade
- Metrics 13-18 has been assessed from the whole length of the street
- Metrics 19 has been assessed as there are a bus service at the street (Healthy Streets, 2021)

In the following sections the collection of the data for the design check will be presented both for the existing street and for the scenarios.

2.4.1 Execution: Design Check of the Existing Layout

In this section the conduction of data for the design check of the existing layout of Holsteinsgade is presented. Each of the 19 metrics requires different data, which either has been provided by Odder Municipality or gathered on Holsteinsgade. The last mentioned is due the fact that some metrics - such as the quality of the carriageway and footway as well as the existing street layout - cannot be assessed without visiting it (Healthy Streets, 2021). Such field study has been done at Holsteinsgade mainly during the 8^{th} of April 2024. The pictures at Figure 2.5 and Figure 2.6 are examples on the measuring and data collection from Holsteinsgade.

Figure 2.5. Picture from Holsteinsgade where a hole in the traffic lane is measured.

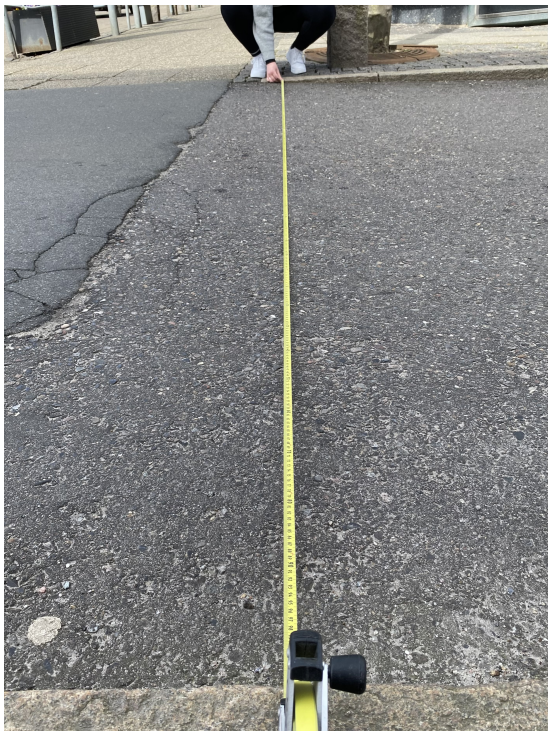

Figure 2.6. Picture from Holsteinsgade where the width of the traffic lane is measured.

To do the measurements for the Design Check, the only tools used were an ruler and tape measuring for instance to measure widths or the depth of a hole, which can be seen in the pictures

on Figure 2.5 and 2.6. Furthermore, to do the counts of pedestrians an app that could count was used to avoid paper getting wet in case of bad whether, flew away in windy whether, or the like. On Table A.1 in Appendix A.1.1 is an elaborate overview of how the data for each metric to assess the existing layout of Holsteinsgade has been collected, when it was collected, and by whom. As each metric has been measured on different locations the map on Figure 2.7 shows the locations for the data gathering of each metric.

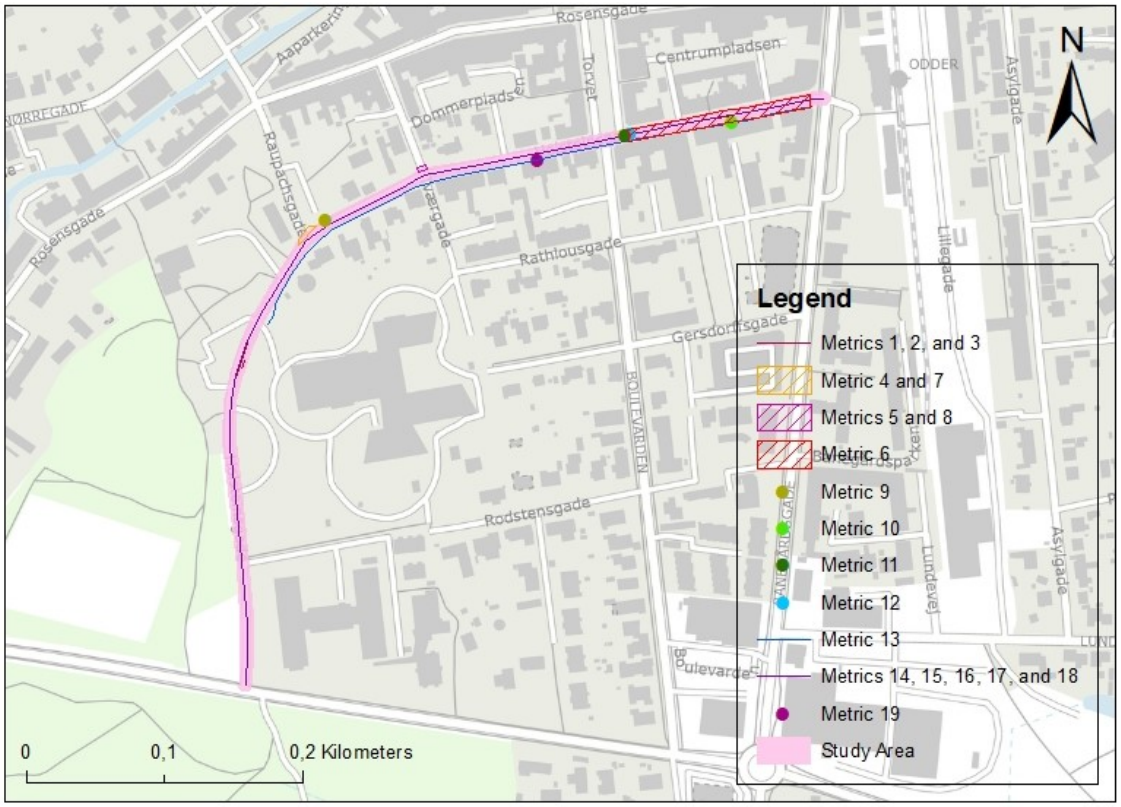

Figure 2.7. Illustration of the locations where each metric was assessed at Holsteinsgade. The base map is from Dataforsyningen: Styrelsen for Dataforsyning og Infrastruktur (n.d.c).

When assessing the results from the design check it is important to be aware that it is common for existing streets, which Holsteinsgade is, to score low. This is due to existing streets often being planned to prioritise the through-movement of vehicles which often can be a challenge to people walking, cycling, or spending time on the street (Healthy Streets, 2021). A low score can likewise be due to that the data for metrics 4-12 has been collected from the weakest point on Holsteinsgade. In this connection, a reflection is that the result from the Design Check might seem worse than the street design is in general. However, here the observations can provide a nuanced and qualitative perspective on the result from the Design Check. Furthermore, the tool is developed to look at one single street and its design (Healthy Streets, 2021), which is the case in this research.

2.4.2 Execution: Design Check of the Proposed Scenarios

When the overall score of the existing street layout has been generated designers are able to increase the score as much as possible within the scope of resources available, physical constraints,

and so on (Healthy Streets, 2021). This is likewise the case in this research, as the aim is to suggest improvements to Odder Municipality based on the results from the Design Check of Holsteinsgade's existing design. Therefore, scores for the proposed layouts should be made as well for which the Design Check tool likewise has been used to. However, there is a difference in assessing an existing layout and assessing proposed layouts as the proposed ones are not physical present. Therefore, when assessing a proposed design, the information from the plans are used to score each metric and otherwise if data is not available an estimate can be made (Healthy Streets, 2021).

In general, three different design scenarios holding proposals with different levels of ambition and resources to improvements of Holsteinsgade has been carried out to demonstrate that there are multiple different solutions for improving the health of the citizens through redesign of the street. Each of these three scenarios has been scored on the 19 metrics, and on Table A.3 in Appendix A.2 the scoring and proposals for each of the 19 metrics for the proposed layouts are presented. The proposals has been made mainly from a mixture of the observed and identified challenges on Holsteinsgade and the purpose of the Healthy Streets Approach.

2.5 Literature Review

To support the investigation of the main research question, a literature review has been done to define the nature of the research within this field of planning (Farthing, 2016). The aim with a literature review is *"... to review the state of knowledge, on a question as a framework for the review. This means that the literature to be used in the review should relate to the specific question you are investigating."* (Farthing, 2016, p. 65). Therefore, an understanding of health in planning and how to change planning practice has been developed and identified. To be able to do that documents such as professional publications, academic articles, and chapters of books has been used to review the already existing literature and identify the state of knowledge (Farthing, 2016). Furthermore, the literature review, which is build upon existing knowledge, contributes to structure and establish this research's theoretical framework. Therefore, the content of the literature review influences the way in which the data is analysed as it provides certain insights on the research related to health in planning and changing planning practice.

The conduction of the literature review is based on a critical approach. This means that the reviewed literature has been assessed in term of its reliability to ensure validity and relevance. Overall, the conduction and literature search has initially been broad and as it proceeded it became more narrow as well as literature was identified from relevant papers' bibliography. Additionally, the literature review aims to identify and develop arguments about the current research's limitations and based on that establish and provide justifications for further research (Farthing, 2016). In the case of this research the argumentation is that further research is needed due to no one having researched how to implement the Healthy Streets Approach into Danish planning whereby there is identified a gap in existing literature, which means that evidence to inform the policy debate is lacking (Farthing, 2016).

Theories on Health-Oriented Urban Development 3

This theoretical framework consists of an introduction and presentation of the connection between health and planning, as well as a presentation of changing planning practice and aims for answering the first sub question: *In which way can urban planning impact public health, and how can changes in planning practice support the work with the complex health-oriented urban development?* To cover this theoretical framework will be divided into three parts; Health and urban planning, Changing planning practice, and Strategical planning

In the first part of the theoretical framework a connection between health and planning will be expressed as this is the focus of the Healthy Streets Approach. Here multiple studies will be put forward which all have researched the connection between health and planning. Thereby, this has taken part in creating knowledge on which effects planning has on health - both currently and historical. In this part, the complexity of health in planning is highlighted as well as knowledge on in which way planning is able to influence public health. As this field of health in planning is of high complexity a bigger field of knowledge is needed, which is why the second part of the theoretical framework consists of a presentation of changing planning practice to better collaborate and utilize the knowledge and experience of other professionals. When working with The Healthy Streets Approach this collaboration between planners and other professionals is also highlighted. In this part the nature of planning being wicked problems is put forward as well as the transdisciplinary approach that has the potential of doing better planning based on broader field of knowledge is presented. Here the sector divided basis of today's society is put forward in relation to wanting intersectional action. Lastly, the planning theory of strategic planning will be presented as this approach to planning is closely related to the work of The Healthy Streets Approach and an understanding of the driving force behind the approach is thereby created.

3.1 Health and Urban Planning

Throughout the first part of the theoretical framework the connection between planning and health is explored by highlighting the complexity of these two topics in relation to each other and the surrounding society. The aim with this part is to gain an understanding of how health and planning have been linked previously as well as in today's society. This will be done using research and theories on the field, as well as a historical perspective.

The structure of this theoretical section is that initially, the current issues regarding the health of citizens is presented followed by a definition of health. Here it is of importance to understand

some of the issues regarding health in order to point at those planning can take part in improving. Hereafter it is described how planning, through changes in the physical structures, can take part in influencing the decisions made by citizens. A historical case of the unhealthy slums of Copenhagen will be presented as an example of how planning has taken part in improving the health of citizens. After this the complexity of health is visualized in The Settlement Health Map where is it emphasised that planning can take part in promoting and improving health by creating changes in streets, routes, parks and public places.

3.1.1 The Connection Between Health and Planning

Health has in the recent decades been especially discussed as the focus has risen on the risks which influence the health of the public and the need for health prevention and health promotion measures in today's society (Statens Institut for Folkesundhed and Sundhedsstyrelsen, 2006; Sundhedsstyrelsen, 2018). These were especially highlighted by the Danish Board of Health (Sundhedsstyrrelsen), in both *'Risikofaktorer og folkesundhed i Danmark'* and *'Kommunens arbejde med forebyggelsespakkerne'* (Statens Institut for Folkesundhed and Sundhedsstyrelsen, 2006; Sundhedsstyrelsen, 2018), as they are of importance. Here it is also highlighted that issues such as obesity, physical inactivity, and bad mental health can be improved by the use of planning as Planloven (Eng: The Law on Planning) must ensure that plans are in line with the human living conditions (Sundhedsstyrelsen, 2018).

The connection between health and planning has become evident over time and it has become clear that planners can take part in the improvement of citizens health. However, it is important to first look into what health is and how it has been defined in relation to our society. By WHO health has been defined as *"'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO, 1946)."* (World Health Organization, 2024). Here it is emphasized that health is linked to multiple aspects such as physiology, the mental well-being, and social well-being, and further it is stated that all these three aspects must be present to be a healthy human being. However, planners are not able, unlike medical professionals, to work on improving the health of an individual, which is why working with health as a planner has a focus on public health on the societal level, community level, as well as street level (Townshend, 2022). This means having the public health as the backbone in their work (Townshend, 2022).

The way in which planning have chosen throughout the past 100 years to develop urban areas is and have been influencing the everyday life of the citizens (Townshend, 2022; Gehl, 2010). Here it has become evident that some plans influenced a healthier and more physically active lifestyle for the communities while others promoted different influences on the lifestyles of the citizens, such as more car-use (Hall, 1981; Townshend, 2022). Though some of the previously implemented plans had a positive effect on the overall health of the citizens some also ended up worsening or even creating current health issues like the growing obesity and physical inactivity rates that are linked to lifestyle diseases (Townshend, 2022). Changing the physical design in which citizens are living their everyday lives is a way that planning can take part in improving health by challenging individuals to make modifications in how they live their lives both privately and professionally (Jackson, 2003). Planners are thereby able to influence the urban experience of the citizens and also take part in improving the health of the public. Examples of changes in planning that can influence the personal decisions could be ranging from *"... travel mode, to housing, community involvement, and family planning."* (Jackson, 2003, p. 192). These changes in planning could be

in terms of *"... architecture, landscaping, and urban design."* (Jackson, 2003, p. 192).

Throughout history and up until recently multiple links have been made by researchers when investigating how planning and the design of urban spaces influence the health of citizens. Here multiple studies point to the fact that stress can be reduced within the human being by having experiences or viewing nature as a part of citizens everyday lives (Ulrich, 1979; Jackson, 2003). Along the same lines is another study describing that the mental as well as the physical restorative health benefits from being in or close to parks and gardens (Frumkin, 2001; Kaplan, 1973; Jackson, 2003). These links between planning and health demonstrate the importance of understanding the many different effects plans can have for the public as well as not considering the influence of planning in public health can have fatal consequences. Here planners have the opportunity to promote healthier lifestyles using specific methods in their planning, such as planning for green space to be accessible throughout the city and planning for *"... sidewalks, busy streets, [and] enjoyable scenery..."* (Jackson, 2003, p. 195) as it is evident that this promotes walking as a form of exercise (Brownson et al., 2001; Jackson, 2003).

The way of viewing planning as a mean to improve the overall health of the public has been done on several occasions throughout history both nationally and internationally (Jackson, 2003; Nielsen, 1987). One that is especially well-known in Denmark is the sanitation of Copenhagen - how and when this occurred will be described in the following section.

3.1.2 Planning for Health Throughout History: Renewing Neighborhoods in Copenhagen

One of the most commonly known redevelopments with health as the main focus in Danish history is the congestion, overcrowding and unhealthy slums that were particularly well documented in Copenhagen from the 1850's until 1970's (Nielsen, 1987). One of the bigger issues with the housing and the physical structure of parts of Copenhagen was that many people were living in very small apartments, (Stadsarkiv, n.d.a) leading outbursts of diseases such as tuberculosis, cholera, and respiratory diseases, but the overall public health was also a hot topic that needed to be improved (Nielsen, 1987; Stadsarkiv, n.d.d). This issue with lack of public health was linked to the unsanitary and unsafe living conditions that were present in the majority of apartments in Copenhagen. Many of the houses where constructed using clay and half-timbering which resulted in constantly moist housing due to water being transported in the clay and timber from the ground up through the walls (Nielsen, 1987). Besides this it was also common to have rats and bed bugs in the apartments (Nielsen, 1987). Due to the buildings being built very close the citizens had little to none opportunity for clean and fresh air into their apartments, and light from the sun was also very rarely seen indoor (Nielsen, 1987; Milthers and Ejlersen, n.d.). Former housing minister of 1975 and author of the book *'En by i forandring'* (Eng: A city in change), Helge Nielsen, communicated a concern and highlighted the importance of bringing health back into the areas as:

> *"There were stacks of reports from doctors and social workers testifying to major social problems in the slums. If tuberculosis was to be fought and public health increased, a major improvement in housing standards was necessary."* (Nielsen, 1987, own translation).

Pictures of the living conditions can be seen on Figure 3.1. Through these pictures it is clear to see

the health related issues and thereby the conditions in which citizens where living. These issues were for example dealt with by tearing down the buildings where the conditions were too bad to keep, was placed in back yards, or had no possibilities for renovation (Nielsen, 1987). After these buildings were torn down new buildings were build where it was possible and wanted. Some buildings were renovated - this was mainly buildings of historical value or where the state of the buildings were able to be modernised (Nielsen, 1987).

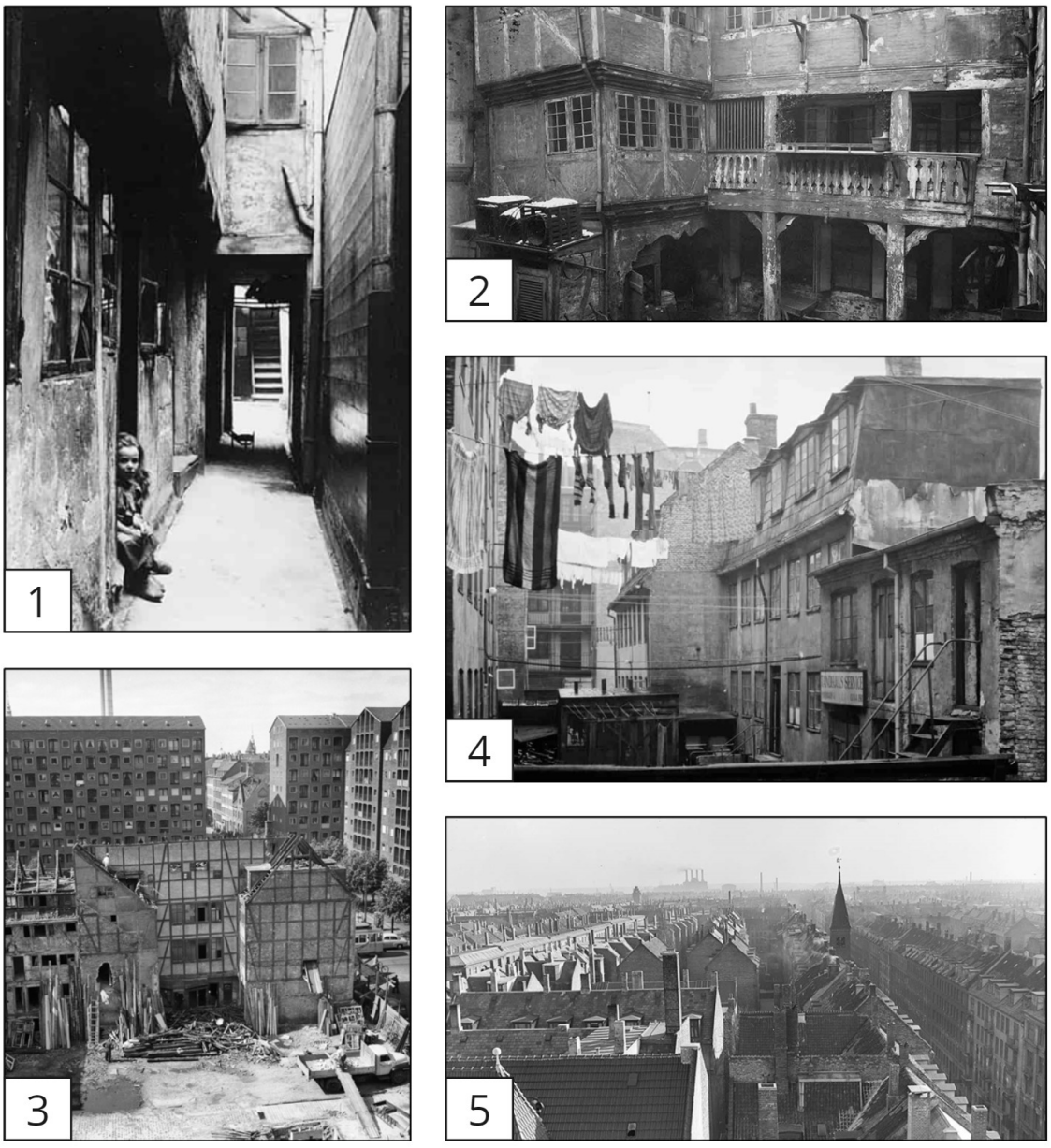

Figure 3.1. 1) A girl in the street Vesterfælledvej, Copenhagen in 1915 (Hyldtoft, n.d.). 2) Back yard area on Pilestræde 8, Copenhagen in about the 1880's. Shows the half-timbering which is quite worn down and the locums are on the bottom-left (Stadsarkiv, n.d.b). 3) In 1957 old buildings of half-timbering were torn down, to create space for new buildings. The tearing down and building new housing was a part of the sanitation of Adelgade and Borgerkvarteret in Copenhagen (Pedersen et al., 2020). 4) The back yard of Murergade 6, Copenhagen in 1959. Here there were both housing and smaller businesses (Pedersen et al., 2020). 5) The rooftops and back yards of Saxogade, Copenhagen in 1953 (Stadsarkiv, n.d.c).

The connections between urban planning and the health of citizens has also been described by Whitehead and Dahlgren (1991) and later on reconfigured by Barton and Grant (2006) as 'The Settlement Health Map' which is a theoretical view on the way urban planning influences multiple layers of factors on public and individual health (Townshend, 2022). In the following section this theory will be presented.

3.1.3 The Settlement Health Map

Whitehead and Dahlgren (1991) published their view on health and investigated the possible solutions to bring more equity to the health of citizens despite different economic and thereby also environmental living conditions (Whitehead and Dahlgren, 1991). 15 years after the publication of *'The Social Determinants for Health'* made by Whitehead and Dahlgren (1991), the theory was reconfigured by Barton and Grant (2006) and made global by the WHO Healthy Cities Movement (Townshend, 2022). The need for visualizing the bigger picture of how the health of citizens is connected to society was the basis for the reconfiguration of the model (Barton, 2016). Here there seemingly was a need for understanding how the city and the health of citizens would be viewed in a different way than previously Barton (2016). In understanding this, according to Barton (2016), planners must try not to view the city as a machine like presented by Le Corbusier (Hall, 1981), as this separates the lives lived by citizens and the physical layout of cities (Barton, 2016). Instead, Barton (2016) argues that cities must be viewed in a more holistic way and that the physical structures are a part of the city just like the everyday social aspect and environment. Within this argumentation is also the understanding of the settlement and health of citizens being of big complexity as there are multiple factors at stake (Barton, 2016). As a way of visualising this connection of how the settlement and health of citizens and the sustainability of our cities are related, Barton (2016) created Figure 3.2 that showcases the three basic elements 'Society', 'Economy', and 'Environment'.

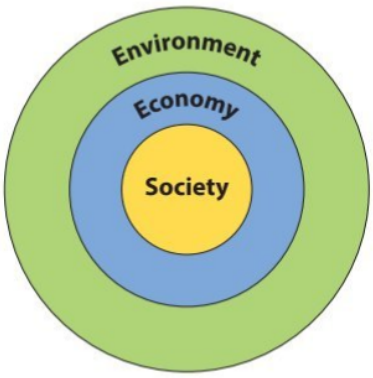

Figure 3.2. Illustration from Barton (2016) of the concept of sustainability related to the Settlement Health Map.

On The Settlement Health Map, which can be seen on Figure 3.3 the three elements Society, Economy, and Environment from Figure 3.2 are present in the multiple spheres of the model. Here the three inner spheres 'People', 'Lifestyles' and 'Community' is connected to the sustainability of the society, whereas the two spheres 'Local Economy' and 'Activities' are connected to the economic sustainability and lastly the two spheres on 'The Built Environment' and 'The Natural Environment' is connected to environmentally sustainability.

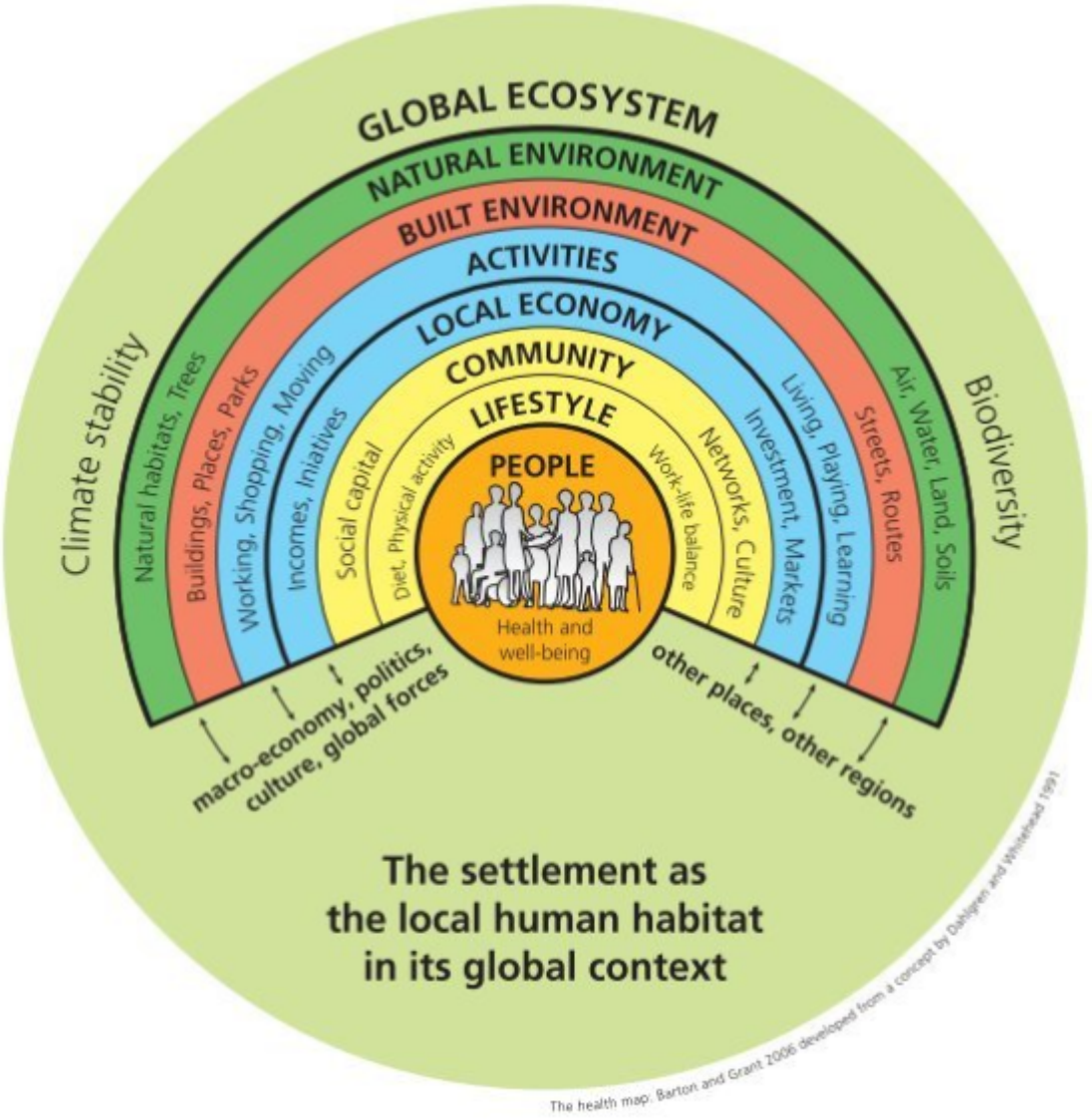

Figure 3.3. Illustration from Barton (2016) of The Settlement Health Map by Barton and Grant (2006).

The seven spheres of the Settlement Health Map each contains elements that can be related to health and planning. However, within this research some are more relevant than others concerning a redesign of Holsteinsgade. The highlighted spheres are the first, second, third, fifth, and sixth, which will be elaborated.

The Settlement Health Map contains age, sex, gender, and hereditary factors such as genetics as well as *"... income, education, mobility, neighbourhood character and location."* (Barton, 2016, p. 25) as central factors on health. Here the choices regarding lifestyle, which is the second sphere, is also connected to the health as there are multiple factors such as choices in terms of diet and the level of physical activity (Barton, 2016). In the third sphere it is presented that community and thereby the social interactions and the social networks can influence the mental health of citizens. This can both be in a positive way - if the citizen feels included and experience emotional and physical support - and in a negative way if there are no mental or physical connection in the community (Barton, 2016). In the fifth sphere the activities in the citizens life is presented as influencing the health of the citizens as *"The availability, quality*

and accessibility of social, recreational and economic activities and services affect well-being and quality of life." (Barton, 2016, p. 26). This could be opportunities for moving or exercising, shopping, learning, and playing (Barton, 2016). The sixth sphere highlights the fact that buildings, spaces, as well as streets and potential routes in the everyday life also can affect the health of citizens (Barton and Grant, 2006; Barton, 2016). This sphere - the built environment - is where planners are the most in control of the changes in the local communities (Barton, 2016), but it could also be argued that planners can influence some of the other spheres through their planning (Townshend, 2022). This could be spheres such as community, local economy, and also the natural environment (Townshend, 2022). Changes in the built environment could be redesign of streets, connecting routes to existing mobility networks, as well as creating an environment that invites staying, walking and cycling.

Understanding the complexity of health in society and what influences this is complex and it is therefore important to note that planners are not able or trained in improving all components of health. This is where transdisciplinary collaboration becomes relevant as collaborating with different professionals is a way of trying to grasp this complexity. In the following part of the theoretical framework this will be presented.

3.2 Changing Planning Practice

The focus of this research is health in planning, and how this to a greater extent can be implemented in Danish planning practice by using the approach of Healthy Streets. A change in planning practice is challenging, as health is complex and affects many aspects of community. Public health and urban planning studies are examples on fields that encompasses multiple disciplinary perspectives. Thereby, one approach to incorporating the Healthy Streets Approach into the current Danish planning practice is through the understanding of planners work as wicked problems and the importance of transdisciplinary work to handle the complexity. The Healthy Streets Approach is designed to fit multiple professional backgrounds and many of the indicators - that will be presented in the next chapter - can be linked to the work of professionals both outside and inside the realm of planning. Here different professional backgrounds can shine a light on a redevelopment but being able to highlight different perspectives depending on their knowledge. As the Healthy Streets Approach aims towards improving the health of the public through the use of changes in the built environment there is a need for involving professions such as; planning, architecture, traffic planning, health, climate, nature, road authority an so on (Healthy Streets, n.d.b; Transport for London, n.d.; Plowden, 2020).

To cover the basis on which planning problems occur, and how this affect the job of the planner, the theoretical perspective of wicked problems will be presented, as the case of Holsteinsgade could be viewed as a wicked problem due to the complexity of the case and the many different considerations that needs to be addressed in the planning. Hereafter, theory on transdisciplinarity will be presented and linked to the realm of planning and working on a planning project, as the complexity of health and planning could benefit from the involvement of multiple different professions. An understanding of intersectional action and the way this affects planning will likewise be elaborated.

3.2.1 Planning as Wicked Problems

The term wicked problems were first articulated by Rittel and Webber (1973) where it was stated that *"Planning problems are wicked problems"* (Rittel and Webber, 1973, p. 160) as they are problems that include a very wide range of considerations, that are of high complexity and that therefore does not fit well with using traditional science and linear approaches (Ritchey, 2013). The wicked problems are described as being devious and issues that have unintended consequences if planners and other planning professionals are wanting to solve the problems (Ritchey, 2013; Rittel and Webber, 1973). The article *'Dilemmas in a General Theory of Planning'* by Rittel and Webber (1973) on wicked problems was published with the intention of critiquing and problematizing the rational planning that was used by a lot of planners at the time (Rittel and Webber, 1973; Head, 2019). Here the rational planning was thought to be less capable of handling the complexity and wickedness of planning (Head, 2019).

The complexity within planning is why planners are not able to handle all elements that are linked to the planning of a specific project - meaning that involving other professions with a different set of skills and knowledge could be beneficial. To this it is likewise important as a planner to understand that not all aspects to a proposed solution can be considered in planning, and that some physical changes in a street only will make the design better. In this building of an understanding planning theory is both relevant and useful - however no planning theory fits perfectly into the reality that planners are working in and the complexity is therefore still present (Hartmann, 2012). What can be said is that working with wicked problems have an amount of uncertainty as *"... planners need to make decisions about the future, without knowing it."* (Hartmann, 2012, p. 244). Connected to this is the uncertainty and complexity that planners also have to deal with as well as the normative aspect of planning as there are considerations to both justice, facts and the values of stakeholders, municipalities, individuals, etc. - all something that planners take into account in their planning and the planning process as well (Hartmann, 2012). These are just some of the aspects planners are facing when it comes to working with wicked problems. The criteria for what characterises a wicked problem will be addressed in the following section below.

The 10 Criteria for Wicked Problems

In order to better describe and understand what a problem must contain to be viewed as a wicked problem Rittel and Webber (1973) have presented 10 criteria that all are characteristics highlighting the fact that a planner is dealing with a wicked problem. A problem does not have to check all 10 criteria off to be a wicked problem, but one or more of the 10 must be present in order to identify a problem as wicked (Ritchey, 2013). The 10 criteria have previously received some criticism because some of them overlapped each other and arguing that they could be cut down to four or five overall criteria, meaning that a wicked problem will often fulfill several of the 10 criteria (Ritchey, 2013). These 10 criteria will be presented on Figure 3.4.

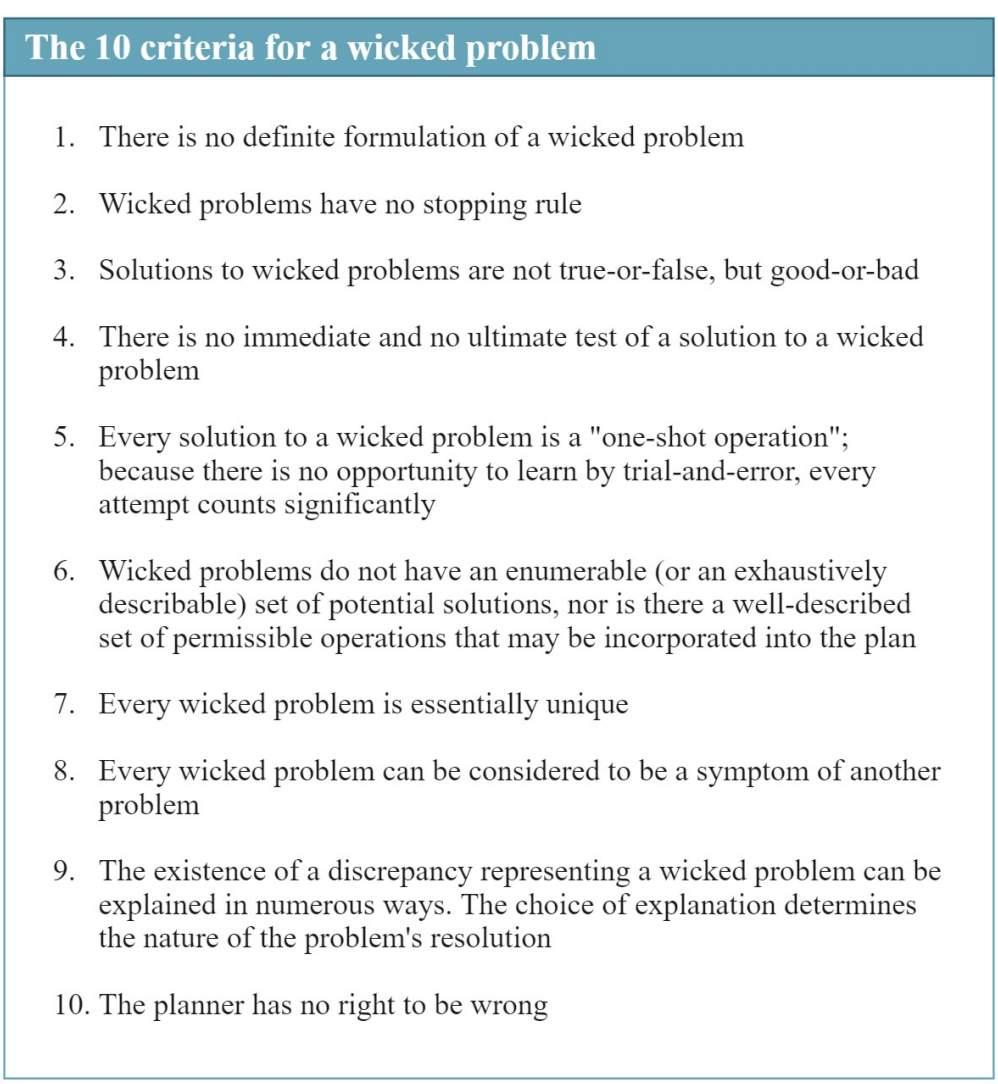

Figure 3.4. The 10 criteria for a wicked problem (Rittel and Webber, 1973). The text on the figure are citations from (Rittel and Webber, 1973).

Within this research the five criteria 1, 3, 5, 7, and 8 that are most relevant when working with redesigning Holsteinsgade with an improvement in public health as the main goal. The relevant criteria will therefore be described below.

For a planning problem to fulfil the first criteria the problem must be one where it is simply not possible to obtain all relevant information needed to solve the problem (Rittel and Webber, 1973). Unlike in the traditional science - where the researcher will obtain all information that is needed to come up with a solution - the planner cannot collect all the information there is on the problem (Rittel and Webber, 1973). This could be due to the fact that the problem usually is, and can be, viewed differently depending on the eyes of the beholder (Rittel and Webber, 1973; Ritchey, 2013). Other than the view on the problem the information needed to come up with a solution might also differ as one planner is looking to improve it in a different way than another planner (Rittel and Webber, 1973; Ritchey, 2013).

Expressed through the third criteria is that the planning problem could potentially be wicked if

the solutions to a problem is neither true nor false, but rather can be viewed as being better or worse (Ritchey, 2013; Rittel and Webber, 1973). Here the solution to the problem can be judged by stakeholders, individuals and planning professionals and thereby depend on their *"... group or personal interests, their special value-sets, and their ideological predilections."* (Rittel and Webber, 1973, p. 163). The judgement of the solution will - due to their different takes on what is good and bad - therefore most likely be a judgement of whether the solution was satisfying and if it was good enough (Rittel and Webber, 1973; Ritchey, 2013).

In the fifth criteria it is stated that when dealing with a wicked problem there is *"... no opportunity to learn by trial-and-error..."* (Rittel and Webber, 1973, p. 163) as planners cannot in most planning situations make big physical changes to test whether that was a good solution for the specific context (Rittel and Webber, 1973). The description of the context being essential is connected to the seventh criteria which states that all wicked problems are unique (Rittel and Webber, 1973; Ritchey, 2013). Here it is especially important to understand that then wanting to work on a wicked problem the planner would most likely not know the proposed solution until the wicked problem have been investigated and the context have been made clear (Rittel and Webber, 1973; Ritchey, 2013). Worth mentioning here is also that one wicked problem might have similarities to another and perhaps have a similar solution, but these solutions would always be different as they are two wicked problems with different contexts (Rittel and Webber, 1973).

The eight criteria of a wicked problem is that it is connected to another problem by being *"... a symptom of another problem"* (Rittel and Webber, 1973, p. 165). Here the wicked problem is viewed as being linked to other problems which makes the judgement of what and how the issues are connected very complex (Ritchey, 2013). Important to point out in this relation is that researching what potentially is lying beneath the surface of the initial problem is key as this will help identify the core of the wicked problem (Rittel and Webber, 1973).

As planning is often viewed as working with these wicked problems that are of high complexity and often leads to other wicked problems, it is beneficial to team up with professionals from other specialities and collaborate on finding the better solution to the problem. This is where transdisciplinarity comes in hand as a way of working together with multiple professionals on a collective project. What the transdisciplinary approach is and how it can be used in planning will be elaborated further in the following section.

3.2.2 Transdisciplinary Theory

Working cross-disciplinary has gained more ground and spread in the welfare-society (Murphy, 2021). Previously, changes in the multidisciplinary practice towards a more comprehensive approach to complex problems has been initiated (Fokdal et al., 2021). However, the practice of divided disciplines and professions has continued, as some of the previously implemented multidisciplinary initiatives can be viewed as barriers to a holistic understanding as planners and other relevant professionals are working individually and only occasionally collaborating (Rosenfield, 1992). In terms of societal problems such as public health issues, and in some cases also planning, that are very complex, multi faced and wicked this collaboration between professionals could bring a wider field of knowledge (Rittel and Webber, 1973). This demands cross-disciplinary collaboration with multiple perspectives delivered from different disciplines (Stokols et al., 2009; Khan et al., 2014). The growth of cross-disciplinary research and practice:

> *"... stems from the recognition that whereas disciplines provide useful tools for framing research and practice, approaches derived from a single discipline may not provide the necessary tools to fully understand and address complex scientific and societal problems, particularly when it comes to identifying and understanding multiple interacting causal factors and developing innovative solutions."* (Stokols et al., 2009, p. 104).

This is where a transdisciplinary approach is especially important to work with in planning as it gives the opportunity for other professions such as architects and engineers to collaborate on a project, hence creating an end result that is more coherent and has considered multiple different alternatives (Fokdal et al., 2021). When redesigning a street or a public space there tend to be a high focus on the many attributes a redesigned area must entail after the redevelopment is complete - examples of some of these characteristics of a high quality spatial design is:

> *"... comfort, human scale, variety, complexity, urbanity, inclusiveness, meaningfulness, understandability, linkage and coherence, congeniality, playfulness, safety and security, transparency, mystery and awe..."* (Khan et al., 2014, pp. 393-394)

Due to these characteristics of what is of high spatial quality, that originates in multiple different professional contexts, there is a need for transdisciplinary work (Khan et al., 2014). The importance of having multiple different professionals working on a planning project can be understood by looking at a model for the connection of the elements that are present in planning. These connections can be seen visualised on Figure 3.5.

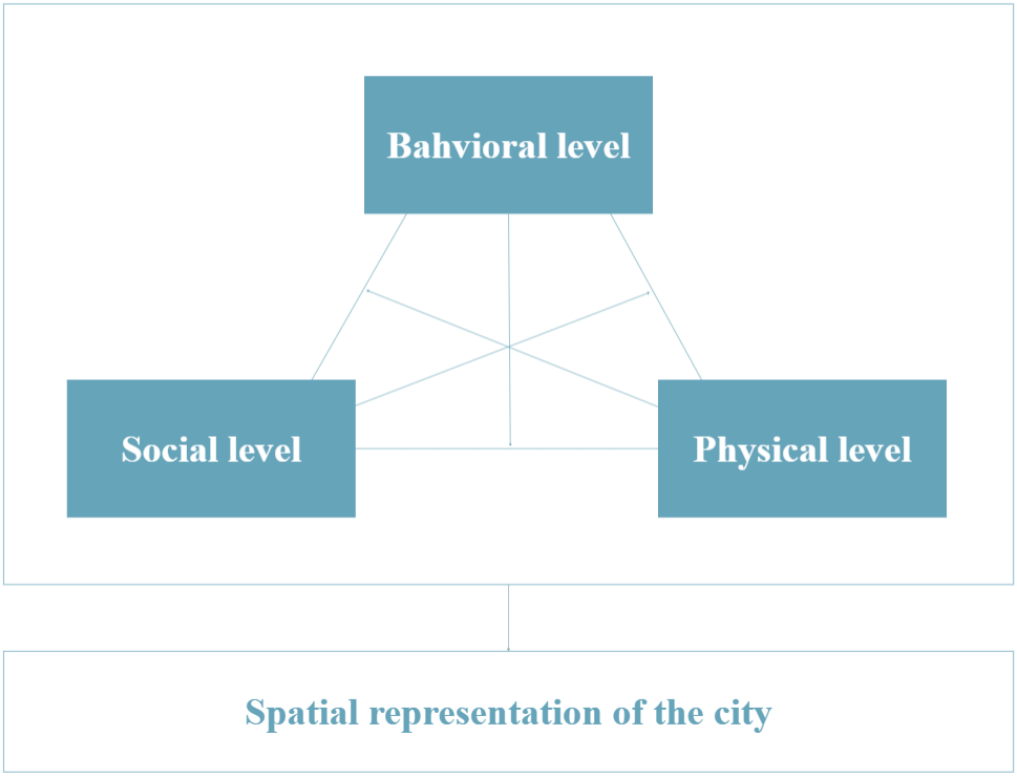

Figure 3.5. Illustration of the relation between the levels of spatial representation by Thierry (2004).

On Figure 3.5 it is evident that these levels of planning - the behavioral level, the social level, and the physical level - are influencing each-other and are connected. Here is it clear that if the physical level is transformed an effect can be seen in the behavioral level and the social level. An example of this could be to investigate how a redesign of Holsteinsgade is going to affect how the city is experienced and what factors are at stake when citizens are using the area - factors such as their choices in staying or leaving and walking or driving. Here changes in the design of Holsteinsgade requires a change in the physical level, the social level, as well as the behavioral level in order to change the experience of using the street. The argumentation is then that:

> *"... an urban planner attributes the legibility of a city to its physical characteristics, a sociologist will attribute it to the different meanings tied to the experience of individuals in the city, and a psychologist will pay attention to the behaviour of individuals in space."* (Thierry, 2004, p. 343).

Depending on the issue and the case area there will be a need to involve different professionals to fill the empty spaces of knowledge as it is also evident that planning can be done in many scales such as both on street level and on regional level, as well as beyond and across different disciplines (Khan et al., 2014).

Definition of Transdisciplinarity

There is a growing interest of transdisciplinarity and fields that have had an increased focus on transdisciplinary practice regarding health and planning (Fam et al., 2018; Fokdal et al., 2021). Approaches to bridging multiple disciplines have been identified and some of the main cross-disciplinary practice and research types are multidisciplinary, interdisciplinary, and transdisciplinary (Stokols, 2006; Rosenfield, 1992; Stokols et al., 2009). However, it can be challenging to assess when an initiative has transitioned from multidisciplinarity to interdisciplinarity or from interdisciplinarity to transdisciplinarity (Stokols et al., 2009; Lawrence, 2010). This is due to the blurred line between the three:

> *"Multidisciplinarity, interdisciplinarity, and transdisciplinarity are complementary rather than being mutually exclusive. Both interdisciplinary and transdisciplinary research and practice require a common conceptual framework and analytical methods based on shared terminology, mental images, and common goals. Without specialised disciplinary studies, there would be no in-depth knowledge and data."* (Lawrence, 2010, pp. 111-112)

As transdisciplinarity aims for greatest level of cooperation between disciplines and as it crosses knowledge boundaries the focus of this research is primarily on the transdisciplinary approach, which is why this approach will be further elaborated below.

How transdisciplinarity is understood can vary from one to another as there about its meaning seems to be no consensus (Lawrence and Despres, 2004). The term transdisciplinarity progressed more into practice by the 21st century. Klein (1996) distinguish transdisciplinarity from multi- and interdisciplinarity as it is characterised by crossing knowledge boundaries (Brown, 2015; Klein, 1996). Transdisciplinarity is by Khan et al. (2014) defined as involving: *"... the members of*

different scientific and practice fields working together over a long period of time, which creates the possibility of producing an overarching synthesis that goes beyond any single framework..." (Khan et al., 2014, p. 399).

Besides from what is stated about transdisciplinarity above, the approach is also involving a trans-sector collaboration where sectors or stakeholders from a wide range of society will collaborate aiming to come up with a solution to a selected issue (Khan et al., 2014). Lawrence and Despres (2004) emphasize that a transdisciplinary approach and knowledge production is able to handle complexity in science, challenges knowledge fragmentation, and deals with heterogeneity. Within the world of planning working transdisciplinary is also a way in which planners and the other involved professionals can form the basis of the knowledge needed to tackle the problem (Khan et al., 2014). Furthermore, transdisciplinary knowledge can be considered a result of inter-subjectivity as well as the approach requires inter-communicative action. Therefore, close and continuous collaboration in transdisciplinary practice is needed during all phases of a planning project. This action-oriented approach contributes to investigate and work with real-world topics not only addressing problems but also contributing to the solution of them (Lawrence and Despres, 2004).

Stokols et al. (2009) argues that a transdisciplinary approach often generates novel and paradigm-expanding outcomes as well as it creates conceptual frameworks aiming to make solutions to social problems, which can have transformational effects amongst others the realms of practice (Stokols et al., 2009). This argues that a transdisciplinary approach can be relevant for creating a conceptual framework for the implementation of Healthy Streets in Danish planning practice. In planning practice it is often seen that a mix of inter- and transdisciplinary methodology is used, as there in some stages of the planning is a need for an interdisciplinary approach which then switches to the transdisciplinary approach again when the project demands this (Khan et al., 2014).

Challenges of Transdisciplinary Collaboration

Transdisciplinary concepts and methods can be used as means to overcome some barriers both in research and professional practice. It is barriers such as frameworks that does not embrace complexity, knowledge and expertise that is specialised and segmented, and lack communication between actors such as professionals, politicians, interest groups, and the public (Lawrence and Despres, 2004). One risk or potential barrier of transdisciplinary work is if there is a mutual lack of understanding of the other involved researchers goals and expectations (Stokols, 2006). Another potential disadvantage of transdisciplinary collaborations can be the labor intensity as it can be very time demanding as well as the benefits of its work might not be evident in a future perspective (Stokols, 2006). Evidence from previous studies show that transdisciplinary collaborations require high labor intensity and that such collaboration can carry tensions, conflicts, and heated debates among the involved participants, which for example can be evoked by the different disciplinary worldviews and values of the participants. Potential disagreements or conflicts must be solved and confronted for the collaborative team to be able to achieve its goals (Stokols, 2006). If these are not solved it can carry *"... interpersonal tensions, fragmentation of the team into subgroups with non-overlapping agendas, and undermine the team's ability to meet its collaborative research goals"* (Stokols, 2006, p. 69). Some factors that respectively constrain and facilitate collaboration are present as well as the goal is illustrated on Figure 3.6.

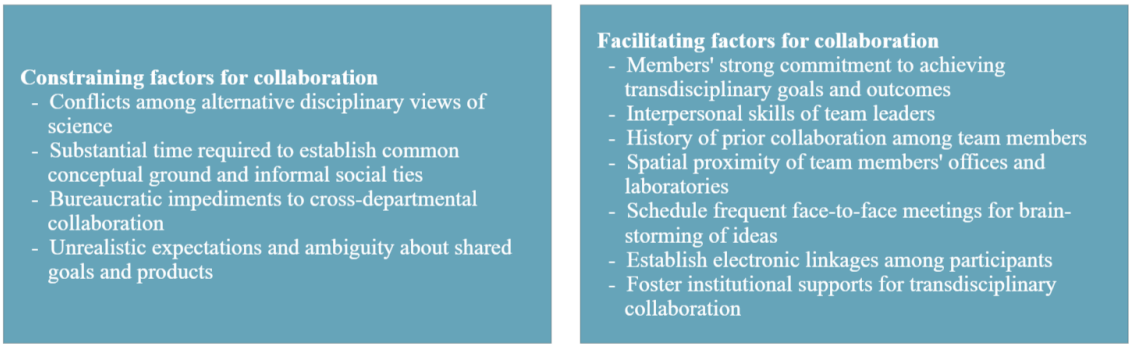

Figure 3.6. The constraining and facilitating factors for collaboration for the collaboration type: Transdisciplinary scientific teams and centers (Stokols, 2006). Text on the figure is a citation from (Stokols, 2006, p. 72).

There are different types of collaboration in practice, which holds different demands to the professionals. This imply that dependent on which collaboration type is utilized the result will differ. Thereby, different types of collaboration in practice leads to different goals (Højholdt, 2016). An important comment concerning transdisciplinary collaboration is that this must not only be used in the phase of bringing in new ideas and working on the proposed solution, it it also relevant and beneficial to take the transdisciplinary approach into the implementation phase.

3.2.3 Intersectoral Action

Many aspects connected to public health such as treatments and health prevention can be dealt with through services delivered from the health sector itself. Despite the health sector delivering many services, other sectors are likewise able to make policies or actions influencing public health either independently or in collaboration across sectors (Jamison et al., 2009). This means that besides the health sector itself, it is evident that other professions such as planning professionals has an impact on public health.

The connection between multiple sectors being able to influence the public health by utilizing transdisciplinarity has also been generalized by Stokols (2006): *"The public policy goals of intersectoral collaborations are often anchored in transdisciplinary conceptualizations of particular societal problems..."* (Stokols, 2006, p. 71). This means that a broad range of perspectives such as economic, political, social, psychological, and urban design should be considered when researching a problem (Stokols, 2006). A broad anchoring provide better conditions for identifying and working with the underlying causes of the conditions that create health. However, intersectoral collaboration is complex both to establish and maintain (Corbin, 2017). The aim for intersectoral policies is to secure that all actions are supporting public health as well as ensuring that all decisions, whether they are directly health related or not, are made from the basis that it should be beneficial or neutral to the general public health (Jamison et al., 2009).

A relevant question to ask, which also highlights a challenge, is: *"How can we design improvement in large systems without understanding the whole system, and if the answer is that we cannot, how is it possible to understand the whole system?"* (Churchman, 1968, p. 2). As both public health and urban planning can be considered as being large systems that also are embedded in other systems, then it is necessary to know the whole system. This can be somewhat possible through transdisciplinary work.

When working collaboratively there are many different ways of gaining and providing knowledge, and knowledge construction is an important element in changing practice. This can be derived from the following: *"Knowledge and society are described as interdependent, confirming Foucault's proposition that changes in knowledge match changes in society."* (Brown, 2015, p. 211). Collaborative work is by Højholdt (2016) considered as a method for quantifying practice. Here Højholdt (2016) states that:

> *"The task in the interprofessional practice (which is by no means easy) is, through communication, professional development and organization, to put the right professional skills together, so that the task that you are facing together has better prerequisites for being solved in a joint effort.* (Højholdt, 2016, p. 16)

Urban planning as a discipline is considered multidisciplinary, action-oriented, and able to construct dialogue with other knowledge domains from for instance natural and social science. This is for example due to urban planners tasks of handling meditation tasks as well as being able to mix scientific and political interests (Després et al., 2011).

In the following section the silo-based societal structure that is present in today's society will be presented. Here the way in which this division of the sectors is influencing planning and planning professionals will be elaborated.

The Silo-Based Societal Division in Municipal Organisations

In the past 10 years many researchers and stakeholders have addressed and acknowledged a need for disciplinary boundaries to become more intertwined than what was seen at the time and still is seen (Madanipour, 2013; Khan et al., 2014). This so-called 'silo mentality' has been accused of being a structure that *"... foregrounds efficiency at the expensive of flexibility and restricts the scope for interdisciplinary collaboration."* (Lennon and Scott, 2014, p. 1) and has therefore been viewed, by planning professionals, as getting in the way of collaborations between different professionals on a planning project. Here *"Making collective action possible by moving beyond the isolated perspectives of single actors and involving other stakeholders has become an epistemic and democratic necessity..."* (Madanipour, 2013, p. 373), which is also directly related to being able to work in intersectoral relations (Madanipour, 2013). However, some practitioners are experiencing a sense of the silos being less fixed in the everyday collaborations than what was the case previously (Lennon and Scott, 2014). But as described by Healey (2007) there is work to be done in the structures of society:

> *"The challenge to functional/sectoral organisation, these days often called the 'silo mentality', generates a momentum to create more linkages between policy fields as they impact on the places and connectivities of urban areas, expressed as a search for 'policy integration' and 'joined-up government'."* (Healey, 2007, p. 5).

In planning and urban design there are opportunities for working transdisciplinary and thereby *"... helping to connect the silo-based disciplines..."* (Carmona, 2014, p. 3), as planning can be a connecting link between different disciplines (Carmona, 2014). This is likewise what is happening when working with the approach of Healthy Streets as this approach encourages planners to

collaborate and share their knowledge with professionals from other disciplines. However, there is a need for more interconnected governance as many cities are handling complex situations, and even wicked problems, in for example the realm of planning, as this connection of the silos is being viewed as a challenging task (Sorensen and Okata, 2011; Healey, 2007). This is challenging as it is linked to politics as well as the official administrations, such as municipalities, regions and the state (Healey, 2007).

To understand and create further knowledge on the way the Healthy Streets Approach is being done - the type of planning this approach is and what the driving force is - the strategic planning theory will be presented in the following section.

3.3 Strategic Planning for Health

In this section the planning theory, Strategic Planning Theory, will be presented as it fits well with the way The Healthy Streets Approach is used to plan with the specific goal in mind - improving the health of the public. This approach to redevelopment is based on analysis, data, as well as technical skills and knowledge. This view on the goal can be seen in strategic planning as persuasive storytelling, meaning that the strategy highlights the story of why it is an important and necessary change (Healey, 2007; Olesen, 2017; Throgmorton, 1996). As highlighted by Olesen (2017) there are *"... strong persuasive and imaginative powers of strategic spatial planning..."* (Olesen, 2017, p. 979). This could be connected to the communication of what the issues are, how they are seen in relation to other issues - the complexity and wickedness of planning problems - and what the potential solutions could be.

In the 1990's where the interest in strategic planning was awoken one of the driving forces behind the strategic planning approach was to promote the creation of *"... spatial strategies for city regions, metropolitan regions, cross-border regions and nation states."* (Olesen, 2017, p. 979). This is and was to be done based on analysis, data, and technical knowledge and should create a vision or a strategic goal that ought to be implemented into the real world (Healey, 2007). In the Healthy Streets Approach, where the overall goal is to improve the health of the public, a carefully chosen strategy is being utilized through the example of the Healthy Streets Design Check. This design check can be viewed as a checklist to reach the ultimate goal of how planning can influence the health of the public.

These are some of the aspects that are clear regarding the implementation of Healthy Streets, as there are several steps in this approach that all have the purpose of leading to an improvement of health. These steps that needs to be done are often viewed as stepping-stones of several comprehensive ideas that combined serves as a vision for the future (Albrechts and Balducci, 2013; Healey, 2007). However, it is also of importance to note that these steps are not confined to just one string of steps, but has been seen to become more creative and focused on the ability for adaptation along the way (Healey, 2007). The strategic planning theory is thereby not a rigid approach that leaves no room for changes but in fact is able to bend the way to get to the goal, if issues are faced in the process along the way.

3.4 Collection of Theory

From this theoretical framework it will be accentuated that a connection can be made in the combination of planning and health, but it is of high complexity as there are several aspects connected to public health (Townshend, 2022; Jackson, 2003; Brownson et al., 2001). As planners often are in a position to influence the built environment, they can take part in improving public health (Barton, 2016; Townshend, 2022). This can for instance be done by influencing the community and the activities in the built environment (Barton, 2016; Townshend, 2022). Examples of changes could be redesigning streets that promote and invite citizens to walk, cycle or stay - it could also be making sure to connect routes to the existing mobility networks.

Due to the uniqueness and complexity of planning for health it can considered a wicked problem. In the case for this research, Holsteinsgade, the lack of citizens using the street for active transport can be viewed as a symptom of another problem. Here there are no definite formulation to what the exact problem is in Holsteinsgade as there are several ideas on what is linked in terms of the use of the street and thereby what a potential transformation should entail. This complexity of the problems of Holsteinsgade as well as the aim of improving the public health calls for planners and other professionals to collaborate on the plan for creating a better Holsteinsgade. When bringing together multiple different professionals - all with a different field of knowledge - the professionals and the planners combined will possess a broad knowledge field that would be beneficial to find the better solution for the street's transformation.

This broad anchoring has been linked to provide better conditions for working with the improvement of public health, but this too is considered complex and in need of 'knowing the whole system' which therefore is in need for the transdisciplinary approach. Here the sector divided society plays a part in the planning and have by some been viewed as getting in the way of doing good and holistic planning (Lennon and Scott, 2014). Lastly the use of strategic planning when working with an overall strategic goal, such as improving public health, is essential as this planning theory is a way of working towards persuading the receiver to help facilitate the strategy and bring the vision of healthy streets to life (Healey, 2007; Olesen, 2017; Throgmorton, 1996).

In the following chapter an expanded presentation of what the Healthy Streets Approach is, what the approach contains, what the overall goal is when utilising the approach, and how to implement the physical changes to improve the overall health of the public can be found.


LOWER MARSH MARKET
BAR
CHANNEL BAR
Ryman
CYCLES
SLOWER MARSH
SE1
Pedestrian priority

The Healthy Streets Approach 4

Overall, the purpose with this chapter is to present the Healthy Streets Approach, which is the framework of focus in this research. Additionally, the chapter aims to investigate and answer the second sub-question: *What is the Healthy Streets Approach, and how has it been implemented in London?* Within this research the focus and goal is to explore how public health can be improved through changes on street level in the built environment, which can be done strategically. The strategy consist in wanting physical changes to influence the health of people and for example the activities and lifestyle of people and through that influence the choice and habits of the citizens in multiple steps. As it has been examined in the theoretical framework there is a great connection between planning and health, which Saunders likewise emphasize in the following:

> *"We see the impact on our health of making bad planning decisions and we have seen this in many countries over the last 100 years. The more that we have built our places around ease of car movement, the consequences for our health have been worse and worse."* (Saunders-Interview, 2024, 00:07:39)

This connection between planning and health is a great focus of the Healthy Streets Approach. Throughout this chapter the Healthy Streets Approach will be presented in terms of its origin, its purpose, the actors involved, the 10 Healthy Streets Indications, and how it is evaluated. In continuation, two examples on streets in London that has been redeveloped with the approach in mind are presented to provide context to how such framework can influence the impression of and experience of being on a street.

4.1 A Health-Oriented Approach to Planning

The Healthy Streets Approach *"... is a framework which integrates health into planning and design decisions and promotes a collaborative approach between transport specialists and designers."* (Ede and Morley, 2023, p. 193). The approach is developed by Lucy Saunders, who is a health specialist, urbanist, and transport planner, and the approach is based on research of urban space and human health. Saunders main goal is to improve population health, which for example is done by the work on scattering the Healthy Streets Approach worldwide by collaborating with organisations who wants to adopt it to the context of their country or area (Healthy Streets, n.d.d). First of all, the aim is to secure peoples basic needs by ensuring that *"... the air is safe to breathe, people can cross the street, (ed.: and) that children can cycle to school.* (Saunders-Interview, 2024, 00:36:24) by making changes in the environment people live in that promotes walking and cycling as the easiest and most rewarding transport mode. The approach is systematic to planning

streets and urban areas so they are accessible for all users and linked to the wider transport system (Plowden, 2020). Furthermore:

> *"The ultimate goal is that wherever you go in the world, you will always have a healthy environment. That means we have to make some changes in individual streets, but also, we have to make changes at much more strategic levels above as well."* (Saunders-Interview, 2024, 00:05:07)

To increase active, efficient, and sustainable transport - as well as to decrease the car dependency - a new way of thinking is required, which can be described as the motivation for developing the Healthy Streets Approach (Ede and Morley, 2023). When streets and urban areas are being redesigned there is an opportunity for decision-makers to prioritise human health and well-being no matter the extent of changes. The Healthy Streets approach is a tool for such, as it puts humans at the center of decision-making, planning, transport, and the public realm in terms of how public spaces are being designed, managed, and used (Healthy Streets, n.d.b; Transport For London, n.d.).

4.1.1 The Origin of the Healthy Streets Approach

The Healthy Streets Approach has its origin in London due to an physical inactivity crisis in the city (Transport for London, 2017; Plowden, 2020). One of the biggest threats to health is a lack of physical activity, which has been engineered out of peoples everyday life, and one of the aspects that influences the Londoners' lack of physical activity is car ownership and in fact most of the trips done by car could be walked or cycled. Car ownership is a greater factor than factors such as gender, employment, income, disability, and ethnicity. Due to this crisis the Mayor of London adapted a more ambitious and wide-reaching plan than previously aiming to improve health and life quality of Londoners and visitors especially through transport. This is due to the transport system being very influential in cities (Transport for London, 2017).

In 2014 the Healthy Streets Approach was written into the world's first transport health action plan *'Improving the health of Londoners'* and in continuation of that it became the framework for all strategies in London, which involved that in theory all decisions must apply and include elements of the Healthy Streets Approach (Saunders-Interview, 2024; Healthy Streets, n.d.e). It gained ground in 2016 by the election of Sadiq Khan as Mayor and his vision for London featured in *'City for All Londoners'*, and in 2018 it became central in the transport strategy (Plowden, 2020). Additionally, the Healthy Streets framework became a key policy of London's spatial plan *'The London Plan'* (Healthy Streets, n.d.e; Saunders-Interview, 2024).

Streets are taking up a great part of London's public space and therefore it influences the character of the city, which makes it important that the public space is attractive and well-designed for people. By having people-centric streets and urban spaces it contributes socially and culturally to the city. Well-working and well-designed streets can likewise contribute to generation of more trade for local businesses as people walking there tend to spend more money compared to people arriving by any other transport means (Transport for London, 2017; Plowden, 2020).

4.1.2 The Aim of the Healthy Streets Approach

As highlighted in the framework *"The aim of the Healthy Streets Approach is to help create a vibrant, successful city where people can live active, healthy lives."* (Transport for London, 2017, p. 10). Furthermore, the aim is to improve peoples physical and mental health (Plowden, 2020) and *"... to encourage more people to walk, cycle and use public transport, thereby increasing active travel and encouraging more sustainable patterns of movement."* (Ede and Morley, 2023, p. 193). Thereby, the goal of the approach is a healthy, sustainable, safe, connected, and successful planning of the city (Transport for London, 2017). This is due to the approach being described as *... a system of policies and strategies to deliver a healthier, more inclusive city where people choose to walk, cycle and use public transport."* (Transport for London, n.d., p. 7). The approach is therefore pointed at the use, planning, and management of the connection between transport systems and public spaces (Transport for London, n.d.).

The approach of Healthy Streets does not seek a fixed end goal, but focuses instead on improving existing conditions that ensures everyone lives in a healthy environment where active travel is possible (Healthy Streets, n.d.b; Transport for London, n.d.). An incremental approach is needed as small changes in all parts of the decisions-making process that relates to transport and street planning (Healthy Streets, n.d.b). The core aim of the approach is to secure streets that are healthy, safe, and welcoming for all no matter if it is a resident, a visitor, a business owner or someone walking through, but especially for children, elderly, and disabled people (Transport for London, n.d.; Transport For London, n.d.). This means that the approach is valuable and needed wherever people are, which for instance are rural places, residential streets, connectors, and primary traffic routes (Saunders, 2023). There are three central levels where the approach is delivered:

- The street level
- The network level
- The spatial planning level

Common for each level is that they are supported with so-called soft measures for instance being campaigns for behaviour change and education (Transport for London, n.d.). All three levels aims to improve the travelling experience and the time spent on the streets. This means that the street level should provide a safe, clean, and appealing environment for all through investments in infrastructure that enhance walking, cycling, and public transport. At the network level the transport networks are managed, which is why the streets and public transport systems must be designed to make active travel part of every journey (Transport for London, 2017). When changes are made in any of the three levels behavioral changing measures are needed in terms of facilitating a shit that are substantial and sustainable (Transport for London, n.d.). Thereby, it is for example, confer the theory of the Settlement Health Map, important to support changes in the built environment with changes in the inner spheres to for example ensure an increased level of physical activity in peoples lifestyle. This is further important due to the mutuality between the behavioral level, the social level, and the physical level and the way these are affecting the way a city or an area are structured physical (Thierry, 2004).

There are many priorities linked to the Healthy Streets Approach such as biodiversity, accessibility, local economy, heritage, etc. (Saunders, 2023). When redesigning an urban environment elements such as street greening, sustainable travels, and a reduction in emissions contributes to a reduction in carbon emissions, support biodiversity, and increases the resilience to climate change (Transport

for London, n.d.). The Healthy Streets Approach is supporting a shift away from the very dominating private car towards a greater use of active and public transport modes. Public transport is an essential element in delivering healthy streets. Thereby, it will contribute to a reduction in non-essential car, freeing up space, and reducing congestion for the remaining and essential journeys (Transport for London, n.d.).

As healthy streets are needed wherever people are, the approach is convertible and applicable to any streets in the world, which is evident from it having scattered to United Kingdom, Australia, New Zealand, and Europe exemplified by Barcelona (Healthy Streets, n.d.b) (Healthy Streets, n.d.c). However, when the approach is being implemented in other contexts and countries some of the main challenges to be aware of are the climatic conditions and the culture. This means that it can be necessary to adjust the framework to the specific context. However, the outcome must always be the same in terms of ensuring an environment that provide sufficient shade, be relaxing, be welcoming, and so on (Saunders-Interview, 2024).

4.1.3 Actors Involved

Overall, it can be emphasized that everyone are responsible in keeping people well and preventing illness and therefore the Healthy Streets Approach can be considered holistic (Saunders, 2023; Transport for London, n.d.). This means that a number of actors needs to be involved in delivering healthy streets (Plowden, 2020). This includes a broad range of authorities, organisations, and generally the whole system, including different sectors, people, politicians, public health, transport, policing, education, planning, etc., needs to collaborate (Saunders, 2023; Transport for London, n.d.). This is for example the transport sector, the local and state authority, municipalities, and so on (Transport for London, n.d.). The Healthy Streets Approach reaches far, which means that it cannot be delivered by only one part - cooperation with partners across the public, private, and community sectors is essential (Transport for London, 2017). Thereby, the approach seems embedded in the transdisciplinary field as multiple professionals are important when working on a planning project aiming to address the public health due to such projects often being complex and multi-faced dealing with a wicked problem (Thierry, 2004; Rittel and Webber, 1973).

4.1.4 The 10 Healthy Streets Indicators

As Figure 4.1 illustrates, the approach consists of 10 Healthy Streets Indicators, being: Everyone Feels Welcome, Easy To Cross, Shade And shelter, Places To Stop And Rest, Not Too Noisy, People Choose To Walk And Cycle, People Feel Safe, Things To See And Do, People Feel Relaxed, and Clean Air (Healthy Streets, n.d.b). The basis for the indicators are research on the factors that make people safe on the streets (Plowden, 2020). In the following Saunders emphasizes how the 10 indicators were developed:

> *"... if you want people to be walking and cycling, you have to provide an environment with clean air and safety that is accessible where they can rest and all these things. And that is how the 10 indicators were developed."* (Saunders-Interview, 2024, 00:06:17)

Each indicator expresses the experience of being on a street. The 10 indicators seeks to improve sustainability both in terms of the social, economic, and environmental aspects of it, which is why

they must be prioritised and balanced through the way streets are designed and managed (Healthy Streets, n.d.b). Thereby, the approach focuses on sustainability and contributes to improving peoples social, economic, and environmental health as urban areas that facilitates active and public transport supports local economic vitality, environmental justice, and wider goals around social inclusion (Plowden, 2020).

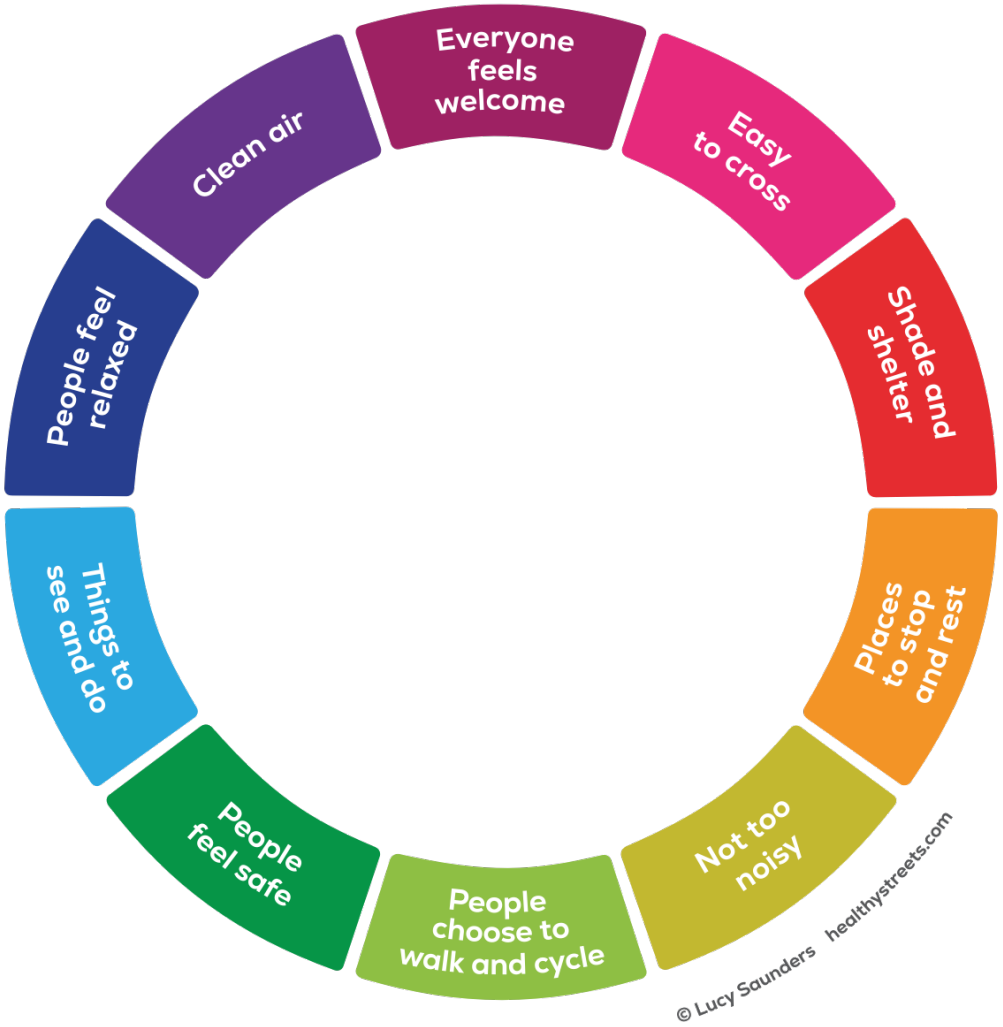

Figure 4.1. Illustration of the Healthy Streets Approach with its 10 Healthy Streets Indicators (Healthy Streets, n.d.b).

As previously mentioned the 10 Healthy Streets Indicators are centered around the human experience of streets, and in that sense the two following indicators stands out: Everyone Feels Welcome and People Choose To Walk And Cycle. These two main indicators are an expression of the need for an environment that are accessible and demand activity everyday for everyone (Saunders, 2023). Thereby, a healthy and inclusive environment should imply that the street is used actively by the whole community for example by walking, sitting, standing, cycling, and using public transport. Besides from the two main indicators, the eight remaining indicators are elements that support the two main, as ones experience of a street affects the senses, and therefore there is interrelations between all 10 indicators. An example is that a noisy street does not make people feel relaxed, which might result in them not choosing to transport themselves actively by foot or cycle (Transport For London, n.d.). Every indicator is supported by scientific evidence,

which means that each of the 10 indicators improves health and encourages people to walk and cycle (Transport for London, n.d.). The 10 Healthy Streets Indicators are further elaborated in the following sections.

Everyone Feels Welcome

A fundamental aspect for maintaining a healthy environment based on physical activity and social interaction is a welcoming place that prepare the ground for walking and cycling, engaging with other people, and spending time. Welcoming places does also play a role in making the area vibrant as well as building and maintaining a strong community. One way to ensure that the street is facilitating such is by identifying if all parts of the community, young as old, are enjoying using the specific space (Healthy Streets, n.d.b).

Figure 4.2. Example of a street design that is inclusive (Transport For London, n.d.).

Figure 4.3. Example where people should be able to move safely during construction (Transport For London, n.d.).

In general there is a connection between the environment and peoples behaviour, which is visualized on Figure 4.4. The figure expresses that the physical as well as mental environment is important and plays an essential role in the way people use and experience a street. Here these two actions from citizens will become a loop where the actions are mutually influencing each other, which will lead to more citizens walking and cycling as the environment is being designed to enhance this use.

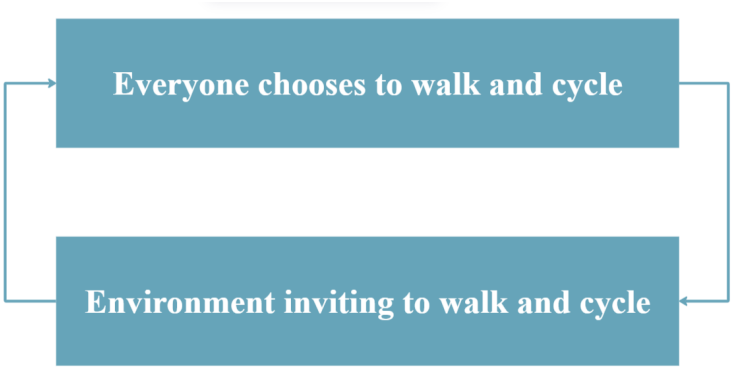

Figure 4.4. An illustration of the connection between the environment and peoples behaviour (Transport for London, n.d.).

Easy To Cross

One of the huge health impacts of urban transport, communities, and businesses are 'severance', which is when *"... people prefer to be able to get where they want to go directly and quickly so if we make that difficult for them they will get frustrated and give up."* (Healthy Streets, n.d.b). This is for example is caused by physical barriers, lack of safe crossing points, and fast moving traffic. Therefore, one of the 10 Healthy Streets Indicators are that the streets should be easy for everyone, no matter age or ability, to safely cross due to the fact that people tend to prefer to get where they want directly and hindrance can lead to frustrations (Healthy Streets, n.d.b; Transport For London, n.d.).

Figure 4.5. Example of prioritising crossings for pedestrians (Transport For London, n.d.).

Figure 4.6. Example of raising and narrowing the carriageway side road aiming to make it easier and safer to cross (Transport For London, n.d.).

Shade And Shelter

When experiencing a street environment there are some basic needs for people, whereof one is shade and shelter (Saunders, 2023). Therefore, a healthy street must offer shade and shelter options to ensure an inclusive environment whatever the weather as shade for example is necessary for people to maintain a healthy body temperature in hot weather and shelter is nice when it is rainy and/or windy. It can be obtained in different ways such as through trees, awnings, and colonnades (Healthy Streets, n.d.b).

Figure 4.7. Example of trees providing shadow (Transport For London, n.d.).

Figure 4.8. Examples of shade and shelter from awnings, entrances to buildings, and bus stops (Transport For London, n.d.).

Places To Stop And Rest

Another basic need is opportunities to stop and rest at different places as it might be challenging for some people to walk or cycle longer distances without having the possibility to stop and rest (Saunders, 2023; Healthy Streets, n.d.b). Seating is therefore an important element to create inclusiveness in the urban environments as it further can invite people to dwell (Healthy Streets, n.d.b) and be part of and view the surrounding vibrant urban environment.

Figure 4.9. Example of places to stop and rest such as steps, walls, and planters (Transport For London, n.d.).

Figure 4.10. Example of parking spaces converted to temporary or seasonal seating (Transport For London, n.d.).

Not Too Noisy

Noise pollution from especially traffic is a well-being and health impact of urban transport. Furthermore, it contributes negatively to stressful living and working conditions as well as it is stressful for people walking and cycling on streets heavily impacted by traffic noise. By reducing the level of noise, the environment will most likely become more enjoyable and people will spend more time on the street and interact with each other (Healthy Streets, n.d.b).

Figure 4.11. Example of a narrow carriageway to make people drive slow (Transport For London, n.d.).

Figure 4.12. Example of new road surfacing that is quieter (Transport For London, n.d.).

People Choose To Walk And Cycle

One approach to increase the health of the public is by being active regularly for instance by walking or cycling shorter trips or as part of longer public transport trips. The idea is that if the most attractive option is to walk and cycle people will choose them, and to make them most attractive walking, cycling, and public transport must be more convenient, pleasant, and appealing

than private car (Healthy Streets, n.d.b). By making these transport modes more attractive and enjoyable it will not only benefit the ones already travelling active but it will benefit all (Transport For London, n.d.).

Figure 4.13. Example of temporary closed streets around schools to promote safety (Transport For London, n.d.).

Figure 4.14. Example of protected space for people cycling on busy streets (Transport For London, n.d.).

People Feel Safe

The feeling of safety is important as it is another of the biggest health impacts due to feeling unsafe can release stress, but it is likewise a basic need that can be challenging to deliver. On streets people can experience unsafeness by motorised vehicles for instance if the traffic is fast moving or if the drivers are not giving enough space, time, or attention. A vital task for the planners to create healthy environments are therefore to manage how people drive. Not only motorised vehicles are aspects in ensuring people feel safe on streets. It is likewise important that people feel safe from any antisocial behaviour, unwanted attention, violence, and so on. Here, street lighting, 'eyes on the street', and street layout can be ways to obtain a greater sense of safety (Healthy Streets, n.d.b).

Figure 4.15. Example of street lights (Transport For London, n.d.).

Figure 4.16. Example of narrow traffic lanes to encourages slower driving (Transport For London, n.d.).

Things To See And Do

The visual impression and expression of an urban area affects how likely it is for people to walk and cycle as visually appealing streets are more enjoyable. Thereby, it is more likely that people will prioritise walking and cycling if there are things to do locally and if shops are within short distance the car dependency will decrease. This could be visiting local shops and

services, interaction with art, enjoying nature, or interacting with other people (Healthy Streets, n.d.b; Transport For London, n.d.).

Figure 4.17. Example of front gardens, window boxes, and hanging baskets to make interesting places (Transport For London, n.d.).

Figure 4.18. Example of opportunities for people to play and engage with their surroundings (Transport For London, n.d.).

People Feel Relaxed

Streets and their environments can make people feel anxious, stressed, unease, or uncomfortable if it is dirty and noisy, as well as if it feels unsafe or does not provide enough space. A basic need is therefore that people should feel relaxed in the streets environment, and all the above factors are important in the street design for ensuring a welcoming and active space for active transport and stays (Healthy Streets, n.d.b).

Figure 4.19. Example of a cycle lane width that is adapted to the demand (Transport For London, n.d.).

Figure 4.20. Example of a clean, well maintained, and free of litter street (Transport For London, n.d.).

Clean Air

Finally, the last Healthy Streets Indicator is that the air should be clean. This is due to air quality being a health impact of urban transport and it impacts everyone but especially a community's most vulnerable and disadvantaged people, including adults and children with health issues. Therefore, a reduction in air pollution will be beneficial for all humans as well as taking part in reducing health inequalities (Healthy Streets, n.d.b).

Figure 4.21. Local programmes can give people confidence in cycling instead of using cars (Transport For London, n.d.).

Figure 4.22. Example of reducing the use of the most polluting vehicles through local initiatives (Transport For London, n.d.).

4.1.5 Context-Based Solutions and Evaluation

There has been identified a range of aspects that can be worked on to improve many of the 10 above mentioned Healthy Streets Indicators all at once (Transport For London, n.d.). This could be:

- Different use of street space
- Reduction in traffic speeds
- Reduction in traffic volumes
- Keep the street clean and cut down on clutter
- More planting and greening
- Use and deal with left-over spaces
- Make sure the street is overlooked
- Promote community ownership (Transport For London, n.d.)

Generally, the Healthy Streets Approach is not a 'one size fits all' (Plowden, 2020) as *"... it is not possible to generalise completely about what can be done where."* (Transport For London, n.d., p. 5). This is due to streets in different contexts requiring different solutions, and that changes needs to be context-specific (Transport for London, n.d.; Plowden, 2020). Therefore, it is important to include considerations on the type of street, its current use, and its potential future use when planning for redesigning a street towards a healthier environment (Transport For London, n.d.).

Whether a street transformation turns out successful or not can be difficult to evaluate (Saunders-Interview, 2024). However, there is a *'Healthy Streets Evaluation Framework'* as when making changes to streets it is important to understand the action's effects. Data about how people are using the street, what people think about the street, and whether the environment is designed to support people in their activities is necessary (Healthy Streets, n.d.a; Saunders-Interview, 2024). Such data will enable the planner to understand whether the objectives of a redesign is achieved or if the changes had unintended impacts. Through such understandings the planner is able to reflect on future street improvements. Despite this, it is common that only little or no data is collected neither before nor after completion, by which a data-based evaluation is not carried out (Healthy Streets, n.d.a).

4.1.6 Examples of Healthy Streets in London: Leonard St. and Lower Marsh

It is according to Saunders difficult to identify how many places the Healthy Streets Approach has been applied as the tool is available for all (Saunders-Interview, 2024). However, there are more examples of streets where the approach has been applied. Two of the places in which it has been utilized are the street Lower Marsh in South Bank and Leonard St. in Shoreditch both in London. The first example is Lower Marsh, which is a part of Lambeth Borough situated in South Bank.

The street, Lower Marsh, is an ancient route that links Westminster Bridge Road and Waterloo Road as well as it is a part of a preserved area (Lambeth, n.d.). The street is characterised by a flexible use of its space, which can be exemplified with the historical Lower Marsh Street where the street in the mornings is used for deliveries, at lunchtime it is used for a lively food market, and in the afternoon and evenings it is used as a pleasant space for visiting shops and bars (Transport for London, 2017; Observations, 2024b). Overall, the impression of the street is that it holds a variety of functions including shops, bars, cafes, restaurants, and offices. Therefore, the use of the street varies throughout the day, which amongst others is due to restrictions such as certain times where the street is closed to vehicular traffic. In the periods with no thoroughfare the street seems very living as people are walking, biking, or staying at the street. The street design is open, inviting, colourful, and feels safe. This is due to a nice, smooth, and level walking surface as well as there is street greening, bicycle parking, liveliness, clean, and street lighting (Observations, 2024b). Figure 4.23, 4.24, 4.25, and 4.26 shows some pictures from the area each showing one or more elements of the Healthy Streets Approach.

Figure 4.23. Picture from Lower Marsh showing flower bowls with a sign expressing no thoroughfare. At certain times these flower bowls were placed as in the picture, and at times with allowed thoroughfare these are placed at the side of the road.

Figure 4.24. Picture from Lower Marsh of a zebra crossing with street lights that connects the end of Lower Marsh with a park area.

Figure 4.25. Picture from Lower Marsh showing bicycle parking that are hidden behind a flower bowl.

Figure 4.26. Picture from Lower Marsh at afternoon showing at sign indicating the restrictions for thoroughfare.

The other example is Leonard St. and some of its surrounding streets, which is a part of London Borough of Hackney situated in Shoreditch. The area of Shoreditch has undergone many changes recently and it is characterised as well-established with diverse communities, cultural heritage, creativity, shops, cafes, and a vibrant economy (Hackney, 2023). Furthermore, Saunders describes Leonard St. as a quiet place (Saunders-Interview, 2024). At Leonard St. there are elements of the Healthy Streets Approach, which for example gives priority to people walking and biking. In addition, there are different parking spaces for bicycles, which for example makes it easier, more convenient, and safer for residents to park their bicycles at the street. The sidewalk and carriageway is also smooth and level as well as there are different green elements in the street. These elements are exemplified in the pictures at Figure 4.27, 4.28, 4.29, and 4.30.

Figure 4.27. Picture from Leonard St. of a broad cycle path where it is also possible to rent cycles.

Figure 4.28. Picture from Shoreditch of a narrowed carriageway, which also works to reducing speed, with plantings at the sides.

Figure 4.29. Picture from Shoreditch of a smooth and level footway surface and planting between the footway and the carriageway.

Figure 4.30. Picture from Leonard St. of a locked on-street cycle parking.


MAN

Case Description 5

To investigate the potentials for implementing the Healthy Streets Approach into Danish planning practice a Danish case has been selected and used, which will be presented in this chapter. The selected case is Holsteinsgade in Odder, and therefore a case description of Holsteinsgade and Odder Municipality will be presented to gain an understanding of the context in which a redesign of Holsteinsgade is proposed. The structure of the chapter is first a brief introduction to Odder Municipality - its geography and demography - and Holsteinsgade. In continuation, the state of and Odder Municipality's visions and goals for health, urban development, and traffic are examined to provide insight into the current challenges as well as municipal strategies, plans, and actions for future development. Furthermore, the organisation of Odder Municipality is presented. Lastly, a more descriptive account of Holsteinsgade is put forward in terms of its physical expression, structures, mental impression, challenges, complexity, and wickedness.

5.1 The Case of Holsteinsgade, Odder

As mentioned, the case of this research is Holsteinsgade in the city of Odder, which is part of Odder Municipality who have a great focus on health and have a development principle to take chances and initiatives (Odder Kommune, 2021). This can be considered necessary when a new approach and paradigm should be implemented in the planning practice. Odder Municipality is located in the eastern part of Central Jutland south for the 2^{nd} biggest municipality in Denmark, Aarhus Municipality. Odder Municipality has an area on 223,70 km^2 (2023) and 23,896 inhabitants (2024) (Indenrigs- og Sundhedsministeriet, 2024). The number of inhabitants in the municipality is expected to rise in the future (Odder Kommune, 2021). Odder is the main city within Odder Municipality in which 13.704 citizens (2023) of the municipality's total inhabitants live and the city is experiencing population growth just like the municipality (Odder Kommune, n.d.a; Hele Landet, 2019). Furthermore, Odder is by Odder Kommune (2021) described as the municipal center holding commerce, service, education, and workplaces.

As the aim with the analysis is to investigate how the Healthy Streets Approach can be used as a planning tool to improve the public health at an existing street within Odder Municipality, Holsteinsgade has been selected as the specific case area. This is apart from the employees at Odder Municipality pointing the street out also due to Holsteinsgade being a centrally located street in Odder holding different functions, possibilities of improvement, and all age groups are using at least some part of the street. Thereby, it is possible to identify how applicable the Healthy Streets Approach in Danish planning. Holsteinsgade is located in the southern part of Odder, which is present at Figure 5.1 that likewise shows the course of the street, Odder Municipality's extent, and the municipality's location in Denmark.

Figure 5.1. Map of Odder Municipality's location in Denmark and Holsteinsgade in Odder. The base maps is from Dataforsyningen: Styrelsen for Dataforsyning og Infrastruktur (n.d.c) and Dataforsyningen: Styrelsen for Dataforsyning og Infrastruktur (n.d.b) and further data is from Dataforsyningen: Styrelsen for Dataforsyning og Infrastruktur (n.d.a).

As mentioned previously, the Healthy Streets Approach aims for prioritising human health and well-being and is an applicable tool within urban, health, and transport planning (Healthy Streets, n.d.b; Transport For London, n.d.). The way in which Odder Municipality is dealing with these aspects is generally addressed in the current municipal plan *'Kommuneplan 2021-2033'*, which is the plan that sets the direction for the physical development, that further holds the defined development goals (Odder Kommune, 2021). Generally, Odder Municipality aims for creating the framework for 'The good life' and in the Development Plan, *'Et stærkt fællesskab i balance: Udviklingsplan 2022-2026'*, it is emphasized that the framework should establish a strong foundation and encourage development for all throughout life (Odder Kommune, 2022b). In order to create the framework for 'The good life' multiple sectors should be involved which is why the structural organisation of Odder Municipality is presented in the following.

5.1.1 Organisation of Odder Municipality

As previously mentioned the division of the different sectors in today's society is being seen in multiple companies and also in municipalities (Healey, 2007). This societal division can also be found in Odder Municipality as it is seen on the organisation diagram on Figure 5.2 that the departments are divided.

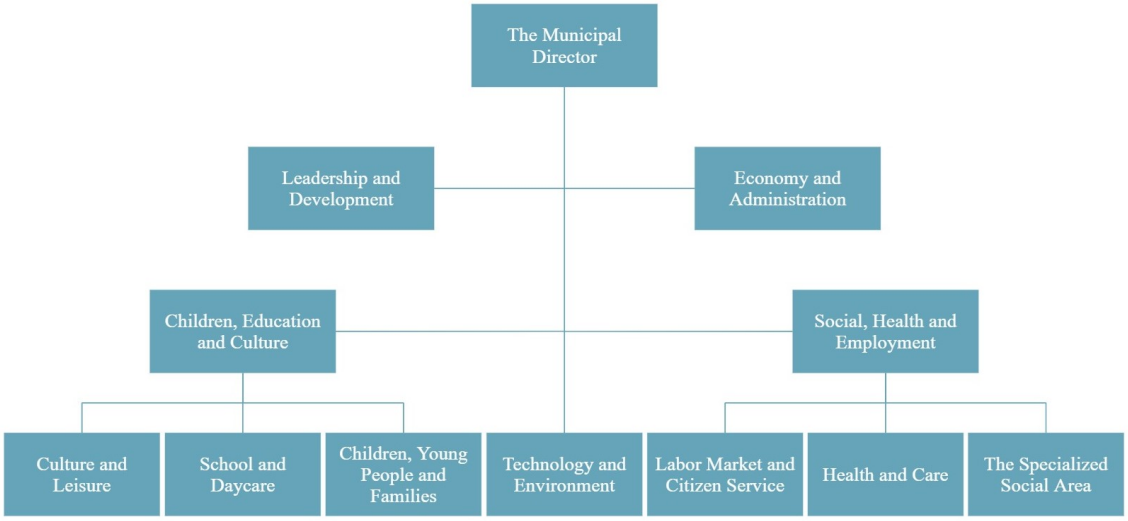

Figure 5.2. Illustration of the organisation diagram of Odder Municipality. The figure is inspired by Odder Kommune (n.d.b).

The municipal structure is that The Municipal Director is at the top of the organisation while The Director of Leadership and Development as well as The Director of Economy and Administration is the second highest (Odder Kommune, n.d.b). In the third layer is the two directors of Children, Education and Culture as well as Social, Health and Employment (Odder Kommune, n.d.b). In the fourth level are the different departments:

- Culture and Leisure
- School and Daycare
- Children, Young People and Families
- Technology and Environment
- Labor Market and Citizen Service
- Health and Care
- The Specialized Social Area

This division shows that departments such as Culture and Leisure, School and Daycare as well as Children, Young People and Families are all referring to The Director of Children, Education and Culture (Odder Kommune, n.d.b). This is the same with the departments of Labor Market and Citizen Service, Health and Care as well as The Specialized Social Area which all are referring to The Director of Social, Health and Employment (Odder Kommune, n.d.b). However the department of Technology and Environment are referring directly to The Municipal Director (Odder Kommune, n.d.b). This division in who is referring to who as well as some departments seemingly being more connected can potentially influence how well and how often a transdisciplinary approach is taken towards solving a problem as it was also presented in the theoretical framework (Lennon and Scott, 2014; Madanipour, 2013).

As this division in Odder Municipality gives different responsibilities to the sectors, which is why there are multiple goals and visions within each sector. Confer the Healthy Streets Approach a collaborative approach is needed (Transport for London, n.d.). However, within the context of Holsteinsgade the work of the three areas; health, urban development, and transport are especially relevant. Therefore, based on multiple municipal plans and documents as well as interviews and observations the following sections identifies Odder Municipality's state and goals of health, urban development, and traffic.

5.1.2 The Health State of Odder Municipality

In general, Odder Municipality faces some health challenges that are also national challenges, whereby Holsteinsgade in Odder becomes a case on how the Healthy Streets Approach can be used to address health challenges through urban planning and design. Laustrup has pointed out some of the challenges in terms of health both nationwide and within Odder Municipality, which therefore are some of the aspects that are of the municipality's interest in work (Laustrup-Interview, 2024b). These challenges include increasing inequality in health; physical activity for instance due to inactivity, people not choosing active transport; increasing percentage of overweight citizens; and mental health and well-being such as loneliness (Laustrup-Interview, 2024b).

The latest report of *'Hvordan har du det?'* (Eng: How are you feeling?), which is a health profile conducted by the Region of Central Jutland in 2021, provides an indication on the overall health state on both regional and municipal level based on how the citizens experience and describe their health, well-being, and health habits (Friis et al., 2022). The report shows that within Odder Municipality 55% of the citizens are either overweight or severely obese, 48% are affected by two or more diseases, 17 % are physical inactive, 12 % feel lonely, and 19% has 2-5 risky health habits (Odder Kommune, 2023; Friis et al., 2022). Furthermore, especially young people and women are experiencing mental dissatisfaction in Odder Municipality - between the 16-24 years old 44% score a high stress level, 54% of young women score a high stress level, 27% feel lonely, and 22% show signs of depression (Odder Kommune, 2023). It is expressed within the Health Strategy *'Odder Kommunes Sundhedsstrategi 2022-2027'* that the municipality is aware of and acknowledge the health challenges, which are described as multi-faceted, as well as there is inequality in the citizens ability to manage such challenges. It is likewise described that the municipality must expect more elderly and more citizens with chronic diseases in the future, which also are the general case in Denmark (Odder Kommune, 2023).

The Healthy Streets Approach is an applicable tool to accommodate some of these public health challenges, to promote health through planning by using the changes in the built environment to promote changes in the lifestyle and strengthen communities. This is done with the aim of helping people meet their basic needs. As previously mentioned, to plan for Healthy Streets a broad anchoring is important and both health, urban, and transport planning are essential. Here a transdisciplinary approach can be a way of bringing in the needed knowledge in the planning process and thereby create planning where multiple professions have expressed and utilized their knowledge (Khan et al., 2014; Thierry, 2004). This is why Odder Municipality's visions and goals related to this project are elaborated in the following sections.

5.1.3 The Goals for Health in Odder Municipality

Health is by Odder Municipality considered a broad term including physical, mental, and social health (Odder Kommune, 2021, 2022b) as well as it is considered as *"... a mean of living a good life that is defined by the individual citizen."* (Odder Kommune, 2021, own translation). The municipality will achieve this by working preventive, supporting the healthy choice as the easy choice, and working systematically with data, dialogue, and knowledge (Odder Kommune, 2022b), and the Municipal Council has four overall goals on the health area (Odder Kommune, 2021):

- The citizens should be supported in mastering the everyday life
- Prevention of emerging or worsening of illness
- The healthy choice must be the easy choice
- The social inequality in terms of health must be minimized (Odder Kommune, 2021)

Odder Municipality's Health Strategy holds the vision that *"All citizens of Odder Municipality must live a good life with well-being and quality of life."* (Odder Kommune, 2023, p. 3, own translation). In addition, Laustrup argues that *"It is quite important that it is from cradle to grave, and regardless of what kind of background you come with, you must have the opportunity to live a good life."* (Laustrup-Interview, 2024b, 00:11:19, own translation). Here it is emphasized that the citizens should be involved in the definition of what a good life involves (Laustrup-Interview, 2024b; Odder Kommune, 2021).

To be successful with the overall vision, Odder Municipality works with four areas of priority; Health Promotion And Prevention, Health For All, Health Should Be Easy, and Together About Health. Health Promotion And Prevention reflects amongst other that the foundations of habits happens during childhood, which is why the health and well-being of children and youngsters is especially important to provide focus within planning. Health For All acknowledges that the conditions of life and access to health services are different amongst citizens, however all should be able to live a healthy life. Health Should Be Easy is considered as one of the most effective tools to strengthen the public health through structural efforts such as establishing cycle lanes to encourage physical activity. Specifically, the municipality wants to promote structures that makes it easy to be healthy and make healthy choices, as well as making health a natural part of everyday life for everyone. Together About Health reflects that promotion of health will only succeed through common responsibility across disciplines and with involvement from citizens, volunteers, associations, companies, and general practice for instance in order to identify new practice (Odder Kommune, 2023, 2021). All of the areas of priority are elements which could be strengthened by utilizing the Healthy Streets Approach (Plowden, 2020).

Odder Municipality is a central actor regarding the health of the public as the citizens at different times of their lives are in contact with municipal services. However, the municipality has possibilities of contributing to a promotion of health and prevent diseases as the citizens are using the urban space, which the planners of the municipality are responsible for (Odder Kommune, 2023; Barton, 2016). Apart from the municipality all parts of the society including citizens, associations, and private actors are valuable actors in terms of creating the best conditions for a healthy and active life whatever it concerns the physical, mental, or social part (Odder Kommune, 2023, 2021). Thereby, it is emphasized that there is a shared responsibility: *"Health must help ensure quality of life in all phases of life and therefore health is a shared responsibility."* (Odder

Kommune, 2023, p. 3, own translation). In addition, the strategy aims for a holistic approach as it focuses on all phases of life and especially the four phases; children, young people, adults, and elder. The strategy acknowledges that health must be strengthened where people are and to do such, a joint effort as well as a shared responsibility across disciplines is required (Odder Kommune, 2023). This is where being able to work transdisciplinary is relevant as this creates an opportunity for the planning to be more thorough as well as a wider field of knowledge is being considered (Khan et al., 2014; Thierry, 2004). However, this approach might in some cases need confidence in what transdisciplinarity can bring as the sector divided structure of society potentially could work against this way of working (Healey, 2007). Within the municipal plan it is emphasised that Odder's physical conditions are influential in supporting implementation of the visions for health (Odder Kommune, 2021). Therefore, urban planning and development are influential for the public health (Barton, 2016; Jackson, 2003; Brownson et al., 2001).

5.1.4 The Goals for Urban Development in Odder Municipality

According to Laustrup structural health actions are those that has the biggest effect on most people and in that context urban planning is mentioned as a way of affecting the behavior and habits of the citizens (Laustrup-Interview, 2024b). Structural efforts such as health prevention and promotion to create the frames for a healthier behavior is one of the ways in which Odder Municipality aims to minimize the social inequality. Another area of interest where a structural effort can contribute to reach the goals are in terms of physical activity as Odder Municipality wants to facilitate conditions that invites all citizens to active movement. It is for instance important for the municipality that all citizens has access to some nearby green areas, as green areas has a beneficial effect on both the physical and mental public health (Odder Kommune, 2021), which is likewise evident from research (Jackson, 2003; Ulrich, 1979; Frumkin, 2001; Kaplan, 1973).

In the Municipal Plan it is stated that the Municipal Council focus, in terms of urban development, is on the connection between urban development and livability for the purpose of creating safe and living urban areas providing each citizens with the possibility to unfold ones life (Odder Kommune, 2021). The vision for Odder is: *"Odder, a real city - green and living for everyone"* (Odder Kommune, 2021, own translation) meaning that Odder should hold a rich shopping and culture life both currently and in the future as well as the urban spaces should be green, attractive, and offering living communities for all (Odder Kommune, 2021). As the case area of Holsteinsgade is located within the city of Odder, which is the municipal center, the Municipal Plan holds a list of development goals for the inner city of Odder as well (Odder Kommune, 2021). Some of these are:

- Ensuring a vibrant shopping and cultural life
- Creating new connections across the existing parallel streets (Nørregade, Rosensgade, and Holsteinsgade) to guide visitors around the whole city center
- Creating urban spaces that are new, green, and attractive and offers communities
- Using strategic tests for citizens involvement, new cross-disciplinary collaborations, and physical urban space experiments (Odder Kommune, 2021)

The strategy for urban transformation has the purpose of developing the central parts of Odder City, which is based on creating a circular flow that guide people around in the city center, creating new recreational urban spaces, and maintaining as well as developing the four urban environments (Odder Kommune, 2021). Odder Municipality has an overall approach to urban development

aiming to link the future with the present through strategic planning (Odder Kommune, 2021). In this sense four development principles are defined, which is presented and elaborated on Figure 5.3. One element of the development principles that is especially relevant is that Odder Municipality wants to take chances and initiatives, which is important in terms of working towards changes in planning practice when implementing the Healthy Streets Approach.

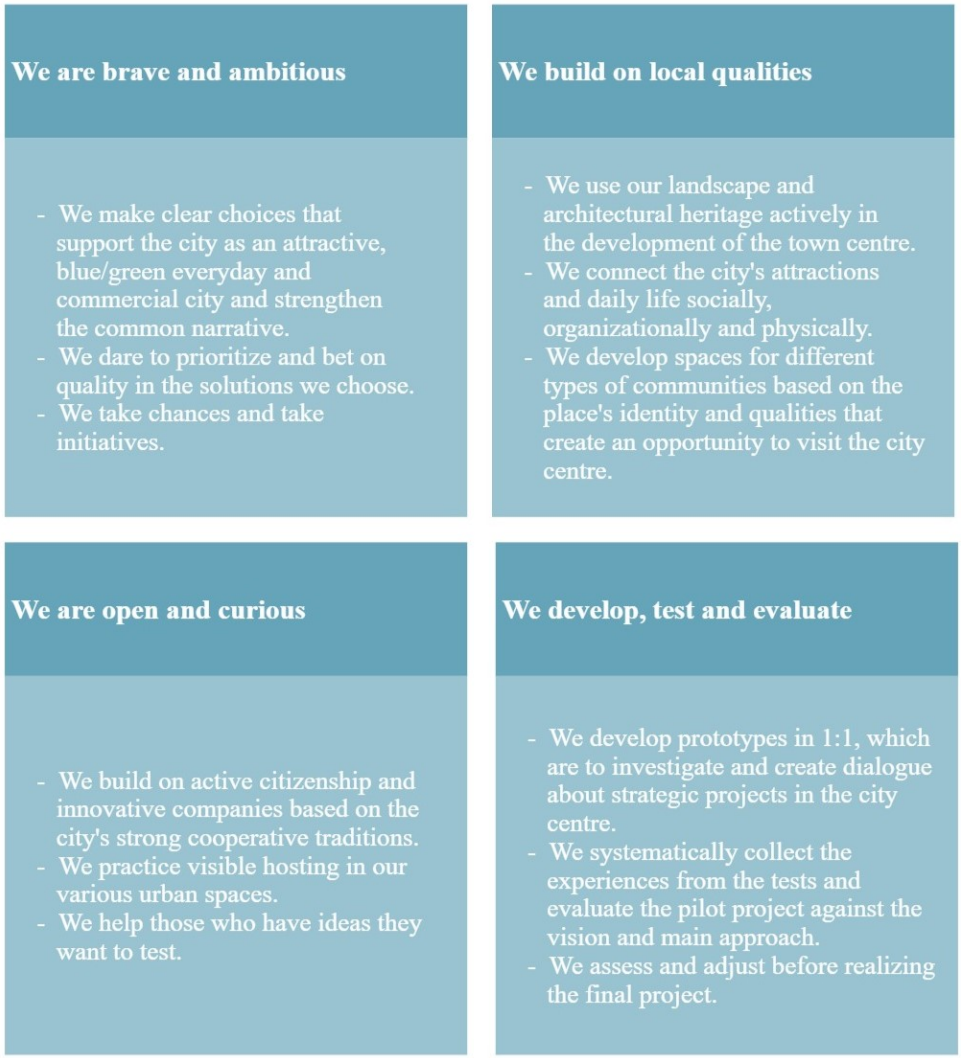

Figure 5.3. The four development principles for urban development in Odder City Center. The text on the figure are citations from Odder Kommune (2021); Hele Landet (2019).

The Municipal Council has stated that infrastructure and planning must promote active transport and physical activity exemplified by continuing the establishment of paths and cycle lanes within the municipality's geographical boarders (Odder Kommune, 2021).

5.1.5 The Goals for Traffic in Odder Municipality

Transport is a part of the Healthy Streets Approach, and it is described that infrastructure is of importance when it comes to development in the municipality. This is due to infrastructure affecting the competitiveness of companies, citizens access to work places, and public and private service. Therefore, effective road, train, and bus connections are important. Odder Municipality

has six overall goals for the traffic. Some of these are to secure fast and effective connections, to create optimal connection between urban development and mobility, to increase the road safety on existing roads and lanes, to strengthen the public transport, and to improve the accessibility for e.g. walking-impaired to public transport (Odder Kommune, 2021). Another focus area of Odder Municipality is to work with improvements of traffic movements in Odder City Center (Odder Kommune, 2021).

Odder Municipality is described by Laustrup as a commuter municipality as many bigger cities such as Aarhus and Horsens are in geography proximity to Odder (Laustrup-Interview, 2024b). This means that many people living in Odder are working elsewhere, which challenges the possibility to travel active to work due to distance. Every year accidents happens at the municipal roads, and the municipality are responsible to pay for a certain part of the treatment and care of road victims. It is described in the Road Safety Plan *'Trafiksikkerhedsplan 2022'* that there is a connection between speed and the number of injured in the traffic, which means that the higher the speed, the greater the risk is of accidents. Speed is therefore a focus area of Odder Municipality (Odder Kommune, 2022a). The overall aim with the Road Safety Plan is - within the financial framework - to improve road safety at the municipal roads and paths, reduce the number of accidents, and increase the safety for all light road users - cyclists, pedestrians, and so on (Odder Kommune, 2021, 2022a). Thereby, it is clear that the municipality has joined The Road Safety Commission's vision that *"... no one should be killed or seriously injured on the Danish roads."* (Odder Kommune, 2022a, own translation). To achieve this vision, Odder Municipality focuses on multiple efforts such as; road safety at school roads, speed, young road-users, and improvement of accident burdened stretches and unsafe crossings. Odder Municipality works on especially two types of efforts to improve the road safety, which is physical improvements of the roads as well as campaigns and education. This is due to a need for improvements of both the roads physical conditions and the road-users behavior in the traffic (Odder Kommune, 2022a). In this connection, changes in the built environment should ideally be supported by softer initiatives such as citizens collaboration and campaigns according to the Healthy Streets Approach (Transport for London, n.d.). In this case the softer initiatives would be a way to create changes in the social and behavioral level, that could influence the physical experience of being on a street (Thierry, 2004).

5.1.6 Holsteinsgade as of Today

As previously mentioned the case area is Holsteinsgade, which overall is characterised by different functions as *"... there are many needs that should be addressed at that street (ed.: Holsteinsgade)."* (Holmegaard-Interview, 2024b, 00:22:47, own translation). Furthermore, the street contains elements of the everyday life and recreational elements such as nature and shopping (Holmegaard-Interview, 2024b; Rasmussen-Interview, 2024b; Observations, 2024a). Holsteinsgade is connecting the station at the one end of the street and the public school, Skovbakkeskolen, at the other end. In between these there are both a residential area and a shopping area with restaurants and shops such as pizzeria, cafe, hair dresser, and knitting shops that can be seen as a fade-out of Rosensgade, which is the main shopping street (Holmegaard-Interview, 2024b; Rasmussen-Interview, 2024b; Observations, 2024a). The residential area consists of varied residents including families with young children and especially elderly (Holmegaard-Interview, 2024a). Furthermore, a forest reserve is located nearby the school and in that part of the street Holsteinsgade is busy especially in the mornings (Holmegaard-Interview, 2024b; Rasmussen-Interview, 2024b; Observations, 2024a). Additionally, the

street is described as a thoroughfare (Rasmussen-Interview, 2024a; Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a). At the pictures on Figure 5.4, 5.5, 5.6, and 5.7 different parts of Holsteinsgade are visualized.

Figure 5.4. Picture from Holsteinsgade showing the carriageway at the end with the school, which can be seen in the background. Furthermore, to the left the best bus stop with shelter and seating, and to the right a parking area.

Figure 5.5. Picture from Holsteinsgade at the part of the street primarily characterised by residence where there also are a pedestrian crossing.

Figure 5.6. Picture from Holsteinsgade near Torvet that shows the part of the street holding shopping and restaurants as well as curbside parking.

Figure 5.7. Picture from Holsteinsgade near the station that shows the part of the street holding shopping and restaurants as well as curbside parking.

The physical expression of Odder City and also Holsteinsgade is dominated by traffic, infrastructure, and parking. This provides an impression of Holsteinsgade as being overtaken by cars, which influences the urban spaces and life negatively (Odder Kommune, 2022b; Observations, 2024a). The actual road of Holsteinsgade is categorised as a 'Trafikvej, sekundær by' (Eng: Traffic road, secondary city), which means that it is a road that connects and handles the traffic between two 'Trafikvej, primære by' (Eng: Traffic road, primary city') as well as it serves public transport (Odder Kommune, 2014). At the street there are multiple bus lines - city busses, local busses, and a regional bus - using the street in both directions mainly either to approach the station and/or the school (Midttrafik, 2023). Aside from the busses departing from the station it is likewise possible to take the light rail that connects Odder with Aarhus. In terms of accidents there have not been any at Holsteinsgade lately, but at both crossings at the ends of Holsteinsgade there has been respectively material damage accidents and personal injury accidents (Odder Kommune, 2022a). Figure 5.8 illustrates the overall structures of mainly Holsteinsgade.

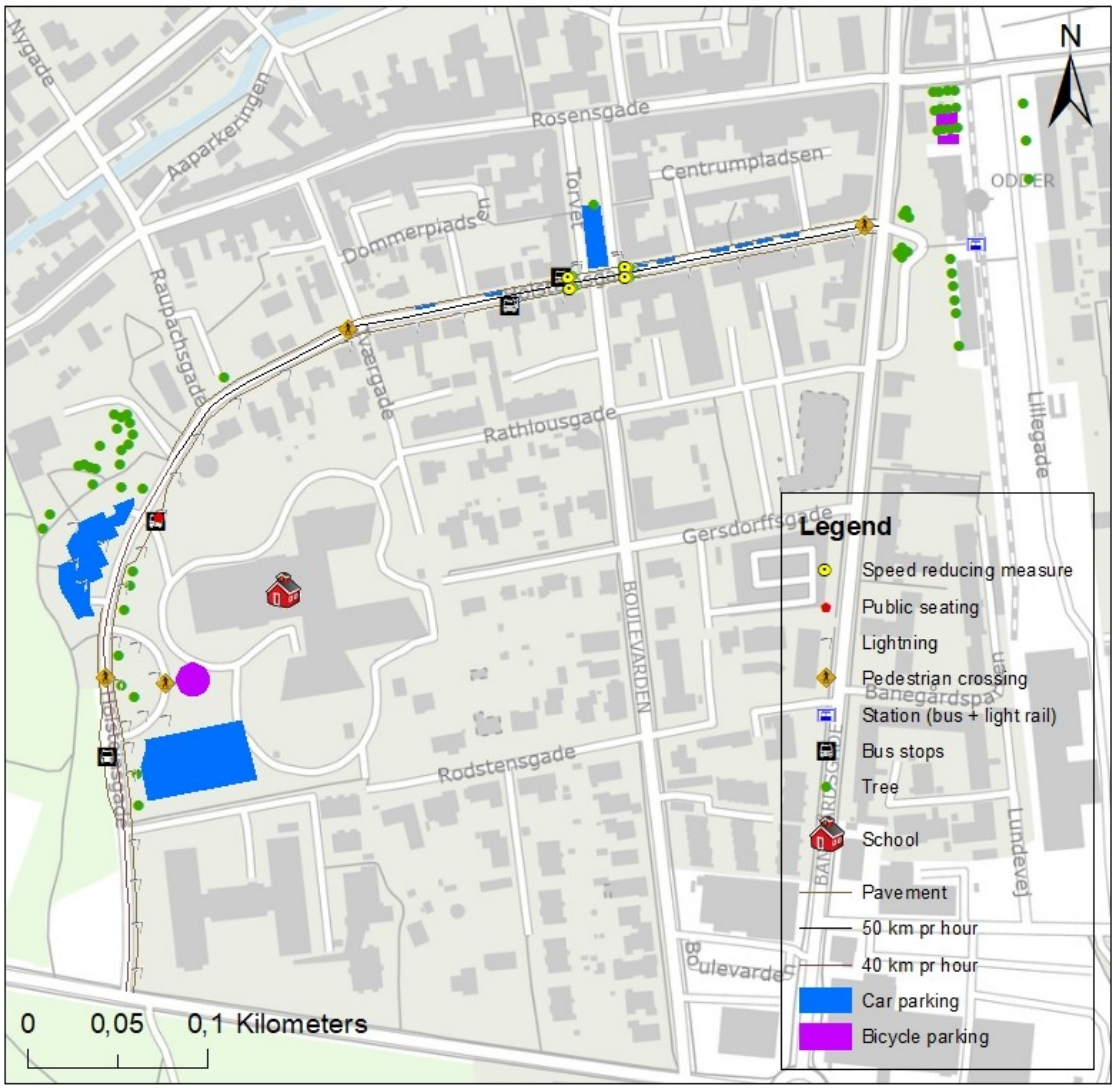

Figure 5.8. Map of selected physical structural elements at Holsteinsgade. The base maps is from Dataforsyningen: Styrelsen for Dataforsyning og Infrastruktur (n.d.c).

On Figure 5.8 it is expressed that at one part of the street there is a speed restriction on 40 km/h while it is 50 km/h at the other part of the street. There are almost pavements along the whole stretch at both sides with the exceptions of two parts near the school. At the places where the pavements ends there are no crossing facilities, which reduces the road safety and can lead to severance and frustration for walking-impaired. On the street there are no cycle lanes or cycle facilities such as bicycle parking. Despite this, there is parking for cars both curbside parking and regular parking spaces. Furthermore, there is street lighting all along the one side of the street, street trees mainly located at the one end of the street, and bus stops where only one of them has a bus shelter and seating. Additionally, there are also two pedestrian crossings and two speed reducing measures.

Challenges at Holsteinsgade

There are some challenges at Holsteinsgade, and in connection to the seventh and eight criteria for a wicked problem, it is important for the planners to understand the uniqueness of the problem and the problems that are linked to each other to be able to solve it (Rittel and Webber, 1973). Therefore, comprehensive considerations on Holsteinsgade's specific uniqueness is necessary to investigate to be able to make the best possible decisions for the future design of the street. Here, the identified challenges affecting the health and human experience of being on Holsteinsgade are presented.

In the Development Strategy some of the challenges that Odder City faces are described being difficulty of maintaining a varied shop offer, attracting new shops, and a lack of attractive urban space with cafes and culture (Hele Landet, 2019). Furthermore, *"... the city has many untapped potentials to strengthen its position as a truly vibrant everyday city."* (Hele Landet, 2019, p. 4, own translation). This has to some extent likewise been observed at Holsteinsgade, and the street has a potential to meet some of Odder Municipality's visions and goals, which the Healthy Streets Approach can contribute to.

A main challenge at Holsteinsgade is the condition of the street, which has been experienced as well as Holmegaard emphasizes that Holsteinsgade is worn and dark as it appears currently, which for example can be especially challenging for walking-impaired (Holmegaard-Interview, 2024b). Additionally, Holmegaard states that Holsteinsgade is *"... not the kind of place you think "I am going there to have a nice time"."* (Holmegaard-Interview, 2024a, 00:10:04, own translation) which is aligned with the impression of the street being slightly boring (Observations, 2024a). The street's worn expression is exemplified in the pictures on Figure 5.9 and 5.10, which can be challenging for especially children, walking-impaired, and elderly. As previously mentioned these population groups are living in or near Holsteinsgade as well as many children are going to school, for whom it is especially important for the street to be healthy, safe, and welcoming (Transport for London, n.d.).

Figure 5.9. Picture from Holsteinsgade showing an uneven and defective part of the carriageway.

Figure 5.10. Picture from Holsteinsgade showing a defective part of the footway surface.

Apart from the street's worn expression, another identified challenge is that in one part of Holsteinsgade, located between the shopping area and the school, the street's course can give rise to higher speed than allowed as the course of the road is mainly straight and the overview conditions are great due to for instance few curbside parking (Observations, 2024a). According to Laustrup the user experience of Holsteinsgade is low as it for example requires confidence on the cycles due to a lack of safety as well as awareness when walking due to the surface conditions (Laustrup-Interview, 2024a). In continuation, the impression was that it would not feel safe to cycle on the street due to the narrow carriageway, many cars parked at the curb, busses taking up a great part of the space, and the lack of visibility of the cyclists presence on the street (Observations, 2024a). According to Holmegaard, many of the kids at the school does not transport themselves to school as their parents are concerned about the road (Holmegaard-Interview, 2024a). In addition, the lack of crossing facilities on the carriageway contributes to the feeling of unsafeness being a cyclist or pedestrian especially at points of the street with bad overview for drivers of vehicles (Observations, 2024a). This is exemplified on the picture on Figure 5.11.

Figure 5.11. Picture of a situation on Holsteinsgade where kids on cycles needs to cross the street at a place with bad overview while cars are driving at street.

Considerations on Future Development of Holsteinsgade

Despite the challenges that Holsteinsgade holds *"... there is great potential to make it better and more inviting."* (Holmegaard-Interview, 2024b, 00:24:19, own translation). Further, a part of Holsteinsgade is part of an area renewal program that aims to promote a better flow within the city and likewise promote the commercial interests to ensure their survival (Odder Kommune, 2021). Considering the future redesign of Holsteinsgade Holmegaard and Rasmussen emphasizes that existing elements such as the bus lines are necessary to maintain (Holmegaard-Interview, 2024b; Rasmussen-Interview, 2024b). However, the maintenance of the busses passing through the street will likewise mean that the available place to adjust the street design according to Holmegaard is limited (Holmegaard-Interview, 2024b). In continuation, it is put forward that features such as road trees and green qualities are valuable to carry on in the work of redevelopment (Holmegaard-Interview, 2024b). These are aspects that will promote the public health of Holsteinsgade. However, according to Rasmussen and Holmegaard economy is considered as one of the biggest challenges to promote public health due to the way planning is done today (Rasmussen-Interview, 2024b; Holmegaard-Interview, 2024b). Furthermore, Holmegaard emphasize that time can be a challenge as well as for example the political focus can change over time and employees can be changed (Holmegaard-Interview, 2024b).

However, with the aim of identifying how the Healthy Streets Approach can be used in a Danish planning context, a design check of Holsteinsgade's existing design and proposals for improvements will be presented in the following chapter. Due to the case of Holsteinsgade holding wicked problem's, a planner's lot is to make decisions and plan for the future without knowing it. Regarding the proposals for redevelopment of Holsteinsgade it is complex to make a plan for the street as there are many uncertainties, which is why different solutions apart from the proposed are present. The complexity lies for example in the difficulty of predicting how the citizens of Odder will respond to the redevelopment. This is why involving the citizens in the process can be beneficial. This is why planners should consider different options to achieve the best possible decisions. Therefore, comprehensive considerations on the wicked problems of Holsteinsgade's specific uniqueness is necessary to investigate to be able to make the best possible decisions for the future design of the street. Here it would likewise be essential to involve other professions and collaborate in a transdisciplinary approach on finding the better solution for the planning of Holsteinsgade.


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The Healthy Streets Design Check of Holsteinsgade 6

This chapter aims for answering the 3^{rd} sub-question: *How is the existing design of Holsteinsgade scored using the Healthy Streets Design Check tool, and which planning actions can be implemented to improve the healthiness of the street's design?* This means that the focus of the analysis is to investigate how healthy the existing design of Holsteinsgade is based on the Healthy Streets Design Check tool. In continuation, based on the score of the current street design and other empirical data such as interview and observation data, proposals for a redevelopment of Holsteinsgade aiming to enhance the health of the street design are put forward. This analysis contributes to the overall investigation of how the Healthy Streets Approach can be utilized in a Danish planning context for the purpose of examining whether a paradigm shift is relevant.

The aim is to bring forward the status quo of the design of Holsteinsgade and thereafter present three proposed scenarios for a redesign of Holsteinsgade. By doing such a redesign the physical and built environment is changed. The three scenarios are targeted towards having three different amount of resources as it was highlighted in the interviews with Rasmussen, Holmegaard, and Laustrup (Rasmussen-Interview, 2024b; Holmegaard-Interview, 2024b; Laustrup-Interview, 2024b; Rasmussen-Interview, 2024a; Holmegaard-Interview, 2024a; Laustrup-Interview, 2024a). The proposed design scenarios are different on the amount of resources needed meaning that the economic resources for realising will differ in relation to the level of drasticness. Besides the resources, the aim with the proposed physical changes are to be a momentum for changes in the activities happening on Holsteinsgade, which ultimately aims for bringing a change in the inner spheres of the Settlement Health Map; Community, Lifestyle, and The Health and Well-being of the citizens. The first scenario is the most drastic and radical proposal of the tree and has an more utopian approach to the redesign than when comparing to the other two. The second scenario is less drastic jet still ambitious and does therefore not call for as many resources if being realised as the first scenario. The third scenario is the scenario with the least need of resources and is not as ambitious as the two others, but as potential for utilizing other planning tools such as temporary activities. In the following section the status quo of Holsteinsgade will be presented highlighting the potentials of the street and building an understanding of how the street's existing design is.

6.1 Assessment and Design Check of the Existing Design

Previously it has been addressed that health is a very complex field as well as there is a great connection between health and planning as planners are taking part in improving public health especially on the societal, community, and street level (Townshend, 2022). This analysis aims to investigate how health can be promoted through planning by applying the Healthy Streets Approach on the case of Holsteinsgade. This will thereby create changes in the physical

built environment to promote a change in citizens lifestyle and take part in strengthening the community, which in combination ultimately are factors that can improve the health of the public. Here the levels; the behavioral level, physical level, and social level will be addressed when coming up with proposals for new spatial representations of Holsteinsgade. Therefore, in this section the existing layout of Holsteinsgade will be assessed based on the Healthy Streets Design Check tool, which provides an assessment of Holsteinsgade against the 10 Healthy Streets Indicators (Healthy Streets, 2021).

Odder Municipality aims to develop the urban environment through strategic planning (Odder Kommune, 2021), and therefore the Healthy Streets Design Check tool is a carefully chosen method to reach the overall goal of the strategy behind the Healthy Streets Approach namely to improve the overall health of the public at Holsteinsgade. The assessment of the existing design of Holsteinsgade can be considered as the first step towards promoting health through the Healthy Streets Approach. The aim with the assessment is to apply the Healthy Streets Approach to a Danish context and identify how the status quo of the existing design of Holsteinsgade is. The existing design has been scored based on 19 metrics from the Healthy Streets Design Check that each represents some physical elements on the street. Such physical elements in the built environment influences people's experience being on the street and people's utility of the street. Therefore, the activities on the street were observed to understand the current use of the street, to create a view on potentials for changes in terms of use, and to get insight into the habits and lifestyle of the citizens. On Figure 6.1 the outcome of the Design Check of Holsteinsgade's existing design is presented and in Table A.3 in Appendix A.2 the rationale for the scoring of each 19 metrics can be found.

	Existing Layout Score
Healthy Streets Score	23
Everyone feels welcome	19
Easy to cross	21
Shade and shelter	17
Places to stop and rest	13
Not too noisy	27
People choose to walk and cycle	19
People feel safe	15
Things to see and do	44
People feel relaxed	19
Clean air	33

Figure 6.1. The result of the Design Check of the existing layout of Holsteinsgade. The score has been produced through (Healthy Streets, 2021).

As Figure 6.1 shows the existing layout of Holsteinsgade scores 23/100, which can be considered as a relatively low score. However, as mentioned in the method it is common for existing streets to score low as streets often are planned to prioritise the through-movement of vehicles (Healthy Streets, 2021). In the case of Holsteinsgade the low score could to a great extent be due to it

being observed that the street is primarily prioritising motorised vehicles over light road users as for instance no cycle facilities are present at the street (Observations, 2024a). Further, this is an expression of how the street layout and planning are influencing the everyday life of citizens and visitors (Townshend, 2022; Gehl, 2010). Important to point out is the fact that the existing design does not positively invite citizens to use the area, however this lack of active transportation on the street level could potentially be rooted in more than just the design of the street. This is why the transdisciplinary approach is relevant as this gives the opportunity for planners to involve other professions with more knowledge on the lack of active transport (Thierry, 2004).

In addition to the overall Healthy Streets Score for Holsteinsgade, it is likewise present in the results of the design check how each of the 10 Healthy Streets Indicators are scored. The three indicators with the highest score are Things To See And Do (44), Clean Air (33), and Not Too Noisy (27). Things To See And Do scores high especially due to the green infrastructure elements at the streets such as a grass area and beds near Torvet (Observations, 2024a), which has been presented in research as having a positive influence on the health of humans (Jackson, 2003; Ulrich, 1979; Frumkin, 2001; Kaplan, 1973). The score of Clean Air and Not Too Noisy is due to the speed limit, the relatively low flow of vehicles during peak hour, and the parking restrictions at Holsteinsgade (Observations, 2024a). Overall, the result of the assessment was not surprising to the three employees from Odder Municipality as they for example argues that there are shops in the central city and the forest to use and look at, air pollution is not a huge problem in Odder, and the noise level is not that high Rasmussen-Interview (2024a); Holmegaard-Interview (2024a); Laustrup-Interview (2024a).

In the other end of the score, the three indicators that scores lowest are Places To Stop And Rest (13), People Feel Safe (15), and Shade And Shelter (17). The score of Places To Stop And Rest is due to a narrow sidewalk, no cycle lane, no cycle parking, and three of the four bus stops does not have shade, shelter, or seating for the users. People Feel Safe is for instance due to few crossing facilities, no tactile surface, only street lighting at one side, and the condition of or lacking high quality walking and biking facilities. The score of the Shade And Shelter indicator is low due to the few trees on the street and the missing shade, shelter, and seating facilities at the most bus stops (Observations, 2024a). These lacking aspects expresses a challenge for especially the elderly and children using Holsteinsgade as it is central in the Healthy Streets Approach that all and especially these people should feel safe at a street (Transport for London, n.d.). The Odder Municipality employees expected that Holsteinsgade scored low on the safety level due to it being worn and narrow, not having many places to stop, stay, and rest, and the street does not make people feel relaxed (Rasmussen-Interview, 2024a; Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a), which all are important elements within the Healthy Streets Approach to provide a healthy and safe environment for people to live in.

In continuation of the above, there is a great accordance between the municipal workers impression of the street and the assessment of the street based on the Healthy Streets Design Check, which is expressed in this quote: *"It does not surprise me, I think it shows what it (ed.: Holsteinsgade) actually looks like..."* (Rasmussen-Interview, 2024a, 00:08:12, own translation). However, the low overall score of the existing design also provides worries: *"There are of course some things where you think: no, that is a shame..."* (Laustrup-Interview, 2024a, 00:08:47, own translation). Despite, the currently worn physical expression and lacks of multiple elements there is consensus that Holsteinsgade holds some potentials for improvement: *"I believe that*

the potential is greater than what is experienced." (Holmegaard-Interview, 2024a, 00:03:50, own translation). In general, there is room for improvements across all 10 indicators, but especially those with the lowest scores. Furthermore, some indicators are more relevant and possible to improve in the context of Holsteinsgade as well as the municipal employees finds some indicators more important than others. The indicators that the three Odder Municipality employees has pointed out as the most important are Easy To Cross, Shade And Shelter, Places To Stop And Rest, People Choose To Walk And Cycle, People Feel Safe, Things To See And Do, and People Feel Relaxed (Rasmussen-Interview, 2024b; Laustrup-Interview, 2024b; Holmegaard-Interview, 2024b). To improve the public health, changes in the street layout and the scene in which citizens are living can be done through planning aiming to challenge individuals to change their habits (Jackson, 2003).

To seek an improvement of Holsteinsgade's street design three scenarios for new street designs has been generated with the result from the existing street design in mind aiming to achieve a higher score but most importantly to promote the public health through physical changes. These scenarios are likewise generated with a focus on seeking to accommodate Odder Municipality's previously presented visions and goals for development. This is visions such as creating an optimal connection between urban development and mobility, increasing road safety, creating green and attractive urban spaces, and ensuring an environment that enables the citizens to life a good life (Odder Kommune, 2021, 2023). When creating the three proposals it must be addresses that as the planning of Holsteinsgade can be viewed as a wicked problem where the definition of the problem is created by the eye of the beholder the proposals are likewise created based on what was viewed as the problem. It is therefore possible that other planners potentially could have focused and emphasised other part of the context and the planning outcome could therefore be different. The three proposals will be presented in the next section.

6.2 Proposals for Redesign of Holsteinsgade

Based on the existing design of Holsteinsgade it is clear that the street has potential for a redesign. In that connection, three different design proposals has been produced to provide examples on how the Healthy Streets Approach can be applied on Holsteinsgade with different extents of changes. Confer Figure 4.4 there is a great connectedness between the built environment and peoples behavior (Transport for London, n.d.), which is why a redesign of Holsteinsgade should aim for providing physical elements that promote and invite the citizens of Odder to walk and/or cycle more and if the citizens are using the street more actively the experience of being in the built environment will change. The reason for three different design proposals are especially connected to the fifth and the tenth criteria for a wicked problem stating that when dealing with a wicked problem it is a 'one-shot operation' and that the planner cannot be wrong as changes in the built environment cannot be tested in advance (Rittel and Webber, 1973). In this context, a transdisciplinary approach is likewise beneficial as the knowledge and perspectives from different disciplines provides the possibility of achieving a more coherent and considered end-result (Fokdal et al., 2021). Besides this, the proposed redesigns are aiming at changing the social, behavioral, and the physical level by transforming the spatial representation of Holsteinsgade into inviting active transport and citizens to stay. Therefore, three scenarios has been made to urge Odder Municipality to consider different solutions for a redesign of Holsteinsgade.

The three different design scenarios - each made with an overall goal in mind - will be presented

later on. Here the intention is to, through the scenarios, suggest changes in the built environment that will influence the activities done by citizens, strengthen the community, and create an area that invites new and healthier habits for the citizens. The three suggestions will be focused on the design on both a street and spatial planning level. Confer the eighth criteria for a wicked problem, it should be mentioned that when looking to redesign Holsteinsgade it is not possible to consider all aspects, as some problems could be a symptom of other issues, which is why elements connected to the Healthy Streets Approach has been of focus. However, a transdisciplinary approach can make it easier to cover more aspects due to the group of planners holds a broad set of knowledge. Furthermore, the scenarios has been made with Odder Municipality's strategic visions and goals in terms of health, urban development, and traffic in mind. This for instance involves seeking to provide designs of Holsteinsgade that supports the citizens in being able to live a good life, creates attractive, green, and vibrant urban areas, as well as increases the road safety for all road-users (Odder Kommune, 2023, 2021). Another overall consideration within the scenarios is that Holsteinsgade should be healthy, safe, and welcoming for all, however, as there is a great representation of children and elderly at the street the scenarios has especially been generated with them in mind as they are highlighted as especially important in the Healthy Streets Approach (Transport for London, n.d.).

Within this section the three design scenarios will be presented in terms of their respective focus and the difference between each other. In the first scenario, which was made with an intended naivety, the goal was to see which changes in the current design was needed to reach the maximum score of 100/100. This design was made to give context to the Healthy Streets Approach and to clarify which elements could be a part of the redevelopment that was to be the best version according to the Healthy Streets Design Check. In the second scenario the aim was to look at what a more pragmatic, jet ambitious, transformation of the current design potentially could be. Here the focus was on creating a street where pedestrians and people on cycles were prioritized and therefore the safety and human experience was important in terms of creating a street where citizens feel invited to commute and stay. In the third scenario 3 the goal was to create an improvement of the current design, but with less resource demanding changes and thereby showcasing what could be done short-term. Here some of the changes that is suggested is to bring greenery to the street, while also creating changes aiming to improve the safety of pedestrians and cyclists. This scenario was also thought to have potential for creating changes while waiting for resources to do more of a total redevelopment and thereby making some temporary changes.

6.2.1 Scenario 1: The Maximum Score

This scenario was created with the intention of showcasing how Holsteinsgade could be redesigned to be able to reach the score of 100/100. In this suggestion for redesign the main idea was to identify which actions were necessary to score maximum and the idea was therefore that the redesign was to be widespread, comprehensive, and radical. Here the aim was to reach an understanding of what is equivalent to a high score in the framework of the Healthy Streets Approach. This scenario would therefore not be considered a context-specific redesign and has a utopian approach to the planning. In Figure 6.2 the score of this redesign can be seen in comparison to the current design. Here it is clear, and as expected, that the street scores 100/100 and that the maximum potential for improving the 10 indicators has been reached.

	Existing Layout Score	Proposed Layout Score
Healthy Streets Score	23	100
Everyone feels welcome	19	100
Easy to cross	21	100
Shade and shelter	17	100
Places to stop and rest	13	100
Not too noisy	27	100
People choose to walk and cycle	19	100
People feel safe	15	100
Things to see and do	44	100
People feel relaxed	19	100
Clean air	33	100

Figure 6.2. Score of scenario 1 using the Healthy Streets Design Check (Healthy Streets, 2021).

To be able to lift the score from 23/100 to 100/100 some actions are necessary. The specific proposed actions can be seen in Table A.3 in Appendix A.2 where details about them are present. The more general actions that are suggested for this design to be realised in Holsteinsgade are as follows:

- Speed limit reduced to 30 km/h
- Speed-reducing measures
- Closing of the street for passing passengers, bus and truck traffic. Only driving for errands allowed
- Raised cycle lanes in both directions with a width of minimum 2 m
- Carriageway and cycle lanes divided with either pillars/bollards or greenery
- Ramps at each crossing point for the cycle lanes
- Bicycle parking that exceeds demand and step-free access
- New footway surfaces for pedestrians on the entire stretch in both directions with a width of minimum 2 m
- Pavement for pedestrians must be continuous and without level difference at side roads
- Raised pedestrian crossings and/or crossing ramps between all intersections and at all intersections
- Installation of tactile surfaces
- Public seating with maximum 100 m distance
- Trees on the entire stretch of the street and on both sides of the street
- Minimum three green infrastructure elements, such as planters, beds, trees, or lawns
- Street lighting on the entire stretch of the street and on both sides of the street

A moodboard visualizing the main actions can be found on Figure 6.3.

Figure 6.3. Moodboard of scenario 1. The pictures are from 1) Sekrateriatet for Supercykelstier (2018), 2) HITSA (n.d.a), 3) HAVEFOLKET (2018), 4) Jøni Aabybro (n.d.), 5) Greenline (n.d.), 6) Refsgaard (n.d.), 7) VandCenterSyd (n.d.), and 9) Rud (2021).

One of the goals with using the Healthy Streets Approach is getting more people to use the cycle and walk. It has become evident that reducing the speed of driving vehicles will improve the conditions for walkers and cyclists (Lindelöw-Interview, 2024; Jørgensen-Interview, 2024). The proposed reduction of speed is also a tool for reducing the risk of traffic accidents as well as it supports the traffic goals of Odder Municipality (Odder Kommune, 2022a). To reduce the feeling of being unsafe traffic-wise cycle lanes that are raised and divided from the cars on the carriageway should be built as well as measures to create safe crossings for both pedestrians and cyclists. As described by Jørgensen and Laustrup there are groups of citizens who are not able to walk for longer stretches and therefore needs multiple places with possibilities to sit and relax and take part in the urban life (Jørgensen-Interview, 2024; Laustrup-Interview, 2024b). This is some of the argumentation behind the action of placing public seating with a maximum distance between them being 100m. Besides this, it is also clear that green infrastructures such as trees, beds, planters and lawns are of importance in improving the feeling of wanting to stay and transport oneself on the street as this enjoyable scenery has been linked to promote walking as a form of exercise and that being in nature can help reduce stress (Brownson et al., 2001; Jackson, 2003; Ulrich, 1979). However, it is important to note that there are some traffic needs for this street to live up to, one being that busses and delivering trucks must have access to use the street, meaning that problems are very likely to occur concerning the public transport and the delivery of goods for the stores. This is one of the main reasons why this first scenario is seen more as a way of exploring the full potential of the Healthy Streets Approach.

It has previously been addressed that this scenario has an utopian approach, and the utopian lies within that some of the proposed actions are conflicting. This can be exemplified with the total width of the current carriageway and footway surface means that expansion of the width cannot be completed due to the houses placement, which is especially valid for the eastern part of Holsteinsgade (Rasmussen-Interview, 2024a). Thereby, it is not possible to both widen the footway surface and establish cycle lanes as the carriageway should still be available for errand driving. In continuation, the aim with the Healthy Streets Approach is not necessarily to reach maximum as a threshold of an acceptable score is not present. Instead, the street design should aim for increasing the score as much as possible within the scope of available resources and the physical constraints (Healthy Streets, 2021). This is what the two following scenarios to different degrees aims for.

6.2.2 Scenario 2: Ambitious and Context-Specific

The goal with this scenario was to make a more context-specific, however ambitious, suggestion for a redesign of Holsteinsgade where buses, cars and trucks could still use the street, but the main focus was on the pedestrians and cyclists. Here the aim was to propose a redesign that was a total transformation, but being mindful of the specific characteristics and needs for the use. One of the characteristics that Holsteinsgade holds and which Rasmussen and Holmegaard consider as necessary to maintain are the bus lines even though it implies that a certain width of the carriageway is required and the room for redesigning the street is limited (Rasmussen-Interview, 2024b; Holmegaard-Interview, 2024b). In addition, green elements and qualities such as road trees are also highlighted as important elements in a redesign (Holmegaard-Interview, 2024b).

The focus will be to facilitate good conditions for walking and cycling with a heightened focus on being and feeling safe, while the experience as citizens using the street must be pleasant. In this scenario it was chosen to divide the street into two areas which can be seen on 6.4; area A and area B. The division of the street as it according to Jørgensen for example is beneficial to categorize streets when designing them *"... because you always have to make prioritizations within the streets."* (Jørgensen-Interview, 2024, 00:08:03). Area A will be focused on children being able to safely cycle or walk to school - here it is essential that the children feel safe and that the parents also view the route to school as safe, as this will impact if the children are allowed to and want to transport themselves to school. Confer the Road Safety Plan, safety at school roads are likewise a goal for Odder Municipality. Overall, this is not the case in the existing design today (Holmegaard-Interview, 2024b). In contrast, Area B will have more focus on the liveliness of the center of Odder and attracting urban life to take the route though Holsteinsgade. This is likewise highlighted as a vision on a potential redevelopment in Holsteinsgade (Odder Kommune, 2021). Here there will be a heightened focus on inviting stays and gaining accessibility for cyclist and pedestrians.

Figure 6.4. Map of the two areas of the second scenario. The base map is from Dataforsyningen: Styrelsen for Dataforsyning og Infrastruktur (n.d.b).

The second scenario was created based on the indicators that was selected individually by Holmegaard, Laustrup, and Rasmussen as relevant to improve in the context of Odder and Holsteinsgade (Rasmussen-Interview, 2024b; Laustrup-Interview, 2024b; Holmegaard-Interview, 2024b). As previously mentioned the indicators that were specifically highlighted was: Easy to cross, People Choose To Walk And Cycle, Places To Stop And Rest, Things To See And Do, People Feel Safe, Shade And Shelter, and People Feel Relaxed. These indicators has therefore been in focus while developing the scenario. In Figure 6.5 the score of this redesign can be seen as well as to what extent each indicator promotes health after the proposed actions have been implemented.

	Existing Layout Score	Proposed Layout Score
Healthy Streets Score	23	70
Everyone feels welcome	19	72
Easy to cross	21	71
Shade and shelter	17	67
Places to stop and rest	13	60
Not too noisy	27	67
People choose to walk and cycle	19	72
People feel safe	15	72
Things to see and do	44	78
People feel relaxed	19	72
Clean air	33	67

Figure 6.5. Score of scenario 2 using the Healthy Streets Design Check (Healthy Streets, 2021).

In this scenario the scores of the 10 indicators are all higher than the scores of current design of Holsteinsgade as the overall score for the proposed design is 70/100. The indicator with the highest score is here Things To See And Do (78) just like it is in score of the existing layout. The factors that influence this indicator is the added amount of public seating as well as the added trees and green infrastructure (Healthy Streets, 2021). However, the lowest scoring indicator is Places To Stop And Rest (60) which is also the lowest scoring indicator in the existing layout and is reasoned and scored based on the amount of space for walking and cycling, the cycle parking, public seating and bus stops (Healthy Streets, 2021). The scores of the eight other indicators have all reached a significantly higher score compared to the existing layout score as they all are within the range of 60-78. As mentioned Places To Stop And Rest scores lowest, despite it is one of the municipal employees highlighted focus points. However, the indicator has reached a significant improvement from a score on 13 to 60. As opposed to this, the two of the three indicators - Not Too Noisy and Clean Air - which by the employees are assessed as least important in Odder, has within this scenario experienced the smallest increase of the score. Overall, to be able to lift the score from 23/100 to 70/100 some actions are necessary. The specific proposed actions can be seen in Table A.3 in Appendix A.2 where details about them is presented. The more general actions that are needed for this design to be realised in Holsteinsgade is as follows:

- Holsteinsgade is divided into Area A and Area B
  - For Area A it remains possible to drive in both directions
  - For Area B the street is changed to a one way street towards Odder Station
- Speed reduction to 30 km/h on the entire street
- Speed-reducing measures must be established
- Time-limited access for large vehicles (no access during periods 7-9 and 13-16)
- Raised cycle lanes in both directions with a width of minimum 2 m
- Carriageway and cycle lanes divided with either pillars/bollards or greenery
- Ramps at each crossing point for the cycle lanes
- Ramps and/or pedestrian areas on the carriageway between all intersections and at all intersections
- Installation of tactile surfaces
- Installation of tiles with a non-slip surface, although with the possibility of minor mistakes
- Build a smooth carriageway, but with the possibility of minor mistakes
- Public seating with a maximum distance of 199 m
- Establishment of bicycle parking adapted to future needs and suitable for different types of bicycles
- Plant trees and minimum three green infrastructures distributed along the street
- Lampposts on the entire stretch of the street and on both sides of the street
- Establish a waiting area at the bus stop with seating, shade, and shelter

A moodboard illustrating the main actions can be found on Figure 6.6.

Figure 6.6. Moodboard of scenario 2. The pictures are from 1) Sekrateriatet for Supercykelstier (2018), 2) HITSA (n.d.a), 3) Granit Butikken (n.d.), 4) Seri Q Sign (n.d.), 5) Greenline (n.d.), 6) Refsgaard (n.d.), 7) HITSA (n.d.b), 8) VandCenterSyd (n.d.), and 9) OutdoorDesign (n.d.).

In this scenario the focus is on creating a street design that invites pedestrians and people on cycles to use the street. One way of promoting this is to think about the speed levels at which cars, busses and trucks are going as this has an impact on the physical experience when using the street (Jørgensen-Interview, 2024; Lindelöw-Interview, 2024). This reduction of speed and the utilization of this reduction is likewise a goal for the municipality to work on (Odder Kommune, 2022a). Another way to clearly prioritize pedestrians and people on cycles was pointed out by Jørgensen as being a strategy to promote walking and cycling (Jørgensen-Interview, 2024):

> *"I think it is smart to not completely ban the cars, rather just put them at the bottom of the prioritization. Parts of the streets should still be accessible for picking people up in a car or product delivery by car..."* (Jørgensen-Interview, 2024, 00:16:57)

As there is a need for buses, cars and delivering vans to be able to drive on the street it is suggested to make one part of the street a one-way-street going towards the station. This will result in changes being made to two bus lines that are currently driving in the wrong direction of what the one-way-street is intended to go - which has been pointed out as a concern about this scenario (Rasmussen-Interview, 2024a; Midttrafik, 2023). This is a clear example of a scenario that goes beyond the street and spatial planning level and therefore working on a network level is necessary as there potentially could be traffic issues that needed to be addressed on the streets that are surrounding Holsteinsgade. As relatively many vehicles are passing through the

street it is necessary to view the changes in traffic on a more strategic level and an analysis of what the potential new problems could be traffic-wise must be done (Jørgensen-Interview, 2024; Rasmussen-Interview, 2024a; Holmegaard-Interview, 2024a) - this is one way in which the wickedness of this planning problem can be shown.

Just like in Scenario 1 the addition of trees and green infrastructure aims to reduce stress levels and promote walking as a form of exercise, and invite stays (Brownson et al., 2001; Jackson, 2003; Ulrich, 1979). This fits well with the goal of promoting active transport and physical activity for the citizens of the municipality (Odder Kommune, 2023). As stated by Lindelöw *"... the trips that people make anyway should be nice."* (Lindelöw-Interview, 2024, 00:27:33) and thereby also highlighting the importance of establishing lampposts, non-slip surfaces and waiting areas at bus stops with seating, shade, and shelter. Lastly, for this scenario the raised cycle lanes, the ramps and the bicycle parking is also a part of making the experience of using the street nice as the needs of the citizens can be met.

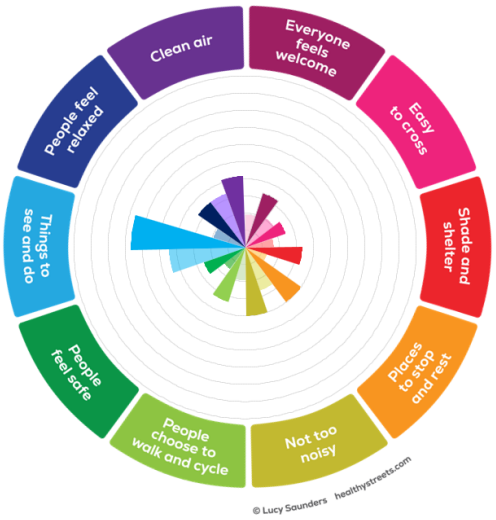
6.2.3 Scenario 3: Less Resource Demanding

In the third scenario the aim was to identify the changes that could be done to be able to score Holsteinsgade higher than the existing layout, but doing so using less recourse. This is for example due to that the Design Check tool aims for the redesign of an existing street being done within the scope of resources available and physical constraints (Healthy Streets, 2021). Further, it is amongst other due to the three employees from Odder Municipality emphasizing that, besides political willingness, limited resources such as economy and time can be challenges in implementing the Healthy Streets Approach in Danish planning (Rasmussen-Interview, 2024b; Holmegaard-Interview, 2024b; Laustrup-Interview, 2024b; Rasmussen-Interview, 2024a; Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a): *"The economy is the biggest obstacle..."* (Rasmussen-Interview, 2024b, 00:02:43, own translation). Additionally, Laustrup argues that a way to handle this challenge is by acknowledging the problem and handle it by wondering:

> *"... How can we do something on a smaller scale or within the financial framework? So, it does not have to be an 'all or nothing' way of thinking, but it is something that I think can be decisive for whether the goal with huge visionary thoughts are reached..."* (Laustrup-Interview, 2024b, 00:32:23, own translation)

The thinking stated in the quote by Laustrup is aligned with the purpose of this scenario - to investigate how changes in the existing design of Holsteinsgade can be done within a smaller scale using a limited amount of money but still improve the built environment and the public health. Here the scenario will focus on improving the public health of the citizens and people utilizing the street by doing a less comprehensive redesign of the street. There will also in this scenario be a possibility to create changes in a shorter time frame, as the actions necessary are not as extensive as the previous suggestions. This design suggestion is based on an assessment of whether the existing design of the street is sufficient or if the 10 indicators could be improved in a less recourse heavy way. In this scenario the suggested actions will be mainly focused on adding greenery, bettering the conditions for cycling regarding safety and visibility. Some of the suggestions could potentially also be done using temporary activities like creating places for urban

life to occur and parking facilities for cycles. In Figure 6.7 the score of the third scenario can be seen.



	Existing Layout Score	Proposed Layout Score
Healthy Streets Score	23	37
Everyone feels welcome	19	33
Easy to cross	21	25
Shade and shelter	17	33
Places to stop and rest	13	40
Not too noisy	27	40
People choose to walk and cycle	19	33
People feel safe	15	26
Things to see and do	44	67
People feel relaxed	19	33
Clean air	33	42

Figure 6.7. Score of scenario 3 using the Healthy Streets Design Check (Healthy Streets, 2021).

It is clear that this scenario will raise the score from 23/100 to 37/100 and that the highest scoring indicator is Things To See And Do (67) as is was in scenario 2 and the existing design. Here this indicator is scored based on the three metrics; public seating, trees, and green infrastructure. The raise in score here is based on the addition of green infrastructure elements that provides green elements to the street and public seating established at short distances to for instance ensure that all people can take a rest during a trip or enjoy the urban space. The lowest scoring indicator is however Easy To Cross (25) and People Feel Safe (26). Both indicators are scoring low despite improvements in multiple of the metrics that influences them - this is amongst other a reduced speed limit, crossing facilities to avoid severance, and installation of tactile covering. The reason for the indicators low scores are however due to especially no restrictions for through traffic and the amount of large vehicles utilizing the street which can decrease the feeling of safety when being on the street due to the narrow carriageway and curbside parking. Furthermore, an element that contributes to the low score of the indicator of People Feel Safe is due to narrow pavement. On Figure 6.7 it can be seen that all the indicators experience an increase in their score, however, to a varying degree. In order to realise this suggestion the following actions must be established on Holsteinsgade to reach the score of 37/100:

- Speed limit reduced to 40 km/h on the entire stretch
- Speed-reducing measures
- Establishment of on-carriageway cycle lanes on the entire stretch or as a minimum, marking of blue cycle lanes at crossing side roads
- All minor defects on the carriageway such as holes and cracks are repaired
- Public seating with a maximum distance of 199 m
- Bicycle parking that exceeds demand - this is particularly relevant in Area B where car parking could be used for permanent/temporary bicycle parking
- Perhaps planting of trees along the street
- Minimum three green infrastructure elements
- Bus shelters with seating and shade from the sun and shelter from the rain at all bus stops

A moodboard illustrating the main actions can be found on Figure 6.8.

Figure 6.8. Moodboard of scenario 3. The pictures are from 1) Cycling Embassy of Denmark (n.d.), 2) HITSA (n.d.c), 3) Rebild Kommune (n.d.), 4) By Bang (n.d.), 5) Erenfred Pedersen A/S (n.d.), 6) Web Urbanist (n.d.), 7) HITSA (n.d.b), 8) VandCenterSyd (n.d.), and 9) OutdoorDesign (n.d.).

In this scenario the theoretical background of utilizing and establishing a greener street as a way of encouraging walking and reducing stress has been used (Brownson et al., 2001; Jackson, 2003; Ulrich, 1979). This addition of green infrastructure and places to sit will also take part in inviting stays. Here, there is, like in the two previous scenarios, a speed reduction as well as cycle lanes are being established as this will invite pedestrians and cyclist to use the street (Jørgensen-Interview, 2024; Lindelöw-Interview, 2024). This reduction of speed is also highlighted by Odder Municipality as there is a connection between the speed level and the amount of accidents meaning that the higher the speed the more likely accidents are to happen (Odder Kommune, 2022a).

6.3 Theoretical Considerations on the Three Scenarios

Through the three scenarios it is clear that planning can take part in promoting an improvement in public health, by for example supporting the visions and goals of Odder Municipality, especially those regarding health, planning, and traffic (Odder Kommune, 2021). This improvement can be viewed in many aspects of the actions that are suggested in all of the above mentioned scenarios. The suggested changes in the street level on the built environment must be backed up by changes in the inner spheres of the Settlement Health Map (Figure 3.3) for instance through soft measures to improve the road-users behavior in the traffic (Transport for London, n.d.). This is already

a focus of Odder Municipality as one of the efforts they focus on are education and campaigns (Odder Kommune, 2022a; Transport for London, n.d.), which Laustrup also highlights:

> *"... and perhaps also a more qualitative or soft approach to how we change the citizens' habits or, in other words, traffic habits. So that you get the school board involved or we could do a campaign..."* (Laustrup-Interview, 2024a, 00:35:57, own translation)

Thereby, it is identified that changes in the built environment is not sufficient alone as it is crucial to make changes in peoples behavior to make a substantial shift in the way the citizens of Odder are using Holsteinsgade (Transport for London, n.d.). This is where the transdisciplinarity will be relevant as other professionals could be involved and working on the habits of citizens or professionals working with road and traffic management, who will be able to create a traffic analysis or bring knowledge and experience on the laws of the traffic.

Through these scenarios a connection between planning and health has been made, as the scenarios overall aim for inviting citizens to use active and public transport as well as socialize on Holsteinsgade. However, it is crucial to acknowledge the complexity of health and planning as well as how those are intertwined (Barton and Grant, 2006; Townshend, 2022). This complexity is part of the reason why planning problems, in Holsteinsgade, can be viewed as a wicked problem - as all of the scenarios potentially could lead to another problem, that then needs to be analysed and taken care of (Rittel and Webber, 1973; Ritchey, 2013). An example of this could be accidents where busses and cyclists are involved, as the amount of people on cycles is expected to rise - this will strongly depend on how the cycle lanes are implemented. Here, the planning problem is a unique planning related issue that have many professional parts in which planners are not able to fulfill all (Khan et al., 2014; Stokols et al., 2009). This is where the skill of working transdisciplinary also comes in hand, as bringing multiple professionals together to collaborate will be beneficial for deepening the understanding of the aforementioned issue (Thierry, 2004). This is also the building block for creating the Healthy Streets Approach and adopting it to Danish planning practice.

The presented scenarios - and the way of working with the Healthy Streets Approach - can be viewed as a way of doing strategic planning where the overall aim is to improve public health for the citizens using Holsteinsgade. This strategic approach has also been addressed by Saunders as being a part of the Healthy Streets Approach which could be a way of connecting the data with some more soft measures such as changes of habits (Saunders-Interview, 2024). This was likewise expressed by Laustrup as a way of connecting the two data types - the hard data and the soft data - by for example using campaigns (Laustrup-Interview, 2024b).

The scenarios are not and should not be viewed as the only three possibilities for a redesign of the street as there are countless other ways of redesigning the street - all with pros and cons as well as some positive and negative consequences of the redesign. The aim of the two last scenarios was to take the context into consideration and thereafter build the vision and plan for what the street could be and look like in the future. Here, the suggested redesign is very related to the eye of the beholder as different planners and other professionals are very likely to focus on a different aspect of the issue and thereby potentially putting forward another plan for redesign (Rittel and Webber, 1973; Ritchey, 2013). In this connection, the suggested scenarios will be discussed based on perspectives

from different professional backgrounds and experiences. Furthermore, the considerations when utilizing the Healthy Streets Approach in a Danish context, how the cooperation is done in the municipal sectors, and what some potential challenges could be is discussed.

Discussion of Scenarios and Changing Planning Practice 7

The aim of this chapter is to answer the fourth and final research question: *How can the proposed actions for a redesign of Holsteinsgade be assessed, and what considerations should be included when converting the Healthy Streets Approach to a Danish municipal planning context?* This will be done by an assessment of the three previously presented scenarios where feedback from three professionals working in Odder Municipality will be put forward aiming to discuss the good and the bad of the scenarios. Hereafter a fourth scenario will be presented - this scenario takes the addressed issues of scenario 1, 2, and 3 into account. In continuation, considerations about changing planning practice will be discussed by addressing aspects related to planning that must be considered when implementing the Healthy Streets Approach in a Danish planning context. Lastly, the cooperation between municipal sectors and members of a project group will be discussed in relation to the intersectoral actions and the transdisciplinary approach.

7.1 Assessment of Design Scenarios

In the previous chapter three scenarios for the redesign of Holsteinsgade were presented. These three scenarios will be assessed, evaluated, and discussed in the following sections aiming to showcase the pros and cons of the suggested changes as well as look into the possibilities for realising the suggestions on Holsteinsgade. This will be done to look into whether the proposed actions are realistic and fitting for the specific context as well as to discuss if the proposed actions are supporting the overall goals and visions of Odder Municipality. One of the goals was expressed by Rasmussen:

> *"We would like the parents to cycle down there (ed.: to the school and daycare) and then cycle to the station and take the light rail to Aarhus instead of driving into Aarhus. Those are the kinds of things we would like to do."* (Rasmussen-Interview, 2024a, 00:35:36, own translation)

This goal is linked to Odder Municipality's goal about wanting to support physical activity by making structures that promote the healthy choice as the easy choice, which a redesign of Holsteinsgade could take part in promoting (Odder Kommune, 2023, 2022b). In the suggestions for redesign the context of Odder as well as the location of the everyday facilities, such as schools, kindergarten, daycare, shops, bus stops, the station, and nursing homes will be evaluated and

discussed to understand if there are actions in the suggestions that are unrealistic or in need of being adjusted slightly. Here the specific context and the potential political support will likewise be addressed. After the pros and cons of the suggestions has been presented the points of the three discussions will be collected with the attention of building a fourth suggestion that will be the final recommendation of a redesign for Holsteinsgade.

7.1.1 Assessment of Scenario 1

The first scenario, as mentioned in the previous chapter, scores 100/100 and was made with intended naivety to gain an understanding of which actions could be necessary in order for Holsteinsgade to get the highest possible score. Here the redesign is a total transformation and was therefore comprehensive and radical. The actions for this transformation can be found in section 6.2.1 'Scenario 1: The Maximum Score' in the previous chapter. The main feedback from the three employees from Odder Municipality consisted of concerns regarding the street being closed for passing traffic, which would result in busses needing an alternative route (Rasmussen-Interview, 2024a; Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a). This was expressed by Holmegaard as: *"... we cannot do without our buses on that road (ed.: Holsteinsgade)..."* (Holmegaard-Interview, 2024a, 00:15:43, own translation). This was further highlighted by Laustrup as there is a need for citizens of different groups to be able to use the car as transportation:

> *"... there is still both a nursing home and a school (ed.: near Holsteinsgade), so there would be a need for some to be driven... So it is a lively street where you still have to take into account that there are somethings that are necessary. It can also be some small buses that need to come in. There are some bigger vehicles that must be able to get there. It is a very diverse use of that road."* (Laustrup-Interview, 2024a, 00:21:48, own translation)

This is also connected to the product delivering that is also a necessity for the street and the city. Laustrup points to the current focus of Odder Municipality that is to create changes that can take part in supporting the local business community and thereby making sure that they are able to get their delivering of goods (Laustrup-Interview, 2024a). However, this scenario propose a closing of the street with errand driving allowed, which means that people with an errand of the street such as residents, delivering of goods, or work are allowed to drive on the street. Therefore, the concern mentioned above would presumably not be an issue as it is clear that the delivering and the errands of driving citizens to and from school, nursing homes etc. would be possible. Another issue worth highlighted by Rasmussen is the lack of space in especially the northern part of Holsteinsgade where the street is going through the city center of Odder as there is a risk of falling short on space in terms of establishing the intended raised cycle lanes: *"... there is no room for it (ed.: raised cycle lanes). Not if you still have to keep the current width of the carriageway..."* (Rasmussen-Interview, 2024a, 00:16:37, own translation).

Regarding the surfaces of the footway and pedestrian crossings it is highlighted that a renewing and establishment of this is possible: *"You could do that with pedestrian crossings. You could do that with paving too - it just costs per metre, that is fine."* (Holmegaard-Interview, 2024a, 00:17:14, own translation). This is likewise the case with the surface of the carriageway as it is put forward by Rasmussen that *"The carriageway can also be (ed.: constructed anew)."* (Rasmussen-Interview, 2024a, 00:17:15, own translation). In terms of the addition of cycle parking that exceeds

the demand Holmegaard and Rasmussen agrees that this could be established and that there is room on the street for those (Rasmussen-Interview, 2024a; Holmegaard-Interview, 2024a). It is also highlighted by Rasmussen that putting up lighting on both sides of the street can be done if the economic aspect is not considered (Rasmussen-Interview, 2024a). The public seating located at maximum 100 meters it also doable: *"Public seating each 100 metres. That is a long distance, so you could get a bench and set it up here and there, as well as some other urban space furniture you could sit on."* (Holmegaard-Interview, 2024a, 00:17:18, own translation).

Scenario 1 is viewed by Holmegaard and Laustrup as ambitious and a suggestion to creating a connection in Odder especially between the forest on one end of Holsteinsgade and the station on the other end, which is viewed as an advantage (Holmegaard-Interview, 2024a; Laustrup-Interview, 2024a). However, a disadvantage in this scenario is that it is a radical and comprehensive transformation which according to Laustrup demands both economy and political support (Laustrup-Interview, 2024a). Here it is added by Rasmussen that it is likewise essential that the citizens of Odder are on board with the transformation (Rasmussen-Interview, 2024a). By Holmegaard it is however emphasized that this acceptance from the citizens could take years to build (Holmegaard-Interview, 2024a).

7.1.2 Assessment of Scenario 2

The second scenario does, as mentioned in the previous chapter, get the score 70/100 and was made with the intention of putting forward an ambitious jet context-specific suggestion for the redesign of Holsteinsgade. Here the road would not be closed off for all except errand driving as in the first scenario. However, the street would be made a one-way street on the stretch near the city center and the station. This scenario is a total transformation but keeping the context in mind and being mindful of the characteristics and uses of Holsteinsgade. The actions for this transformation can be found in section 6.2.2 'Scenario 2: Ambitious and Context-Specific' in the previous chapter. Within this scenario the concerns are likewise centered around how the traffic affected. One of the main concerns from Rasmussen and Holmegaard, is that the one-way street potentially could be a hit on the business-life of the center due to the influence of a cut down in curbside parking (Rasmussen-Interview, 2024a; Holmegaard-Interview, 2024a). Here the concern is also, according to Rasmussen, directed towards a need for analysis on whether the traffic is moved to the connected streets, which would then need a traffic analysis as well to understand how this wicked problem could be solved (Rasmussen-Interview, 2024a):

> *"When you make the entire (ed.: area B) a one-way street, then I think we are just moving the traffic, then they will come onto some smaller roads on some residential roads. So if you have to make it one-way, then I think it should not be whole stretch..."* (Rasmussen-Interview, 2024a, 00:31:01, own translation)

Another concern is the time limited access for the large vehicles, which Holmegaard doubts whether it will be respected (Holmegaard-Interview, 2024a). It is however viewed as a change that in theory could do well for the children going to and from school:

> *"My first thought is that the time-limited access could make a huge difference in relation to the school children, but I simply do not know if you can discipline*

> *deliveries outside of that morning period. They (ed.: delivery men) simply come at all times..."* (Holmegaard-Interview, 2024a, 00:27:55, own translation)

As put forward by Laustrup Odder is a commuter city where many of the residents are commuting to the bigger surrounding cities to work and it is therefore an easy method for the parent to drop off their children in school, kindergarten or daycare prior to heading to work (Laustrup-Interview, 2024a). In relation to this, the importance of traffic safety is relevant to prioritize according to Rasmussen, who believes that if parents see that the streets are safe then the children will be allowed to cycle or walk to school (Rasmussen-Interview, 2024a). This however, is currently more relevant for those living in Odder city and not so much those living in the smaller cities outside Odder (Rasmussen-Interview, 2024a; Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a). Here Laustrup states that the establishment of raised cycle lanes would make an important difference (Laustrup-Interview, 2024a). As there is a more limited amount of space in the stretch near the city center it is brought forward by Rasmussen that there probably will not be room for raised cycle lanes on the narrowest part (Rasmussen-Interview, 2024a). However, there could be room for the raised cycle lanes on the stretch near the school and kindergarten:

> *"In (ed.: area A), we might be able to (ed.: establish raised cycle lanes), because I think we (ed.: Odder Municipality) are the owners of a part of the side areas, so we could probably do it there, but we simply cannot do it in (ed.: area B), because then we would have to remove houses."* (Rasmussen-Interview, 2024a, 00:39:46, own translation)

Due to the many uses of Holsteinsgade it is brought forward by Laustrup that it could be relevant to involve users, citizens, etc. to get a view into what their needs are as there could be many needs (Laustrup-Interview, 2024a). This involvement of citizens could also influence the political support and allocation of finances, that was put forward by Rasmussen as a potential issue, as the citizens assumed would feel heard (Rasmussen-Interview, 2024a).

7.1.3 Assessment of Scenario 3

The second scenario, as mentioned in the previous chapter, scores 37/100 and was made with the intention of doing the transformation within a smaller financial framework as this aspect of the redesign has been pointed out as being a big obstacle (Rasmussen-Interview, 2024b). This approach to the redesign leads to a less comprehensive transformation, which potentially could be done in a shorter time frame. The actions for this transformation can be found in section 6.2.3 'Scenario 3: Less Resource Demanding' in the previous chapter.

On this scenario an advantage for Rasmussen is that this suggestion does not involve as big of a transformation as the previous ones (Rasmussen-Interview, 2024a). This is, however, not an advantage according to Laustrup but actually a disadvantage as it is put forward that: *"I do not think we (ed.: Odder Municipality) are making much progress compared to the existing score"* (Laustrup-Interview, 2024a, 00:56:56, own translation). A way to make more progress is through the speed being reduced, which is highlighted by Holmegaard: *"The speed could then be reduced."* (Holmegaard-Interview, 2024a, 00:48:44, own translation). To this it is mentioned by Rasmussen that adding greenery and more public seating could likewise be added to the list of actions that are

less resource heavy to implement (Rasmussen-Interview, 2024a). This is strongly supported by Laustrup who states:

> *"And then I actually think that the thing about still making room for public seating is quite important because there can be so much socially with just sitting and hanging out for 15 minuets after school, where they (ed.: the children) just set up meetings instead of just going to each person's home and sitting in front of a screen. If you can get the young people and the children to stay and make some appointments for the third half of the day, it is just so valuable. And I think it is affordable to install seats, but it would just give so much to well-being, socializing, or some elderly people from the care center who can sit and watch life on the street. The fact that it can provide that element, I think is so valuable for us as people in a city. So I think I have a pretty strong opinion on the seating because I think it could do so much."* (Laustrup-Interview, 2024a, 00:50:55, own translation)

It is also stated by Laustrup that these public seating should include places where more than two people can sit and have multiple functions, as this will support the idea about children meeting up after school to socialise and make play dates or agreements on meeting up later on (Laustrup-Interview, 2024a). Here it would be reasonable to push the maximum of 200 meters between seating down to maximum 100 meters according to Laustrup and Holmegaard (Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a). Laustrup also highlights that the placement and design of the seating must be well considered (Laustrup-Interview, 2024a). One of the examples for public seating is the bus stop near the school which is a place with room for it. On the stretch near the city center and the station the room for public seating is, however, an unknown as stated by Holmegaard: *"I have my doubts about whether there is room for bus sheds, as I know them, but there can be many variants that do not take up that much space."* (Holmegaard-Interview, 2024a, 00:58:43, own translation).

Regarding the on-carriageway cycle lane it is pointed out by Rasmussen that blue asphalt must only be used in areas where a crossing is located, but emphasizes that the white markings on the carriageway can be done on the entire street (Rasmussen-Interview, 2024a). A challenge in this scenario is presented by Holmegaard and Rasmussen as there could be issues with lack of space for the cycle lane, that could be solved by closing the curbside parking, but which would not be a popular decision politically according to both Rasmussen and Holmegaard (Rasmussen-Interview, 2024a; Holmegaard-Interview, 2024a).

7.1.4 Collection of Thoughts From Odder Municipality

Based on the three previous sections assessing and discussing the proposed actions and transformations of Holsteinsgade attention can be brought to the complexity of the street both in terms of use and the external constrains such as the lack of space and the political wishes. Amongst Rasmussen, Holmegaard, and Laustrup there is a common view on the first scenario being unrealistic, too drastic, and inconsiderate of the context of Holsteinsgade and Odder (Rasmussen-Interview, 2024a; Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a). However, the two other scenarios, 2 and 3, both have realistic suggestions for changes, where Laustrup sees scenario 3 as too unambitious and Rasmussen believes that scenario 3 is the most realistic as scenario 2 needs a traffic analysis (Laustrup-Interview, 2024a; Rasmussen-Interview, 2024a):

> *"It is also difficult to say (ed.: point out the most realistic scenario) because immediately I would probably say the second (ed.: Scenario), but then we have to think, what happens then with the traffic, in addition to that. So the third (ed.: Scenario) would probably be the one I would go with for a start and then say that if we can do something on the second, then we have to go straight out and see what happens then with the traffic, because it is not just to say that now we are closing and then we are doing this, because the cars are still somewhere. So it is a bit difficult without having a larger area involved."* (Rasmussen-Interview, 2024a, 01:05:24, own translation)

This acknowledgement of Scenario 3 being too unambitious and Scenario 2 being in need of a more in-depth traffic analysis lead Laustrup to the thought of countless other scenarios being possibilities for the redesign:

> *"... I actually see that there are far more options than just three options, because I also think that there are some elements from the second that you could work more with, which are not really that costly, but which would perhaps give a big effect in some areas and I think that this talk might also be interesting to talk through from a closer business case, so you could make a fourth model, somewhere between the second and the third."* (Laustrup-Interview, 2024a, 01:06:02, own translation)

The economic side is addressed by Laustrup stating that it could be interesting to look into supporting the redesign with less costly actions such as involving the citizens and getting to know their needs and wishes or create a cycle campaign with Cyklistforbundet (Eng: The Cyclists' Association) (Laustrup-Interview, 2024a). Here it is also highlighted by Laustrup that it could be relevant to involve the school board of the schools or the student council when trying to influence the habits of the children (Laustrup-Interview, 2024a). As argued in the quote above there are multiple options for a redesign according to Laustrup, and further it is put forward that a fourth scenario is relevant to consider that combines the second and third scenario.

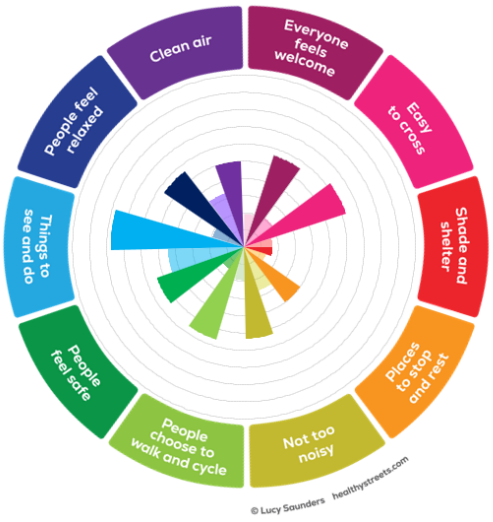
7.1.5 A Fourth Scenario?

Based on the scenarios discussed in the previous sections a fourth scenario could also be a solution, as the score of 100 is too unrealistic but the score of 35 - which is a raise in the existing score of 12 - is unambitious as described by Laustrup (Laustrup-Interview, 2024a). Therefore, a fourth scenario will be presented in this section.

Scenario 1, 2, and 3 all has pros and cons as well as suggestions for actions that simply is not realistic for the context of Holsteinsgade. Here the diverse use of the street is conflicting and a necessity to understand further, which include understanding the need for both busses, trucks and cars to use the street while also having the street being a vain for children walking and cycling to and from school. The aim with the fourth scenario is to bring forward a suggestion of the redesign of Holsteinsgade where the specific context, the feedback from the municipal employees, and the assumed needs for usage has been taken into account. Here it is important to emphasise the fact that in this scenario there is an opportunity for Odder Municipality to opt out some of the actions if there is a lack of political support and/or finances. However, there is an

opportunity for utilizing multiple funds from the different departments of the municipality when using a transdisciplinary approach in the work on Holsteinsgade (Rasmussen-Interview, 2024a; Holmegaard-Interview, 2024a) The final details is something that Odder Municipality will need to work through once the overall plan for the redesign is finalized and the financial details are determined. If some actions were to be opted out from the scenario, it is recommended to opt out the lighting on both sides of the street and/or the total construction of new asphalt and instead just patch the asphalt where needed.

In this scenario it has been chosen to work with actions for the entire street as well as having different actions that are specific to one stretch of the street - here using the division of Holsteinsgade in area A and area B like in the second Scenario (see Figure 6.4 in section 6.2.2 'Scenario 2: Ambitious and Context-Specific'). It is a goal for this scenario to balance the needs for transportation using cars, trucks, and busses on the street as well as creating facilities for citizens walking or cycling to ensure that they get the experience of feeling safe and views the overall experience as pleasant. This redesign score 52/100 in the Healthy Streets Design Check and is thereby raising the score with 29 points when comparing to the 23/100 that is the score of the existing design of Holsteinsgade. The specific proposed actions for this scenario can be seen in Table A.3 in Appendix A.2 where details about them is presented. In Figure 7.1 the score of the street can be found as well as the individual scores of the 10 indicators.



	Existing Layout Score	Proposed Layout Score
Healthy Streets Score	23	52
Everyone feels welcome	19	56
Easy to cross	21	63
Shade and shelter	17	17
Places to stop and rest	13	40
Not too noisy	27	53
People choose to walk and cycle	19	56
People feel safe	15	54
Things to see and do	44	78
People feel relaxed	19	56
Clean air	33	50

Figure 7.1. Score of the fourth scenario using the Healthy Streets Design Check (Healthy Streets, 2021).

To reach this score the following actions must be realised in Holsteinsgade:

- It must be possible for buses, trucks, cars, etc. to drive on the street
- Speed reduction to 30 km/h on the entire stretch
- Speed-reducing measures are established
- Ramps and/or pedestrian areas on the carriageway between all intersections and at all intersections
- Installation of tactile coating
- Installation of tiles with a non-slip coating, although with the possibility of minor mistakes
- Build a smooth carriageway, but with the possibility of minor mistakes
- Public seating with a maximum distance of 100 m

- Establishment of bicycle parking adapted to future needs (for different types of bicycles)
- Plant trees and green infrastructure distributed along the street
- Establish lighting on both sides of the road
- For area A:
  - Raised cycle lanes in both directions (width of minimum 2 m)
  - Perhaps separation with greenery between carriageway and cycle lane as well as ramps at each crossing point
- For area B:
  - Marked cycle lanes on carriageway - marked in white

A moodboard illustrating the main actions can be found on Figure 7.2.

Figure 7.2. Moodboard of scenario 4. The pictures are from 1) Cycling Embassy of Denmark (n.d.), 2) HITSA (n.d.a), 3) Rud (2021), 4) By Bang (n.d.), 5) Greenline (n.d.), 6) Sekrateriatet for Supercykelstier (2018), 7) HITSA (n.d.b), 8) VandCenterSyd (n.d.), and 9) OutdoorDesign (n.d.).

These actions were chosen based on the feedback from the previously mentioned scenarios where it was especially highlighted that there was parts from both the second and third scenario which would work. Here, the division of the two areas was brought to play as this is a way of improving the traffic safety for the children walking or cycling to school or kindergarten, as it was highlighted by Rasmussen that there potentially would be room for raised cycle lanes on the stretch near the school (Rasmussen-Interview, 2024a). From observations made on Holsteinsgade it was clear that the children were cycling more down the side streets Raupachsgade and Tværgade, which is located in the middle part of Holsteinsgade (Observations, 2024a). This is also pointed out

as being of importance by Laustrup: *"I also think that with the cycle lane it is quite decisive (ed.: for whether the street is used for cycling or not)..."* (Laustrup-Interview, 2024a, 01:11:09, own translation). The suggested cycle lane will however need to evolve into an on-carriageway cycle lane as the street gets surrounded by houses on the stretch near the city center and the station. However, another perspective relevant to consider in terms of actions are the limit of the redesign which is pointed out by Rasmussen, Holmegaard, and Laustrup to be strongly connected to the financial leeway and is therefore appointed to restrain which actions can be included (Rasmussen-Interview, 2024a; Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a). A further perspective is the tactile surface that is doable to include in the redesign:

> *"... in the third (ed.: scenario) there is, for example, not that thing with tactile surface, and it costs money, but it does not cost that much money either, and that is something that gives a signal that there must be room for everyone..."* (Holmegaard-Interview, 2024a, 01:08:30, own translation)

It is also put forward by Holmegaard that an upgrade in the carriageway and pedestrian path, an addition of seating as well as some reduction of speed would help create a street inviting citizens to stay and utilize the street for active transport (Holmegaard-Interview, 2024a). This way of working with little resources jet still bring change is likewise highlighted by Laustrup, where the addition of public seating is thought to support the health and well-being of the citizens:

> *"... seats, every 100 meters instead of 200 meters or where they are placed or how they are designed or something like that. Could it be things like that, which could move relatively much with such a few resources?"* (Laustrup-Interview, 2024a, 01:10:26, own translation)

However, what is highlighted as the most decisive in the redesign of Holsteinsgade has on multiple occasions by Rasmussen, Holmegaard and Laustrup been pointed out as being the financial side of planning (Rasmussen-Interview, 2024a; Laustrup-Interview, 2024a; Holmegaard-Interview, 2024a). Here, the political side of a redesign is also closely connected as stated by Holmegaard:

> *"... then it is just a question of how much money we (ed.: the planners at Odder Municipality) can get and how ambitious we can be and get our politicians to work on the part that hurt the most. You can also say that it hurts now, the whole thing with the children not driving themselves to school and parents being worried about their way to school and stuff like that - it hurts, but we have just accepted that we have to drive them and then there are some who drive their kids to school and pick them up again. That kind of thing that causes more congestion..."* (Holmegaard-Interview, 2024a, 01:03:31, own translation)

The fourth scenario has as mentioned previously some actions that potentially could be opted out of while there are different actions from the other three scenarios that potentially could be added to this scenario - all depending on the political support and the finances addressed to the redesign. Here it is stated by Holmegaard that mixing and matching the scenarios potentially could be done

in the progress of obtaining offers on the specific redesign just like the redesign would likely be done in stages. Important to note is however that if other actions are added to the redesign it is not necessarily equal to a higher Healthy Streets Score as there, at the moment, are some factors in which a change ideally should influence the score to being higher but does not. This is the case when reducing speed from 50 km/h to 40 km/h - here this reduction would be an improvement in the experience of walking or cycling the street. As the design check that was used in the scoring is not jet converted to the Danish context a speed limit of 50 km/h would provide a score of 0, while a speed limit of 40 km/h would provide a score of 2. This is a symptom that the Healthy Streets Design Check tool would need to be converted to be utilized properly. In addition, this is a disadvantage of the quantitative way of scoring the street and underlines the importance of the soft data such as interviews, observations and involvement of the citizens. This more critical approach to the Healthy Streets Approach and considerations about changing planning practice will be discussed in the following section.

7.2 Considerations About Changing the Planning Practice

Throughout the analysis and the first part of the discussion the Healthy Streets Design Check tool has been applied and assessed in relation to a Danish planning context in order to identify how the Healthy Streets Approach can be utilized in Danish planning context of Holsteinsgade. However, to implement the approach into national planning practice can be easier said than done. Therefore, this section aims to identify and discuss considerations about changing the planning practice towards connecting planning with health through the Healthy Streets Approach. In this sense the planner is of importance and the discussion will therefore further delve into the planner's role when working transdisciplinary.

7.2.1 Considerations About Implementing Healthy Streets Danish Planning

This section will discuss considerations about implementing the British Healthy Streets Approach into a Danish planning practice in terms of crucial reflections for a planner to have in mind prior to or during an implementation of this paradigm-expanding framework to planning. This means that the discussion will be centered around how convertible the framework is. Overall, changes in planning practice to involve health to a greater extent can be very challenging, which is due to health being complex and influencing many aspects of the community (Barton, 2016).

Public Health: A Personal Problem or a Structural Issue?

Planners practice are centered around influencing the everyday life of citizens (Townshend, 2022; Gehl, 2010), which provides them with the ability to likewise influence the citizens possibility of living a good and healthy life. In contrast, Saunders points out an inexpedient narrative around physical activity being that public health problems are *"... seen as a personal choice rather than a structural issue in society and in our environment."* (Saunders-Interview, 2024, 00:36:24). Therefore, physical activity is not seen as a basic right determined by the environment but as a personal problem that the individual needs to address, by which it is difficult for people to be active when living or being in environments that are not supporting such. The other way around, it can be viewed as a structural issue as planners have the ability to influence the built environment in which people are living in to facilitate conditions that promotes health within the people sphere, which improves the social sustainability (Barton, 2016). In this connection, there are thus several

considerations to relate to in order to ensure with the greatest possible probabilities that the developed plans actually ends up promoting a healthier lifestyle and does not carry unintended effects.

The Convertibility of the Healthy Streets Approach

The Healthy Streets Approach has some limitations or areas that planners should be aware of. There is likewise many important considerations to do when wanting to implement the Healthy Streets Approach into a new context, in this respect Danish planning. Initially, a view is that an implementation of the Healthy Streets Approach into Danish planning is possible as it previously has been expressed that healthy streets are needed wherever people are, which makes the approach convertible to any street or context (Healthy Streets, n.d.b). However, the conversion requires a translation and adjustment of the Healthy Streets Design Check tool into a Danish version. When the Design Check tool was generated in England multiple professions such as designers, engineers, public health specialists, and policy makers contributed. Therefore, when adjusting the tool into Danish similar professions are relevant to include. Furthermore, it would for example be important to adjust the Design Check tool into Danish units such as measuring metrics 1, motorised vehicle speed, in kilometers per hours instead of miles per hours as well as metrics 10, space for walking, and metrics 12, space for cycling, should be based on Danish standards connected with the demand.

Another view is that an adaption is not without challenges and a main concern about implementing the Healthy Streets Approach into Danish planning has been initiated by the Odder Municipality employees, who questions whether it is possible utilizing an approach that originally has been produced within and to a London context in a Danish or even an Odder context, which all things being equal are a smaller scale. This is expressed by Laustrup who emphasizes that:

> *"... it is clear that it (ed.:the Healthy Streets Approach) is something that can be used in London. In other words, it is a matter of converting or translating the relevance of these parameters into an Odder context."* (Laustrup-Interview, 2024a, 00:00:37, own translation)

Overall, the municipal employees are agreeing that not all 10 Healthy Streets Indicators are of just as high relevance and actuality in Odder as for example Laustrup expresses that *"... there is something that is very relevant here and something that is very little relevant.* (Laustrup-Interview, 2024a, 00:00:37, owntranslation). In this sense the indicators of Clean Air and Not Too Noisy are highlighted by Rasmussen, Holmegaard, and Laustrup as less relevant due to the size of Odder and Holsteinsgade's short course (Laustrup-Interview, 2024b; Rasmussen-Interview, 2024b; Holmegaard-Interview, 2024b).

In relation to above mentioned concern it can, as stated in Chapter 4, be argued that the Healthy Streets Approach does not seek a fixed end-goal, is not a universal or 'one size fits all' model, as well as the solutions and focus should be context-based as streets different contexts in terms of its use and future use should be included, which makes it impossible to make total generalisations across contexts (Plowden, 2020; Transport For London, n.d.; Transport for London, n.d.). In contrast, Saunders, who is a Healthy Streets consultant (Healthy Streets, n.d.d), has experienced that independent of context it is the same issues or problems that are faced, which will be the

case as well when implementing it in Danish planning (Saunders-Interview, 2024). Thereby, the approach is applicable in every context whatever it is urban or rural areas as the principles generally are the same: *"It is the small details that change from place to place. But the problem is the same. The things we need to do is the same and the outcome we are trying to get to is the same."* (Saunders-Interview, 2024, 00:12:06). Some of the differences that are important for a planner to consider are climatic and cultural differences to accommodate the changes in the built environment to the society. This can be exemplified by some places having hotter surfaces than the UK, which increases the need for more shade as well as a specific policy might be welcoming in one place but not in another (Saunders-Interview, 2024). Thereby, on the one hand, the Healthy Streets Approach is convertible in every place, but on the other hand it is important that the planner considers the context it is implemented within to ensure that it is adjusted to the specific place and its characteristics.

Challenges of Changing Planning Practice Towards Promoting Health

There are several aspects a planner should keep in mind when implementing an approach as the Healthy Streets Approach that aims for connecting the two complex areas of health and planning. According to Saunders *"The first argument for not doing things differently is that it will have a negative impact on the economy."* (Saunders-Interview, 2024, 00:32:44). A further reflection upon challenges is that construction or recondition of a street can be costly and it can be difficult to assess the cost and benefits of a redevelopment:

> *"... when we talk about the health-promoting preventive business case, we are just not in a very strong position, because we do not have good data for what it costs if something does not happen, so it would be difficult to make that calculation and consider it something else than an investment."* (Laustrup-Interview, 2024b, 00:33:28, own translation).

Thereby, economy is often considered a restraining element as the calculation of what is saved on the healthcare compared to the benefits that the planning sector achieve is complex and has multiple unknown layers. The complexity further lies within finding the monetary arguments for a redevelopment as it is difficult to determine the effects of Healthy Streets installations and to measure changes in the built environments effect on the public health (Lindelöw-Interview, 2024). However, it is inevitable that when planners wants to redevelop an area or street a certain economy are required. An opposing argument is that in the light of the current health issues, an ambitious approach is needed, as it can be questioned whether economy should be a limitation for improvement of public health. Another consideration that is addressed is that a project using the Healthy Streets Approach aims for being anchored in multiple different departments (Transport for London, n.d.), the financial means could therefore come from different municipal sectors (Holmegaard-Interview, 2024a; Rasmussen-Interview, 2024a).

Another important aspect for planners to consider when implementing this approach is the network of streets that the intended area for redevelopment are embedded in. This is due to the fact that within this research the Healthy Streets Approach has only been investigated through one single street, Holsteinsgade, and despite this, there are more connecting roads. Therefore, a perspective is that overall planners should apply this approach by both considering the individual street and the network of streets as:

> *"The ultimate goal is that wherever you go in the world, you will always have a healthy environment. So, that means we have to make some changes in individual streets, but also, we have to make changes at much more strategic levels above as well."* (Saunders-Interview, 2024, 00:05:07)

Furthermore, it is important that planners consider the whole network of streets on city level as it should be nice for all people to walk and cycle within the surrounding neighborhoods, which is due to *"... a chain is never as good as its weakest part. ... we should have a network of good streets. If we design a street, we should always zoom out a bit."* (Lindelöw-Interview, 2024, 00:22:25). According to Jørgensen it is likewise important to be strategic when planning streets on larger urban scales by categorizing them to ensure that focus is on the important part (Jørgensen-Interview, 2024). This could for example be to keep traffic flow in one street and design for other streets to be people-oriented that invite staying and interaction (Jørgensen-Interview, 2024).

The weather can of course be a factor in relation to promote and make people prioritize active transport means. This is according to Saunders only the case in places where the choice of transporting oneself by car is present as *"... people will walk in snowy places and rainy places and hot places if they have no choice..."* (Saunders-Interview, 2024, 00:29:42). However, the streets should not necessarily aim for excluding car traffic, but the environments should be comfortable with for example shade and shelter so active and public transport becomes the easiest choice (Saunders-Interview, 2024; Jørgensen-Interview, 2024).

Another perspective on the above stated is that habits and everyday routines are often difficult to change. Thereby, it can be wondered how it is possible to a greater extent make people choose active transport over passive (Saunders-Interview, 2024). According to Jørgensen it is difficult working with changing habits when planning streets, but experience has show that on the one hand, it should be rewarding choosing active transport means, but on the other hand, there should be restrictions for cars (Jørgensen-Interview, 2024). This is elaborated:

> *"... the car gives people (that can afford it) a lot of freedom, it still has advantages that public transport and bikes struggle to compete with, so if we want people to switch to bikes and busses, we of course have to make these modes more attractive, but at the same time we have to design to make the car less attractive."* (Jørgensen-Interview, 2024, 00:05:26)

This is aligned with Saunder's experience that places where people are walking, cycling, or using public transport often are places where there is no access to cars or no easy parking, which is an expression of changes in the built environment are required to make changes in people's habits:

> *"It is about changing the environment people live in so that the easiest and most rewarding thing to do is to walk and cycle and then it becomes the habit, and the structure is set up to support that."* (Saunders-Interview, 2024, 00:27:09)

A point of view can therefore be that planners should be aware of the connection between the physical, social, and behavioral level when planning the spatiality of an area (Thierry, 2004). In

this sense Laustrup suggests a less resource heavy approach to influencing peoples habits as more qualitative or soft approaches such as campaigns and education could be usable for such (Laustrup-Interview, 2024a), which likewise is stated in Chapter 4 as supporting elements for behavior change. In contrast to this, Lindelöw argues that *"... it is easier to change people's behavior when something changes in their life."* (Lindelöw-Interview, 2024, 00:37:12) as it makes people reconsider their situation. Another central consideration for planners to be aware of is pointed out by Lindelöw, who emphasizes that a challenge can be to ensure that a behavioral change becomes lasting (Lindelöw-Interview, 2024). Thereby, it can be relevant to connect other professionals to the planning team, which for example could be a psychologist to provide knowledge for working with the behavioral level as they might have better conditions for interpreting how people experience an environment (Jørgensen-Interview, 2024; Thierry, 2004).

In continuation of the above, the pace of improvements in the built environment on street level is another important consideration when utilizing this paradigm-expanding approach. Saunders has provided an example of the importance of pace, as it in a part of London has become stressful and difficult driving, which it has become gradually through over many years where road space has been limited, parking removed, and access bans installed (Saunders-Interview, 2024). The gradual pace and step-by-step approach has been to push people and ensure that they are slowly getting used to it and change habits slowly (Saunders-Interview, 2024). Thereby, *"... it is about having pace. So, it has to be done in small steps...* (Saunders-Interview, 2024, 00:29:16). This is supported by Laustrup, who argues that culture can change over time and a suggested change might become relevant some years after the first proposal of it due to the receiver of the proposal having been matured (Laustrup-Interview, 2024b). However, what makes it difficult with the pace is that the processes that needs to be done are complicated and long-termed, but the challenges that are present should be meet within few years, which means that it is difficult to find a balance in being ambitious, having pace, and getting things done compared with not being too drastic in terms of ensuring that people are following.

Aside from behavioral change, it is also important with commitment from different actors. On one hand, a strong civic society that demands change is crucial as *"... the politicians and the leaders cannot implement big changes in streets without the permission of the public. So if the public do not want it, then you got a problem."* (Saunders-Interview, 2024, 00:16:33). This imply that the planner needs to be aware of the public's needs. On the other hand, commitment and permission from the top government is likewise a key element as well as the top government needs to understand the problem of interest and that the Healthy Streets Approach can be a solution (Saunders-Interview, 2024). Summarizing, to carry out a project *"You need your politicians to lead it. You need the general public to be asking for it effectively, and then you need practitioners who are given the permission and the resources to implement it."* (Saunders-Interview, 2024, 00:16:33).

A final perspective to consider when wanting to change planning practice, which an implementation of the Healthy Streets Approach into Danish planning can be considered as, is the decision-making peoples mindset or practice. This is for example expressed by Rasmussen, who emphasize that a barrier in municipalities can be to convince the elder politicians to use a new approach (Rasmussen-Interview, 2024b). In continuation the challenge lies within that every professional group includes *"... some people who are keen to do things differently and some people who have a good understanding of what the old agenda was, and they struggle to adjust to a new agenda.* (Saunders-Interview, 2024, 00:20:28). Thereby, it is a challenge to bring everyone together by on

one hand ensuring that the ones liking the old agenda feels comfortable with and understands the changes and on the other hand ensuring that the more ambitious people does not feel frustrated due to the slower pace (Saunders-Interview, 2024). In terms of implementing the approach within a Danish municipality it is suggested by Holmegaard, Rasmussen, and Laustrup that the Healthy Streets Approach should be presented to the political committee ensuring all are familiar with it (Rasmussen-Interview, 2024b; Holmegaard-Interview, 2024b; Laustrup-Interview, 2024b). Here it is essential that the model with the 10 Healthy Streets Indicators is used active and continuous to assess the performance of the selected parameters (Rasmussen-Interview, 2024b; Holmegaard-Interview, 2024b; Laustrup-Interview, 2024b).

Throughout this discussion it has been identified that the Healthy Streets Approach can be converted to a Danish planning practice though it requires several considerations and attention to different challenging aspects of succeeding. When utilizing the Healthy Streets Approach as a tool for planning on the street level as well as on the strategic level it is important to work across disciplines through transdisciplinarity (Transport for London, n.d.). Working transdisciplinary is not necessarily an easy manoeuvre as it previously has been stated that many different actors should be involved when the Healthy Street Approach are being applied (Transport for London, n.d., 2017). Saunders emphasizes that a challenge for such is to get different parts of government to work together (Saunders-Interview, 2024), which in a Danish context can be caused by the silo-based division of departments. Therefore, the cooperation between stakeholders are of focus on the following section.

7.2.2 Cooperation Between Municipal Sectors

As referred to above, cooperation between members of a project group from different sectors and departments is relevant when utilizing the Healthy Streets Approach, which is due to the complexity of planning for improving the public health through changes in the built environment (Barton, 2016; Khan et al., 2014). The reason why the Healthy Streets Approach requires a transdisciplinary approach is amongst other that a redeveloped street must hold a set of different characteristics to achieve a high quality spatial design for which there needs to be a great connection between the behavioral, social, and physical level, which can be achieved by involving multiple different professionals (Khan et al., 2014; Thierry, 2004). This is further due to it having been described that multiple sectors such as the urban planning sector and the transport sector are able to influence public health. In the following quote it is emphasized that within the health sector cooperation are a necessity to succeed: *"In the health field we do not succeed alone, so everything we do are done together with others. ... and it can be many different arenas."* (Laustrup-Interview, 2024b, 00:14:12, own translation). Despite, a transdisciplinary approach is demanded it is not necessarily that easy to succeed with such in practice. Therefore, this part of the discussion will be centered around the role of project group members' when doing a transdisciplinary project like the Healthy Streets.

The Relevance of a Transdisciplinary Approach?

Initially, an argument for utilizing a transdisciplinary approach is that it can give rise to new conceptualizations within practice as it is described as generating paradigm-expanding outcomes (Stokols, 2006; Stokols et al., 2009), which is why it can be considered relevant when wanting to implement the Healthy Streets Approach into Danish planning. However, it has been identified

that the Danish municipal sectoral organisation in most cases is divided, which influences how often a transdisciplinary approach is utilized to address the wicked problems and complexity of interest (Lennon and Scott, 2014; Madanipour, 2013). Therefore, another argument is that the structures the silo-based division creates in municipalities are a barrier for transdisciplinary cooperation within planning projects (Lennon and Scott, 2014). This is despite the employees from Odder Municipality all viewing their work as being embedded within a transdisciplinary practice, however, it might differs to what extent (Holmegaard-Interview, 2024b; Rasmussen-Interview, 2024b; Laustrup-Interview, 2024b). This can be exemplified with the following quote: *"You work with a concept called health in all policies... It is an approach I have to all my work... so it (ed.: health) permeates all my work."* (Laustrup-Interview, 2024b, 00:17:41, own translation). This is an expression of the municipal workers sensing the silos being less fixed at least in their everyday work (Lennon and Scott, 2014). However, a cooperation between the silos within Danish municipalities can vary depending on the size of the municipality (Laustrup-Interview, 2024b; Holmegaard-Interview, 2024b; Rasmussen-Interview, 2024b). According to Holmegaard and Rasmussen the smaller size of Odder Municipality provides a greater flexibility as there are less units and some employees has more areas of responsibility compared to bigger municipalities in which the members of a project group might be more divided (Holmegaard-Interview, 2024b; Rasmussen-Interview, 2024b). For example Laustrup mentions that ... *in Odder, we are quite good at combining several disciplines because there are very short paths to each other.* (Laustrup-Interview, 2024b, 00:30:58, own translation). Despite this, it can likewise be vulnerable when a project are carried out by few people (Holmegaard-Interview, 2024b). It is further possible to connect the silo-based disciplines through planning and the Healthy Streets Approach as planners are able to create links between different departments and the approach can thereby be a tool that demands an even greater extent of transdisciplinary work for instance within municipalities (Carmona, 2014). This can furthermore be due to the idea that the Healthy Streets Approach can be viewed as a transdisciplinary conceptualization of the public health issues that a population is facing (Stokols, 2006). Thereby, the planners role is to ensure a greater connection amongst the different sectors or departments in a municipality.

In continuation of the above, the Healthy Streets Approach can demand a greater level of transdisciplinarity within Danish planning practice if it is being implemented as it requires collaboration between different partners (Transport for London, 2017, n.d.). However, it is not problem-free to utilize the approach, which is expressed by Saunders that:

> *"... the challenge is that we need lots of different people in different parts of government to all work together and government is set up for everyone to work on their own. So the big challenge is getting people working together."* (Saunders-Interview, 2024, 00:15:18)

Thereby, it can be challenging to succeed in collaborating, which both is evident from the theory on transdisciplinarity and practical municipal experiences. Conflicts amongst disciplines, time to establish common ground, and unrealistic expectations are some constraining factors (Stokols, 2006), as well as Laustrup and Holmegaard has experienced unsuccessful collaborations due to members of a project group not sharing the same political vision, which is why it is emphasized that a sense of the local opportunities are important (Laustrup-Interview, 2024b; Holmegaard-Interview, 2024b). Each individual of a project group therefore has a responsibility

for contributing to a well-functioning cooperation. In the next section the possibilities and challenges of a transdisciplinary approach will be discussed.

Possibilities and Constraints of a Transdisciplinary Approach

It has been introduced within Chapter 3 that there are facilitating and constraining factors for a transdisciplinary practice. One perspective is that elements that facilitates a transdisciplinary practice are often related to the skills of the members of a project group (Stokols, 2006). In relation to this, Holmegaard has pointed out that other facilitating elements within a cooperation are that all members of the project group must be committed and take ownership as well as the planning project should be anchored in all relevant sectors as well as locally and that there should be a managerial project ownership (Holmegaard-Interview, 2024b). Therefore, it is important to have a well-defined project organisation, and it is thereby beneficial to align expectations and know the other project group members prior to the cooperation as well as being roomy, humble, and patience towards each other (Holmegaard-Interview, 2024b; Laustrup-Interview, 2024b; Stokols, 2006). Overall, a transdisciplinary practice makes it possible for multiple sectors or departments to influence public health as a broad local anchoring provides the best conditions for achieving a comprehensive planning of a certain problem. Another advantage of a transdisciplinary approach is that it is possible:

> *"... to bring many heads together instead of pretending to know it all... you must always know that there are many perspectives on the solution of a task, and that no one really has the right model. But together we probably have something right.* (Laustrup-Interview, 2024b, 00:19:39, own translation).

Thereby, the transdisciplinary practice makes it easier and more plausible for planners to fully understand a complex and wicked problem in terms of its causal factors and its solutions as well as identifying an end result that is coherent and based on multiple alternatives Stokols et al. (2009); Fokdal et al. (2021).

Another perspective is the constraining elements that are often connected to a lack of understanding, knowledge-sharing, expectations, and resources as well as it requires high labor intensity (Stokols, 2006). Furthermore, time is often pointed out as a disadvantage as it can be time-demanding figuring out the shared conceptual framework and common goals (Stokols, 2006) and that the more people involved in a planning project the more time it will take (Holmegaard-Interview, 2024b). However, Laustrup claims that this will presumably be most significant in the initial phase (Laustrup-Interview, 2024b). An opposing argument is therefore, that the execution of the developed strategy or project will be more efficient when done through a transdisciplinary practice due to the more members compared to a project executed by one single person (Laustrup-Interview, 2024b). A potential constraining factor is the difficulty in maintaining the common vision and goals throughout a project period, which can be challenged if some project group members are leaving their job or if the political direction changes in the process (Holmegaard-Interview, 2024b). Therefore, it is argued that stability is crucial and that *"... it is the same people who follow a project through on."* (Holmegaard-Interview, 2024b, 00:18:49, own translation).

As stated previously, a barrier towards working transdisciplinary can be a lack of mutual understanding in relation to a certain planning project's goals and expectations, which can be due

to different disciplinary worldviews and values among the members of a project group (Stokols, 2006). In this respect, it is acknowledge by Holmegaard that a planning project carried out in collaboration does not always turn out as imagined, which can be due to lack of political or financial support (Holmegaard-Interview, 2024b). Saunders identifies that speaking the same professional language is very important: *"... I see a big barrier with people having their own professional languages...* (Saunders-Interview, 2024, 00:19:04). Furthermore, to be successful in cooperating amongst professional fields Rasmussen imply that communication is important through the whole project process as well as being supportive and constructive (Rasmussen-Interview, 2024b).

An opposing argument to the above mentioned is that the Healthy Streets Approach *"... is designed to be easy for everyone to understand...* (Saunders-Interview, 2024, 00:15:18), which means that it has not been made only for the transport sector, the health sector, or the spatial planners. Thereby, an argument is that the approach is a tool for dialogue as it seeks to establish a common language where *"... everyone can understand it, but nobody owns it.* (Saunders-Interview, 2024, 00:15:18). Thereby, there is a responsibility for the planners to seek to create a good and respectful dialogue as well as creating a common language to understand. In this connection, Saunders emphasizes that the Healthy Streets Approach aims for people coming from different departments and all taking ownership and seeing a meaning within a planning project by seeing the benefits it will have from their professional perspective(Saunders-Interview, 2024). This is elaborated: *"So, that shared goal across sectors is key and everyone is speaking the same language. I think those are the most important things, but there is a big role for leadership in making this stuff happen."* (Saunders-Interview, 2024, 00:19:04). To be successful it requires according to Laustrup that the members of a project group must be aware of making it relevant and meaningful for the other professional fields and their overall visions and goals: *"... I think that one plus one becomes three if you have some agendas that can merge and support each other, so that we actually achieved something even better.* (Laustrup-Interview, 2024b, 00:18:43, own translation). It is thereby argued that different members of a project group has a role in terms of executing the Healthy Streets Approach and to ensure that streets or areas are being redesigned based on a thoroughly assessment of all possible solutions achieved by multiple different professionals.

Conclusion 8

Health and planning are two complex fields that both affects and is affected by multiple areas of society as well as being fields that have a great connection. At the same time there is great connection between these two fields. Urban areas and cities are experiencing population growth and are often considered as unhealthy places due to for instance heavy traffic, pollution, social isolation, and noncommunicable diseases and health can therefore be viewed as an essential asset of a city. In order to accommodate some of the health challenges that are faced within urban areas, urban planning can play a role as planners are able to guide the urban development to promote and improve the public health. To investigate how health can be embedded within planning through a holistic and transdisciplinary approach, the Healthy Streets Approach has been selected. Therefore, the focus of this research has been to investigate: *In which way can the Healthy Streets Approach be utilized in the Danish planning context of Holsteinsgade in the city of Odder, and how can this approach help planners take part in promoting and improving public health?* This has been investigated through a paradigmatic case of Holsteinsgade in Odder to identify if a paradigm shift in planning is necessary and whether the Healthy Streets Approach can be converted to Danish municipal planning practice and used for improving public health.

The academic foundation for this research has been expressed in the theoretical framework, which is based on a literature review. Health in planning is understood as a complex and connected field, as planners has the ability to promote and improve public health through changes in the built environment keeping in mind the more soft perspectives such as habits and lifestyles. However, as planners often are working with wicked problems and problems of high complexity they are not able to handle all aspects connected to a holistic planning situation, which is why involvement of multiple professions is relevant regarding implementing health into planning practice. Here a transdisciplinary and intersectoral approach to planning of streets can contributing to reach a great level of cooperation between municipal departments as the Healthy Streets Approach overall is influenced by different sectors such as urban planning, transport and mobility planning, and health planning. However, within a municipal planning practice the organisations are often divided in silos which must be less fixed to reach a sustainable transdisciplinary work. A strategic planning approach is likewise used to describe the driving force behind the Healthy Streets Approach.

The Healthy Streets Approach by Lucy Saunders is a framework that embed health in planning through a human-centered, holistic, and transdisciplinary focus. The approach has its origin in London, but is applicable at any street anywhere. The main purpose with the approach is to make healthy environments that promotes walking and cycling as the easiest and most rewarding transport modes, but the approach does not seek a fixed end-goal. In order to make changes in the built environment that promotes public health there are many aspects to consider, which is expressed in the 10 Healthy Streets Indicators. Thereby, this can be a framework worthy for planners who wants to apply health in their planning projects or practice.

The case of Holsteinsgade has been used as an example of how the Healthy Streets Approach can be applied in a Danish planning context. Within the analysis and through the use of the Design Check tool it becomes evident that the existing design of the street was scored 23/100 which for instance was due to its worn expression and lack of facilities for active transport. However, it is further identified that the street holds potentials for redevelopment. Through three different proposals for redesigning the street with different levels of ambition and resources, the proposals for actions were put forward that could raise the score to respectively 100/100, 70/100, and 37/100. Some of the actions that can improve the healthiness of Holsteinsgade's design are reducing the speed limit, enhance the carriageway and walking surface, provide cycling facilities, plant street tress, install public seating, etc. However, it is further concluded that there are multiple different actions that can be utilized to improve the healthiness of the street's design, which likewise dependent on a planning group's intention with a redevelopment of the street.

In continuation of the identification of the healthiness of the existing design of Holsteinsgade and the three proposed redesigns of Holsteinsgade, an assessment of the proposed actions was carried out as well as a forth scenario was presented. Here, it was overall assessed that the proposals varied from too ambitious to too unambitious. It is inferred that there are countless of different ways to plan actions for redesigns through the Healthy Streets Approach that can be modified to the specific context and the political wishes. Furthermore, it has been identified that the Healthy Streets Approach is convertible, however, changing planning practice and expanding the planning paradigm is more easily said than done as there are many considerations that needs to be taken into account. This is considerations such as the available resources, the network of streets, the climate, the culture, habits and everyday routines, the pace of implementation, and the actors involved. Additionally, an utility of the Healthy Streets Approach in a Danish municipal context demands a transdisciplinary approach to accommodate the complexity of health in planning. Here, one potential barrier that must be overcome in order to utilize the Healthy Streets Approach in Danish planning is that the common division of municipal sectors needs to become less fixed to be able to work holistically with the approach from a transdisciplinary perspective.

Overall, based on the investigation of Holsteinsgade, on which the Healthy Streets Approach through the Design Check tool has been applied to redesign the street, it can be concluded that the Healthy Streets Approach is a helpful and useful tool for planners that want to involve health in their practice and include it in planning projects. The Healthy Streets Approach can be utilized in different ways - for instance to assess an existing street's health, to generate new street designs, or to create dialogue between planners and stakeholders to create awareness on health as an aspect of spatial planning. Thereby, the approach can be considered as applicable to other Danish contexts as well, despite an actual implementation of the framework demanding an adjustment to a Danish context. Here multiple considerations when utilizing the approach is important. Planners must for example consider utilizing the approach through a transdisciplinary approach as it demands holistic perspectives and different actors involved. However, this will often demand a break down of the fixed and relatively divided municipal departments which can be challenging.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Appendix A

This chapter holds various appendixes for the research that unfolds and explains different aspects. First, an extension of information about the collection of data for the design check is presented. Second, the scoring of the 19 metrics for both the existing layout and the proposed layout.

A.1 Extended Information on the Collection of Data for the Design Check

This appendix covers an overview of the data collection for the design check for the existing design of Holsteinsgade. Furthermore, it covers elaborations on the collection of and calculations of some of the metrics.

A.1.1 Overview of the Data Collection for the Design Check

Metrics	Who/When	Measuring method
Motorised vehicle speed	Odder Municipality, 2011, 2017, 2020	The 85^{th} percentile for the period when vehicles are travelling their fastest was used to scores this metric. The data was provided by Odder Municipality from three different measurements and years - See Appendix A.1.2 for the calculation of data.
Volume of motorised traffic	Odder Municipality, 2011, 2017, 2020	Traffic counts from the period where the motorised traffic levels for all motorised vehicles (except electric cycles and scooters) at Holsteinsgade were at its highest was used to score this metric. The data was provided by Odder Municipality from three different measurements and years - See Appendix A.1.3 for the calculation of data.
Mix of vehicles	Odder Municipality, 2017, 2020	Traffic count data from the hour with the highest level of large vehicles was used to score this metric. The data was provided by Odder Municipality from three different measurements and years - See Appendix A.1.4 for the calculation of data.

Cycle safety at junctions	Own collection, 8^{th} of April 2024	The junction with the least mitigation measures on the street were scored after assessing every junction. Further, the Junction Assessment Tool [JAT] in *Cycle Infrastructure Design* by Department for Transport (2020) were used to assess the conditions in the junction.
Ease of crossing side roads	Own collection, 8^{th} of April 2024	The poorest performing junction based on an assessment of every junction was scored. It was observed if the side road junction had a narrow, tight geometry as well as raised table.
Ease of crossing between junctions	Own collection, 8^{th} of April 2024	Here, each stretch of street between each junction has been assessed and the weakest section between junctions was scored. The scoring table for scoring crossing facilities between junctions in Healthy Streets (2021) was used. The weakest section was scored as an un-signalised crossing.
Priority of crossing at junctions	Own collection, 8^{th} of April 2024	The weakest performing arm of the weakest performing junction was scored after assessing every junction on the street. The scoring table for scoring junctions in Healthy Streets (2021) was used.
Navigation of crossing for people with visual impairments	Own collection, 8^{th} of April 2024	The poorest performing crossing point was assessed out of every crossing on the street in terms of the tactile paving, its design, and the materials it was made of.
Quality of the footway surface	Own collection, 8^{th} of April 2024	All the footways along both sides of the street was assessed for level differences such as cracked/uneven paves, raised tree roots, etc. and thereby the weakest and poorest section of footway surface was scored based on its defects.
Space for walking	Own collection, 8^{th} of April 2024	First, the whole street was assessed to identify the narrowest point of clear walking space (street furniture such as benches, bins and cars parked on the footway was assessed as elements narrowing the walking space). Second, the width of the narrowest point was measured. Additionally, as the walking space required for comfortably walks for people depends on the number of people walking in the area, a count of the pedestrians in the peak hour was done (see Appendix A.1.5). A combination of the width and the peak hour pedestrian count was used to score this metric.

Quality of the carriageway surface	Own collection, 8^{th} of April 2024	The whole street was inspected to look for cobbles, grates, manhole covers, utility covers, and speed cushions conditions and if some asphalt was broken or uneven. The weakest place of the carriageway on the street was assessed for defects.
Space for cycling	Own collection, 8^{th} of April 2024	The narrowest 'effective width' was assessed measured from the outside of edge of kerbside obstructions. Thereby, the weakest point for cycle protection was assessed. As there is not line markings at Holsteinsgade defining the lanes the available space for cycling at the narrowest point between the kerbs was measured and divided in two. To score this metric a desirable minimum width was used from *Cycle Infrastructure Design* by Department for Transport (2020).
Public seating	Own collection, 8^{th} of April 2024	Public seating is seats in bus shelters, steps and low walls at public buildings and is for example not seating at cafes or restaurants. Here the longest gap between public seats on Holsteinsgade was measured based on the whole length of the street and thereby a score was given. Only well-functioning and useable seats was included.
Cycle parking	Own collection, 8^{th} of April 2024	This metric was scored by assessing if the demand for cycle parking throughout the whole street was meet or to what point it was meet as well as if there was step-free access to it.
Trees	Own collection, 8^{th} of April 2024	The proportion of the whole length of Holsteinsgade was assessed in terms of trees in the public realm.
Green infrastructure	Own collection, 8^{th} of April 2024	The full length of Holsteinsgade was assessed and it was identified how many green infrastructure features there were in the public realm. Green infrastructure features is for example planters, planted parklets, hedges, green walls, rain gardens, planted tree pits, green walls, flowerbeds, and grassed areas.
Lightning	Own collection, 8^{th} of April 2024	The whole length of Holsteinsgade was assessed in terms of lighting up footways based on if the lightning provides intermittent lightning and if it is on both sides, one side, or non sides.

Reducing convenience of driving short journeys	Own collection, 8^{th} of April 2024	Here it was identified by assessing the whole street if there were any restrictions for through movement for private motorised vehicles such as no access to or parking restrictions of streets connected to Holsteinsgade.
Bus stops	Own collection, 8^{th} of April 2024	As there are more busses going through Holsteinsgade this metric was scored by assessing the weakest bus stop in terms of if it had any seating and shelter and for how many costumers.

Table A.1. Overview of how the data for the Design Check has been collected. The method for measurering the data is inspired from Healthy Streets (2021).

A.1.2 Metrics 1

To assess metric 1, which is motorised vehicle speed, the 85^{th} percentile for the period when vehicles are travelling their fastest are required. As there is no newly gathered data on this, Odder Municipality provided data from three measurements from three different years (2020, 2017, and 2011) either gathered between the school and the parking area or opposite Holsteinsgade 10. To make the best possible estimate, the 85^{th} percentile from each count has been added up and the mean of them has been calculated and converted the result to [mph]:

$$\frac{(48,2km/h+33,8km/h+52,4km/h)}{3} = 44,8km/h \approx 27,8mph \tag{A.1}$$

A.1.3 Metrics 2

To assess metric 2, which is volume of motorised traffic, data provided by Odder Municipality has been used. As there is no newly gathered data on this, Odder Municipality provided data from three measurements from three different years (2020, 2017, and 2011). Therefore, the mean of traffic counts from the period when motorised traffic levels are highest is:

$$\frac{(292cars+266cars+166cars)}{3} = 241,3cars \tag{A.2}$$

A.1.4 Metrics 3

To assess metric 3, which is mix of vehicles, traffic count data from the hour with the highest proportion of large vehicles are required. Here, data provided by Odder Municipality has been used. As there is no newly gathered data on this, Odder Municipality provided data from two measurements from two different years (2020 and 2017). First the mean of large vehicles in peak hour from the two counts has been calculated:

$$\frac{(22largevehicles+21largevehicles)}{2} = 21,5largevehicles \tag{A.3}$$

To find the percentage of large vehicles in the peak hour, the mean of large vehicles (21,5 large vehicles) are divided with the mean of the total number of vehicles in the peak hour from the two counts (132,5 vehicles) and multiplied by 100 to make it into percentage:

$$\frac{21,5 large vehicles}{132,5 vehicles} \cdot 100 = 16,23\% \tag{A.4}$$

A.1.5 Metrics 10

To assess metric 10, which is space for walking, a peak hour count of people walking were necessary. As it was not possible to identify the exact peak hour the Danish report *Trafiktællinger: Planlægning, udførelse og efterbehandling* by Vejdirektoratet (2006) has been used. In this report (Figure 6.1) it is stated that the peak hour in the weekdays Tuesday-Thursday is from 15.00-16.00 and on Fridays and weekends it is from 14.30-15.30. Therefore, two counts has been done on the same location on two different dates. The map on Figure A.1 shows the location from where the counts of pedestrians were made and Table A.2 is an overview of the information's and data from the pedestrian counts.

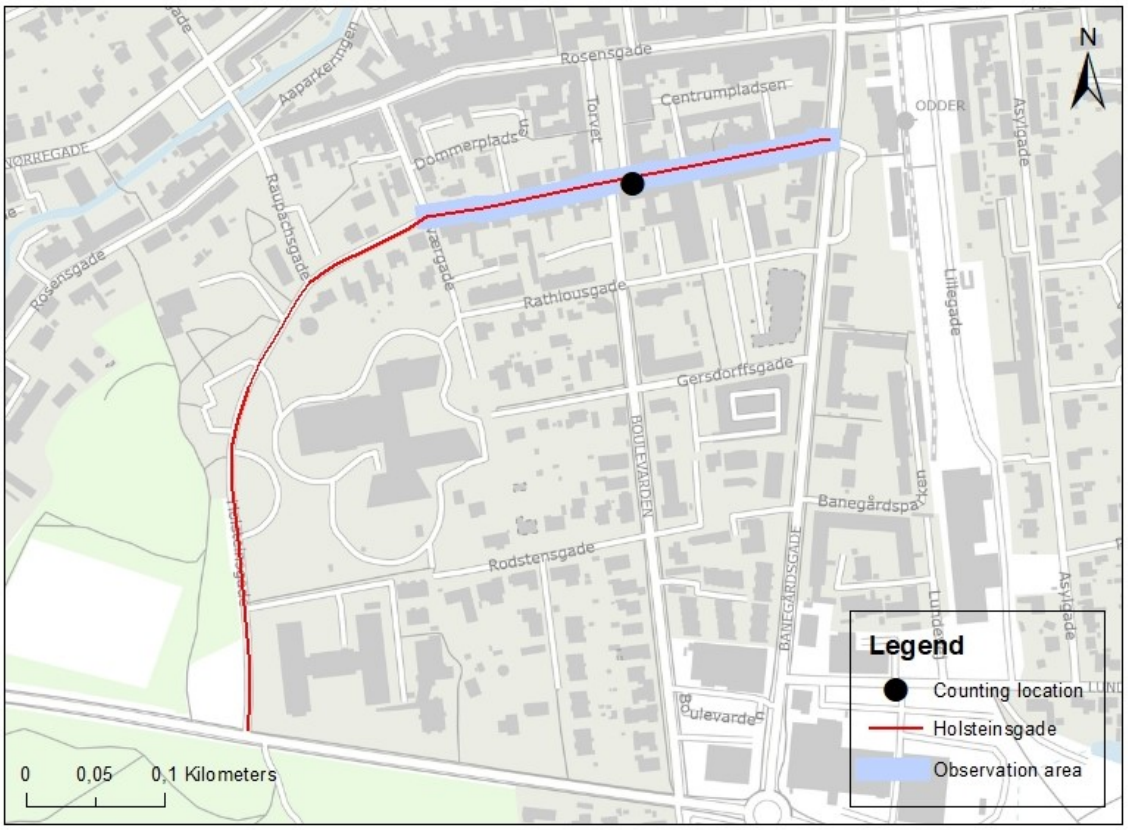

Figure A.1. Illustration of the place in which the counting was done. The base map is from Dataforsyningen: Styrelsen for Dataforsyning og Infrastruktur (n.d.c).

Date	Number of Pedestrians	Time	The Weather
Friday the 15. of March 2024	176	1 hour (14.30-15.30)	Light to moderate wind, drizzle, cloudy, coolly with temperatures around 7 degrees
Wednesday the 3. of April 2024	226	1 hour (15.00-16.00)	Cool in the wind, but warm with the sun and approx. 4 degrees

Table A.2. Overview of the information about the collected counts of pedestrians.

As the results from the counts were way below the minimum number of people walking in the peak hour to reach a score higher than 0 it was assessed that it was not necessary to do additional counts.

A.2 Scoring of the 19 Metrics for the Existing and Proposed Layout

Status Quo		
Metrics	**Score**	**Existing Layout**
1	*1*	Speed on 50 km/h on one part of the street and 40 km/h on the other part of the street
2	*2*	241,3 cars drive on average on Holsteinsgade during peak hour (based on traffic counts from three different locations measured over three different years)
3	*0*	16,23% of all vehicles are large vehicles (based on traffic counts from three different locations measured over three different years)
4	*0*	Conditions have been identified at one or more intersections that can cause the most typical collisions to occur
5	*1*	There are ramps and these are located at the natural walking area for crossing the side road
6	*0*	On the worst part of the street, there are no paving or crossing facilities such as pedestrian crossings
7	*0*	At the worst intersection on the street, there are no paving or crossing facilities such as pedestrian crossings
8	*0*	In the worst intersection, there is no tactile coating on either side
9	*0*	There are several major defects/flaws/unevenness that have a level difference of more than 15 mm, along the entire stretch. For example, a tile was measured that protruded 4 mm in relation to its neighboring tile
10	*0*	At the narrowest part of the pavement, the width was measured at 1,28 m
11	*0*	There are several major defects/holes in the carriageway that have a level difference of more than 20 mm. For example, a hole of 20 mm and one of 30 mm were measured

12	*0*	The narrowest place was measured to 4,03 m. There is no dedicated cycle path
13	*1*	There is a distance of 446 m between the two nearest public seating areas
14	*1*	There is no bicycle parking, but also no leaved bicycles, so it was therefore assessed that the bicycle parking met the demand
15	*1*	There are 4 trees on the street, two on each side of the carriageway. In addition, there are several trees on both sides of the street by the school
16	*2*	There is a larger grass area as well as a bed at the car park opposite the school and beds at Torvet
17	*1*	There are street lamps located along one side of the street that provide sporadic light on the pavement
18	*1*	There is no restriction for private motorized traffic passing through, however there are parking restrictions in the car parks at Torvet (max 2 hours) and the eastern part of Holsteinsgade (max 2 hours)
19	*0*	3 out of the total 4 bus stops on the street have neither seating nor sun and rain protection for any customers
Scenario 1		
Metrics	**Score**	**Design Proposals**
1	*3*	Speed reduction to 30 km/h on the entire stretch, including speed-reducing measures
2	*3*	Less than 199 vehicles during rush hour (both directions) by closing the street to general traffic and allowing only errands (small vans and cars)
3	*3*	No access for large vehicles including lorries, buses, etc.
4	*3*	Raised cycle paths on both sides of the road, shielding from the carriageway either with pillars/bollards or a half-metre separation gap with greenery using trees/bushes and ramps for going up and down the cycle paths at any crossing point
5	*3*	At crossings where there are side roads, there must be a continuous pavement, which has no difference in level, across the side road
6	*3*	Raised pedestrian crossings and/or crossing facilities with lowered pavement on each section between two intersections
7	*3*	Raised pedestrian crossings and/or crossing ramps with lowered pavements at all transition sections at all intersections on the street
8	*3*	Installation of tactile covering in the form of natural or constructed guide lines, which must be simple, straightforward and with as few changes of direction as possible, and be continuous and a logical connection between the guide lines. These must be installed on both sides of a crossing to help the visually impaired
9	*3*	The pavement on the entire stretch must be covered with tiles that are level and non-slip

10	*3*	For <600 pedestrians during peak hours, the width of the pavement at the narrowest point must be 2 m or more OR With 600-1,200 pedestrians during peak hours, the width of the pavement must be 2.5 m or more OR For >12.00 pedestrians in the peak hour, the width of the pavement must be 3 m or more
11	*3*	The carriageway on the entire stretch must be smooth and non-slip
12	*3*	The cycle paths are wider than the minimum width of 2 m on the entire stretch
13	*3*	There must be publicly accessible seating with a maximum distance of 100 m on the entire stretch. This can be, for example, seats at bus shelters, stairs or low walls in front of public buildings and does not apply to cafés' outdoor seating, etc.
14	*3*	Establish bicycle parking adapted to future needs and different bicycle types and ensure step-free access to it
15	*3*	Place trees along the entire stretch on both sides of the road at regular intervals to ensure shade, shelter and greenery
16	*3*	There must be at least three green infrastructure elements on the entire stretch. This can be sustainable urban drainage system, green walls, planted parking. This can be combined with metric 4 regarding greening of the separation side
17	*3*	Establishment of street lighting that illuminate the entire stretch on both sides of the road
18	*3*	The street must be permanently closed to all private motorized traffic, with errand driving being the only thing permitted
19	-	No busses on the street
Scenario 2		
Metrics	**Score**	**Design Proposals**
1	*3*	Area A+B: Speed reduction to 30 km/h including speed reduction measures
2	*3*	Area A: The intention is that there should be fewer than 199 vehicles in the peak hour, as it is expected that more parents will send their children off by cycle due to safe cycling facilities Area B: The intention is that fewer than 199 vehicles will drive during the peak hour, as the stretch is one-way and a lower traffic intensity is therefore expected
3	*1*	Area A+B: 2-5% of the motorized traffic during peak hours must be large vehicles. Buses are allowed access at all times, but restrictions are placed on all other large vehicles, meaning they cannot access the area between 7-9 and at 13-16

4	*3*	Area A+B: Raised cycle paths on both sides of the road, shielding from the carriageway either with pillars/bollards or a half-metre divider with greenery using trees/bushes and ramps for going up and down the cycle paths at any crossing point. This should contribute to 80% or more of all collisions on bicycles being removed
5	*2*	Area A+B: At crossings where there are side roads, there must be ramps so that it is easy to get from the pavement and over the road
6	*2*	Area A+B: On stretches between two intersections, there must be safe options for crossing the road in the form of ramps from the sidewalk/cycle path and possibly a pedestrian crossing
7	*2*	Area A+B: At all transition sections at all intersections, there must be safe options for crossing the road in the form of ramps from the sidewalk/cycle path and possibly a pedestrian crossing
8	*3*	Area A+B: Construction of tactile paving in the form of natural or constructed guide lines, which must be simple, straightforward and with as few changes of direction as possible, and be continuous and a logical connection between the guide lines. These must be installed on both sides of a crossing to help the visually impaired
9	*2*	Area A+B: The pavement on the entire stretch must be covered with tiles that are flat and non-slip, but in the weakest part of the stretch there may be a few mistakes or defects on the pavement
10	*1*	Area A+B: With <1200 pedestrians during peak hours, the width of the pavement at the narrowest point on the street must be 1,5-2 m. Here it is recommended that on the eastern part of Area B there is a wider pavement that provides a good walking area at the shops OR For >1200 pedestrians during peak hours, the width of the pavement at the narrowest point must be 2-2,5 m with the same recommendation as above
11	*2*	Area A+B: The carriageway on the entire stretch must basically be smooth and non-slip, but at the lowest point on the stretch, a few mistakes or defects may occur
12	*2*	Area A+B: The cycle paths have a width of 2 m, which is the minimum width, on the entire stretch
13	*2*	Area A+B: There must be publicly accessible seating with a maximum distance of 199 m on the entire stretch. This can be, for example, seats at bus shelters, stairs or low walls in front of public buildings and does not apply to cafés' outdoor seating, etc.
14	*2*	Area A+B: Establish bicycle parking that exceeds demand and allows different types of bicycles (e.g. cargo bikes) to be kept safely. Particular focus is placed on Area B, as more people are encouraged to cycle into the city and shop, but bicycle parking must also be established in Area A

15	*2*	Area A+B: On a minimum of 50% of the entire stretch, trees must be placed on both sides of the road to ensure shade, shelter and greenery. It is proposed that the largest proportion of the trees be established in Area B, as in Area A there is already a forest nearby - however, trees still need to be established here
16	*3*	Area A+B: There must be at least three green infrastructure elements on the entire stretch. This can be sustainable urban drainage system, green walls, planted parking. This can be combined with metric 4 regarding greening of separation discount. In addition, parts of the parking spaces on the street and on Torvet can be used to establish green infrastructure elements
17	*3*	Establishment of street lighting that illuminate the entire stretch on both sides of the road
18	*1*	Area A+B: There are no restrictions on the passage of private motorized traffic, but on all parking spaces on the street there are restrictions that vary according to the location of the individual parking space
19	*2*	Area A+B: There must be an adapted waiting area at all bus stops that does not take away space from pedestrians on the pavement. In addition, there must be seating for at least 4 of the travelers during peak hours and the opportunity to stand sheltered from rain and sun. There must be step-free access to the bus, a blue cycle lane and a 0,5 m pavement for entering and exiting the bus
Scenario 3		
Metrics	**Score**	**Design Proposals**
1	*2*	Speed reduction to 40 km/h including speed reduction measures
2	*2*	Unchanged
3	*0*	Unchanged
4	*1*	In the worst intersection, there are no conditions that give rise to the most typical collisions, which is achieved by blue cycle lanes on the entire stretch or, as a minimum, at every crossing street to create visibility about the cycle rails
5	*1*	Unchanged
6	*0*	Unchanged
7	*0*	Unchanged
8	*0*	Unchanged
9	*0*	Unchanged
10	*0*	Unchanged
11	*1*	All the minor errors or defects on the carriageway are repaired so that there are none or few
12	*1*	Cycle lanes (possibly blue lanes) will be established on the carriageway on the entire stretch. In the narrowest places, where there are speed-reducing measures, the cycle lanes and the carriageway will be separated by a stele/bollard

13	*2*	There must be publicly accessible seating with a maximum distance of 199 m on the entire stretch. This can be, for example, seats at bus shelters, stairs or low walls in front of public buildings and does not apply to cafe's' outdoor seating, etc.
14	*2*	Establish bicycle parking that exceeds demand and allows several different types of bicycles to be stored safely. It will be particularly relevant in Area B, and can be established in the existing car parking spaces via either permanent or temporary elements
15	*1*	Unchanged, but more trees can be planted on the street if resources are available
16	**3**	There must be at least three green infrastructure elements on the entire stretch. This can be sustainable urban drainage system, green walls, planted parking. This can involve parts of the parking spaces on the street and on the square to establish green infrastructure elements
17	*1*	Unchanged
18	*1*	Unchanged
19	*1*	Establishment of a bus shelter with seating for at least 4 customers, providing shelter and shade from rain and sun. This can also contribute to the achievement of metrics 13 and 15
Scenario 4		
Metrics	**Score**	**Design Proposals**
1	*3*	Speed reduction to 30 km/h on the entire stretch, including speed-reducing measures
2	*2*	Unchanged
3	*0*	Unchanged
4	*1*	In the worst intersection, there are no conditions that give rise to the most typical collisions, which is achieved by blue cycle lanes on the entire stretch or, as a minimum, at every crossing street to create visibility about the cycle rails
5	*2*	At crossings where there are side roads, there must be ramps so that it is easy to get from the pavement and over the road
6	*2*	On stretches between two intersections, there must be safe options for crossing the road in the form of ramps from the pavement/cycle path and possibly a pedestrian crossing
7	*2*	At all transition sections at all intersections, there must be safe options for crossing the road in the form of ramps from the pavement/cycle path and possibly a pedestrian crossing
8	*3*	Installation of tactile covering in the form of natural or constructed guide lines, which must be simple, straightforward and with as few changes of direction as possible, and be continuous and a logical connection between the guide lines. These must be installed on both sides of a crossing to help the visually impaired

9	*2*	The pavement on the entire stretch must be paved with tiles that are flat and non-slip, but at the lowest point on the stretches there may be a few mistakes or defects on the pavement
10	*0*	Unchanged
11	*2*	The carriageway on the entire stretch must basically be smooth and non-slip, but at the lowest point on the stretch, a few mistakes or defects may occur
12	*1*	Area A: The raised cycle paths have a minimum width of 2 m Area B: Cycle lanes are established on the carriageway on the entire stretch, marked with a white stripe and cycle symbol, including blue fields at crossing side roads.
13	*3*	There must be publicly accessible seating with a maximum distance of 100 m on the entire stretch. This can be, for example, seats at bus shelters, stairs or low walls in front of public buildings and does not apply to cafe's' outdoor seating, etc.
14	*2*	Establishing bicycle parking that exceeds demand and allows for different types of bicycles (e.g. cargo bikes) can be kept safely. Particular focus is placed on Area B, as more people are encouraged to cycle into the city and shop, but bicycle parking must also be established in Area A
15	*1*	Unchanged, but more trees can be planted on the street if there are resources and space for this. Here, there is a particular focus on Area B
16	*3*	There must be at least three green infrastructure elements on the entire stretch. This can be sustainable urban drainage system, green walls, planted parking. This can involve parts of the parking spaces on the street and on the square to establish green infrastructure elements
17	*2*	Establishment of street lighting, which are placed with sporadic intervals, on both sides of the street
18	*1*	Unchanged
19	*0*	Unchanged

Table A.3. Overview of the data collection for the Design Check in terms of score and proposed designs for the existing design and the four scenarios.