More than Getting Around: What Impacts the Mobility Practices of the Residents of Aalborg?

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ABSTRACT

Purpose: This research has been conducted with the purpose of investigating into the practices of Aalborg residents when it comes to transportation, what are the factors that condition these practices and what could be a motivator for the recrafting or substitution of those practices into more sustainably friendly options, something that, due to the current situation of, amongst others, climate change, becomes quite relevant. It was also seen that the case of Aalborg is not isolated, with other smaller-sized cities also turning to more sustainable transportation solutions.

Design/Methodology/Approach: Having into consideration the relevant case design, the data gathered for this research came in the form of surveys and one-on-one interviews. Afterwards, a reflexive thematic analysis was conducted on these qualitative (and, in some cases, quantitative) data, generating certain themes and codes that were in constant review (following the hermeneutical approach chosen).

Structure: As expected, this research is divided into concrete and connected sections to facilitate its comprehension. First and foremost, a general introduction on the topic is done, followed by the explanation of the limitations found and the current state of transportation in Aalborg. Afterwards, a literature review is done, together with an explanation on the theoretical approach chosen. Finally, the methodological approach is detailed, followed by the scientific approach and the chosen methodology to analyse the data. The latter part of the research concludes with an analysis, continued by a discussion, and closed by a conclusion.

Findings: After conducting the relevant analysis, and having in consideration the theoretical approach, the literature review, the epistemological and ontological perspectives from hermeneutics, and the methodological approach, including a "most likely" case type, it can be seen that residents of Aalborg base their transportation practices in a multitude of factors, where feelings such as freedom, convenience, commodity, and so on stand out. This, in turn, affects how they perceive their city and how they position themselves in the face of sustainable transportation, and, due to the nature of the case type, it can be suggested that these barriers that affect transportation practices might also be encountered in other similar-sized European cities.

Keywords: practice theory, transport practices, sustainable transportation, Aalborg, hermeneutics, freedom, convenience, urban design.

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Introduction

Global warming and the environment are now a big part of the political agenda (Bang, A., 2019, 'Klimaet er højest på vælgernes dagsorden'). Climate change is perhaps the greatest natural threat to human welfare but it is difficult to feel its strong impact, as the consequences of climate change in countries such as Denmark are creeping in gradually. The complexity of climate change can be characterised as a 'wicked problem', as how to solve the climate crisis does not seem to have a clear answer (Kolko, J., 2012, 'Wicked Problems: Problems Worth Solving'). As evidenced in the graph below, CO2 emissions causing climate change have significantly increased (especially over the last 50 years) and, if this pattern is maintained, the projections estimate a total emission of 40,000 million metric tons of CO2 by 2040 (Rezaei Sadr, N, Bahrdo, T. & Taghizadeh, R., 2021, p. 3), as Figure 1 shows.

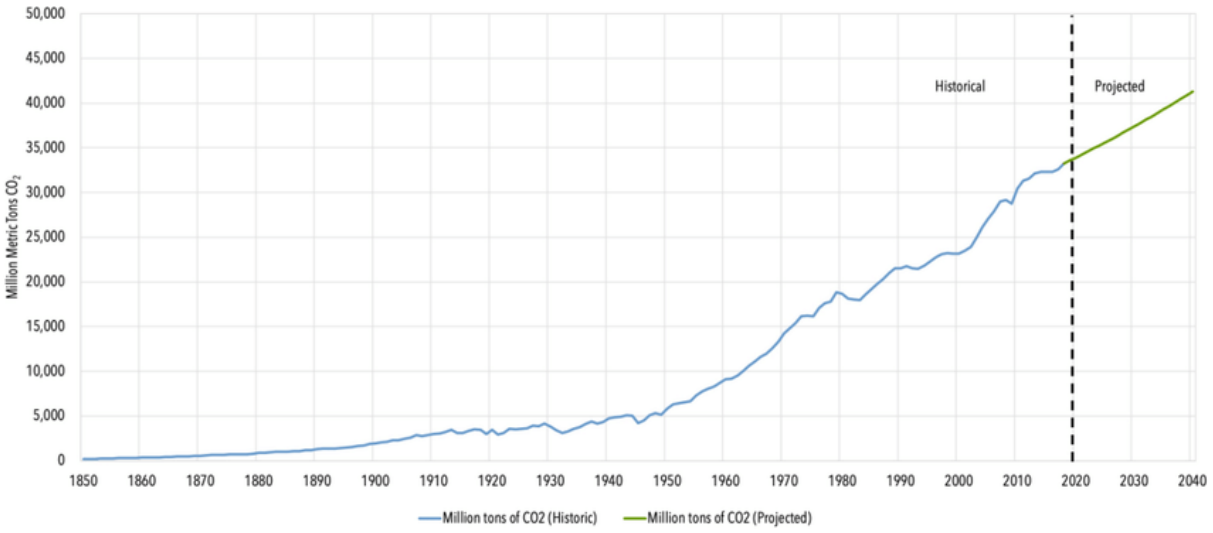


Figure 1 - Global carbon dioxide emissions 1850-2040 (Rezaei Sadr, N, Bahrdo, T. & Taghizadeh, R., 2021, p. 3)

Nevertheless, something else that has constantly increased is the efforts in reducing CO2 emissions. In recent times, governments, NGO's and multiple bodies have started campaigns to raise awareness of the negative effects on the environment that CO2 emissions have and initiated multiple projects to reduce their impact.

One example of this can be the European Climate Law, a regulation that compromises European states to become climate-neutral by 2050. This is intended to be achieved by "investing in green technologies, cutting emissions and protecting the natural environment".

The law also calls for the contribution of all sectors of the economy and society towards this common goal (European Commission, 2022, 'European Climate Law').

It is especially worth noting that the transportation sector is one of the areas that has negatively contributed the most to total CO2 emissions and climate change. Transportation accounted for 23,2% of total CO2 emissions only in the European Union (EEA Eurostat, 2022, 'Greenhouse gas emissions by source sector'), almost 10% more than other sectors.

Looking at these numbers in detail, cars, buses and trucks (passenger and freight transport) amounted to 75% of all transport CO2 emissions in 2018. Aeroplanes and cargo ships make up most of the rest, with 20% of the total. Trains, however, account only for 1% of them (Ritchie, H., 2020, 'Cars, planes, trains: where do CO2 emissions from transport come from?').

Furthermore, "*transport demand is expected to grow across the world in the coming decades as the global population increases, incomes rise, and more people can afford cars, trains and flights*" (Ibid). Car ownership, for example, is predicted to rise to around 60% more than it is today, while aviation could be three times as much as today in 50 years' time (Ibid). According to some authors, this can be explained due to the fact that humans, starting in the first half of the 21st century, "*have designed a living arrangement that necessitates driving to fulfil economic, social, and cultural goals*" (Barr, S., 2015, p. 91).

Taking a regional example, by analysing the CO2 emissions of eight activity sectors from different industries in the European Union, transport appears as the only sector that actually increased its CO2 emissions compared to 1990 (Eurostat, 2022, 'Greenhouse gas emissions falling in most source sectors').

Despite all of this, measures can be taken to reduce CO2 emissions and slow down the effects of climate change. Technology, for example, appears a potential solution to minimise the effects that cars, trucks, planes and so on have on the atmosphere. Optimistic scenarios determine that, with the widespread use of more sustainable transportation methods, net-zero CO2 emissions could be reached by as early as 2070, the same timeframe that could see car ownership rise by 60%. Naturally, it is easier to reduce emissions in certain means of transportation, such as cars, compared to others - planes, trucks and ships - (Ritchie, H. 2020. 'Cars, planes, trains: where do CO2 emissions from transport come from?').

During the past decades, countries worldwide have launched several projects to find and follow the best path towards a more sustainable future. As a clear example of this, the European Union has been actively working towards impulsing initiatives related to sustainability and sustainable transport for decades. According to them, European transport finds itself "*at a crossroads* [as] *old challenges remain but new have come*" (European Union, 2011, p. 4). As evidenced by Figure 2, the steady growth of CO2 transport emissions from 1990 to 2005 has not only been halted but also greatly reduced from 2010 on, with the exception of a small spike from 2015 to 2020 and a great fall product of the COVID-19 pandemic.

Following this reference, it can be seen that the EU's goal also relies on lowering these emission levels to less than 600 by 2035.

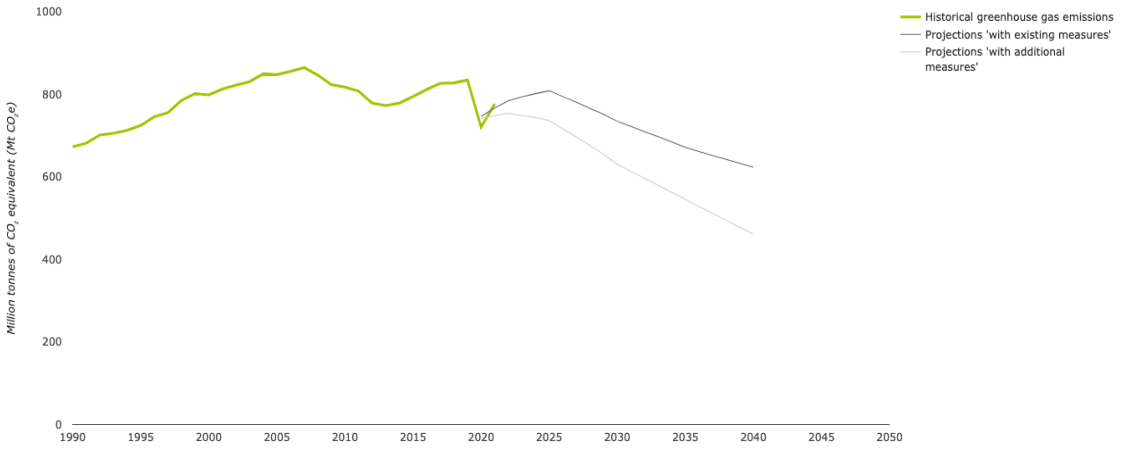


Figure 2 - Greenhouse gas emissions from transport in the European Union (European Environmental Agency, 2022, 'Greenhouse gas emissions from transport in Europe')

Some interesting examples from cities and regions inside the European Union, both small and big, include cases such as Lahti, Finland, a city with around 116,000 inhabitants (UN Data, 2023). Following EU guidelines laid out in the Sustainable Urban Mobility Planning Guide, Lahti aims to "*build a sustainable city together with citizens, stakeholders and decision makers*" (European Platform on Sustainable Urban Mobility Plans, 2021, p. 27). The main objective is to "*enhance the cooperation between land use and mobility planners*" (Ibid). In this way, emissions would be reduced in favour of, for example, bicycle use. A similar plan is taking place in Leuven, Belgium, where the city aims to "*reduce the use of cars by 20% by 2030*" (Ibid, p. 36). Another European example is the city of Örebro, in

Sweden, which aims to tackle fossil fuel usage by putting in action a plan consisting in "*increasing the share of cycling, walking and public transportation to 60% of all trips*" (Ibid, p. 37). These smaller cities share initiatives and knowledge within the framework of the European Union.

It is not only small-sized cities that have taken steps towards a more sustainable day-to-day, as larger European cities have also deployed options to reduce CO2 emissions. Three countries, for example, have incorporated the ideas outlined in the Sustainable Urban Mobility Plans to the full possible extent: France, Norway, Lithuania and the regions of Catalonia and Flanders (European Platform on Sustainable Urban Mobility Plans, 2018, p. 16). The success of these programs is also based on a support structure from several levels of administration and society, from national to regional, and even local support -represented in finances, infrastructure and so on- (Ibid, p. 191).

Taking an example closer to the case study, the country of Denmark has taken an active and focused approach to this problem to try to minimise the impact, for instance, that traffic has on the environment. For the past decades, the "Transportministeriet" (Ministry of Transport of Denmark) has conducted several studies to gain insight into the situation, and has devised different strategies to tackle it. In an analysis done in 2008, this ministry determined that *"traffic in Denmark increased by 50% in the last 20 years* [1988-2008] *and will continue to do so in the foreseeable future*" (Transportministeriet, 2008, p. 1, translated by author). With those perspectives in mind, the Transportministeriet set up certain government objectives to create "*a better connected Denmark in terms of both its traffic and the environment*" (Ibid). Some of these initiatives included: "*reduction of transport-associated CO2 emissions*", "*greener vehicular traffic*", "*more public transport and cycling*", "*better railway network*", "*better roads*", "*new green technologies*" and "*reduced noise and air pollution in urban areas*" (Ibid, translated by author). New green taxes were also scheduled to be introduced when buying new cars, amongst others (Ibid, translated by author).

After implementing new policies, a further study conducted in 2012 determined that positive changes were achieved and that Denmark positioned itself one step closer towards sustainable transportation, albeit progress was still possible. When this study was made, Denmark had the "*greenest drivers in the EU"* (Transportministeriet, 2012, p. 8, translated by author). According to the report, this was partially due to the taxation system on vehicles

aforementioned, besides technological advances. Nevertheless, the ownership of vehicles in the country has constantly increased since the 2000s (Skatteministeriet, 2021, 'Stor stigning i antal biler på vejene', translated by author). Figure 3 shows this growth in detail.

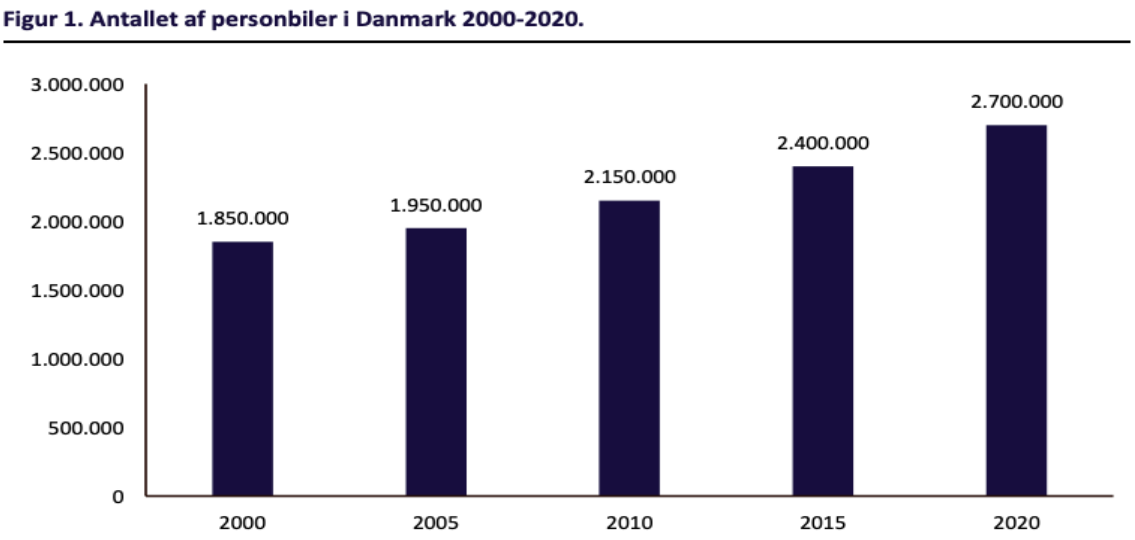


Figure 3 - Amount of personal cars in Denmark (Skatteministeriet)

While Denmark has been shown to take progressive actions towards sustainable transportation methods, cars are a strong part of national transport behaviour. Mette Henriksen, sales manager at Nordjyllands Trafikselskab, believes that people's habits are difficult to change, especially car owners:

"[As for human behaviour] *the first time is always difficult. This is also the case with public transport. And for many of those who are used to taking the car, public transport is a bit of a mystery. They don't know which bus to take, where it leaves from, where to get off or how to buy a ticket. They know the car journey. And although they are well aware that there may be some unknowns in terms of queuing and parking, it is still safer for them than taking the bus"* (Kjær Jørgensen, E., 2023, 'Tag bussen: Aalborg City og Nordjyllands Trafikselskab indgår grønt samarbejde', translated by author).

Naturally, each city is a different story. Whether it is the geographical location or the size, there are always certain policies that might need to be reviewed accordingly for the adoption of more sustainable transport options.

Taking into account the capital city of Denmark and its suburbs, where approximately ⅕ of the population of the country live (UN Data, 2023), it can be seen that this particular urban density presents different challenges, but also possibilities, for mobility. For instance, the urban area of Copenhagen is the only one in Denmark that features a metro system. No

other city in Denmark has the urban density to contain a metro, so Copenhagen has a special transport method it can use to transport its citizens sustainably.

An alternative example of a public transportation method that can be used in cities where the construction of a metro is not viable is the tram or light rail system. In Denmark, the tram system (also known as Letbane) is currently being used in two cities: Aarhus and Odense. Aarhus -with 336,441 inhabitants as of 2017- (UN Data, 2023, 'Aarhus') and Odense -with 200,703- (UN Data, 2023, 'Odense') are the second and third biggest cities in the country, respectively.

Nevertheless, while such systems present an alternative to a metro system, not all cities in Denmark are prepared to adopt them. Other cities around the country have developed different public transportation options to satisfy their local needs and demands.

One of these cities is Aalborg, in North Jutland. With 143,239 habitants in 2022, it currently is the fourth largest urban area in all of Denmark (Aalborg Kommune, 2022). Aalborg describes itself as "*a small sustainable city [...] that creates the framework for sustainable choices*" (EnjoyNordjylland, 2023). This smaller number of inhabitants, therefore, creates different transportation needs and challenges, as the demand in North Jutland's biggest city is lower compared to other cities in the country. It is estimated that there are 92,989 cars in Aalborg Municipality (Schouenborg, J, 2021, 'Familien Aalborgs bilpark vokser kraftigt: Se hvor meget og i hvilke bydele de har har flest', translated by author), which means, in the city of Aalborg, that there is around one car every two or three inhabitants. Gasoline cars amount to around 130,000 tons of CO2 emitted per year (Aalborg Kommune, 2022, 'Transport'), whereas only flying emits more. Buses, on the other hand, amount to 10,000 tons of CO2 emitted per year in the city.

Aalborg has been trying for a number of years to innovate and improve in several areas to become a more sustainable and eco-friendly city and depend less on cars. Aalborg municipality states that:

> *"the development of a sustainable society is both about taking care of the environment, the climate and nature, about building cities for people and about getting the best out of the current economic reality*" (Aalborg Kommune Plan, 2013, 'Bæredygtighedprofil', translated by author).

The municipality's plan is based around five pillars that have to be promoted to achieve the best results: social/society, local values, environment, economy and nature. Inside the environmental aspect, the municipality makes emphasis on the need for sustainable

transportation, including "*minimising the need for a car*", "*coherent supply of sustainable models of transportation*" and "*promoting the bicycle's share of total transport*" (Ibid).

Taking action, Aalborg Kommune has worked hand in hand with, amongst others, Nordjyllands Trafikselskabet (NT), main provider of public transport in the city, to implement greener initiatives around the public transportation system of the city,

> "*NT determines the routes and timetables for the regional buses* [...] *and for the city bus operation in a number of towns* [...]. *Aalborg Municipality, therefore, determines city bus routes and timetables for* [the city of Aalborg] (Ibid).

NT, together with train providers DSB and Arriva Tog, are the ones that discuss and fix the prices of tickets in North Jutland. This consideration is done taking into account the price ceilings determined by the Danish Parliament (Ibid).

As stated above, NT and the municipality of Aalborg have explored different solutions to reduce the climate impact on public transportation. One of the last initiatives, which started in the last half of 2022, saw NT introduce a whole new fleet of electric buses, replacing their old diesel ones. This was done in an effort to "*reduce CO2 emissions and make the city of Aalborg a better city to live and stay in*". Moreover, "*the new buses will save Aalborg Municipality approx. 6300 tonnes of CO2 per year* [and] *they are quiet and do not emit harmful particles when they drive*" (Kjær Jørgensen, E., 2022, 'Bybusserne i Aalborg bliver elektriske', translated by author). The objectives of NT and Aalborg Kommune include having more than 120 electric buses running by the end of this year (Ibid).

This collaboration also includes providing electric buses for the Plusbus, one of Aalborg Kommune and NT's most ambitious projects to modernise public transportation in the city. Due to the size of Aalborg and the transportation demands, Aalborg Kommune saw fit to introduce a so-called BRT or Bus Rapid Transit model instead of a metro or tram system. A BRT is basically defined as a "*high-quality bus-based transit system that delivers fast, comfortable, and cost-effective services at metro-level capacities* [...] *through the provision of* [for example] *dedicated lanes*" (Institute for Transportation and Development Policy, 2023).

Besides the aforementioned transportation methods in Aalborg, there are also several bike paths that cross the city through, from downtown to the near suburbs. The municipality looks to "*continuously improve conditions for cyclists*" (Aalborg Kommune, 2016, p. 1, translated by author). According to them, cyclists can get from downtown Aalborg to any

area of the suburbs in a maximum of 35 minutes through the use of these cycling routes (Ibid).

Even though there are several projects in motion to better improve sustainable transportation options in Aalborg, changing the behaviours of the citizens of Aalborg does not seem to be an easy task. This is evidenced by the fact that one of every two-three Aalborgensers owns a car, and that NT has been in a period of deficit for the past years (rising gas prices and the lack of subsidies having a great effect on it), calculating a total loss of 20 million Danish kroner per year from 2023 to 2025 (Fjordbak, E., 2023, 'Kæmpe underskud i NT - busruter lukkes', translated by author). This, in turn, led to the closure of multiple bus routes, especially to low-density population areas (Ibid). This perspective on the case of Aalborg presents itself as an interesting dilemma to analyse from an academic point of view, utilising the right methods and theories (such as practice theory, commonly used in studies related to mobility as a practice). The perceived duality between "ideal sustainable development" versus an economic and social reality creates a paradox for Aalborg's transport situation, hence making it interesting and relevant to look at:

"Why do Aalborg residents choose certain mobility practices, and how this impacts their perception of the city's urban design and transitioning towards sustainable transportation"

Furthermore, this investigation will look into three secondary research questions which, while being engulfed by the problem formulation, present unique cases that will be explored and uncovered throughout the analysis. These are:

- *What characterises the individual mobility practices in Aalborg?*
- *What is the local perception of public transportation and mobility?*
- *How could mobility practices in Aalborg enhance sustainability?*

Limitations

The following section will uncover all limitations set in the making of this research and detail a number of uncertainties referring to concepts and direction. As stated above, this thesis will uncover how transport possibilities impact the practices that inhabitants of Aalborg have, including the degree of sustainability of said transportation and, to the extent possible, the reasons behind those choices.

To achieve this purpose, first of all, a geographical limitation will be set. The focus area (or radius) of the research will cover approximately 15 kilometres parting from downtown Aalborg. The reasoning regarding this choice lies in the use of various transportation devices such as a bicycle or e-bikes. It is estimated that, for an individual living more than 15 kilometres away from the centre of Aalborg, the usage of bikes and e-bikes significantly decreases as this method of transportation simply cannot compete against, for example, a car in terms of speed and comfort. While buses could cover this distance, the bus connections and routes are less present and less frequent the further we look away from the city of Aalborg.

Keeping the focal point within a radius of 15 km from Aalborg centre ensures a “fair competition” between cars, bikes and buses/trains. It is presupposed that, otherwise, the car could have a decisive advantage over longer distances.

Furthermore, the concept of sustainable transportation/mobility will be mentioned multiple times, and it shall be understood henceforth as a transport method that has a lower CO2 impact than a diesel or gasoline car, since a car with one passenger emits approximately 60% more CO2 than one passenger in a train per kilometre travelled (BBC, 2019, ‘Climate change: Should you fly, drive or take the train?’). Taking this into account, biking or walking are seen as the most sustainable transport methods possible, followed by public transportation. While, according to researchers, these two concepts have different meanings, for the sake of this research sustainable transportation and sustainable mobility will be utilised to refer to the same thing as per the definition given above.

Furthermore, the concept of urban design, for the purpose of this project, will refer specifically to the transportation infrastructure of the city of Aalborg and its design. Therefore, areas that are normally included into the definition of urban design will be omitted for the purpose of creating a more logical structure and comprehension of the topic.

Literature Review

Before advancing with the theoretical approach of this project, it becomes pertinent to dive into the corresponding academic background and the existing texts regarding sustainable transportation considerations around the world, with a specific focus on small to mid sized (approximately 5,000 to 250,000 inhabitants) cities in the European Union.

The purpose behind this literature review relies also on understanding what has already been written and analysed inside the field of study. To achieve a broad and relevant background review, several texts have been taken into account, including research papers, books and official guides written by both researchers and organisations such as the European Union. The general topics connecting all the texts are sustainable transportation, seen from different approaches and perspectives, and mobility practices. When referring to sustainable transportation, as many aspects as possible are being taken into account from it: how to achieve it, the main challenges around it and what it is.

The State of Sustainable Transportation and Mobility: Challenges and Potential Solutions

The subject of mobility and behaviours has raised multiple investigations from multiple perspectives across the last decades. Doing a general survey on the topic of sustainable transportation, it can be identified that several authors and public organisations have devoted themselves to writing on the topic.

First and foremost, it becomes pertinent to define what we understand by "sustainable mobility/transportation". According to authors Vandycke and Viegas, sustainable mobility involves:

"the provision of services and infrastructure for the mobility of people and goods—advancing economic and social development to benefit today's and future generations—in a manner that is safe, affordable, accessible, efficient, and resilient, while minimising carbon and other emissions and environmental impacts" (Vandycke, N. and Viegas, J., 2020, p. 23).

Author Steward Barr condenses his definition to determine that "*sustainable mobility involves reducing the need to travel by making the places where people live economically viable and vibrant*" (Barr, S., 2015, p. 103).

Taking into account the status and notion of sustainable transportation in Europe, relevant for this project were the texts and books commissioned by different organisms inside the European Union regarding this same topic. The notion of the SUMP (Sustainable Urban Mobility Planning) emerges as a relevant concept in current sustainable mobility studies that focus on the European Union. As the name suggests, the SUMPs involve not only a theoretical approach to the question but also a practical one. For example, the book-guide "Sustainable Urban Mobility Planning in Smaller Cities and Towns", by authors Lasse Brand, Susanne Böhler and Siegfried Rupprecht, besides serving as a concrete guide meant to be used by local transport decision makers and policy planners in European cities, also provides context and explores the problems faced by mobility in smaller towns and cities. In this text, it is stated that this guide is meant to be "*utilised by transport planners and policymakers in smaller cities and towns (population of 5,000 to 100,000) people*", making it somewhat relevant to the analysis of the case in Aalborg (Brand, L., Böhler, S. and Rupprecht, S., 2021, p. 8).

According to the authors, the challenges that mobility in smaller cities is facing nowadays include being more car-oriented, having low frequencies and poor coverage when it comes to public transportation and, in some cases, a demographic problem involving a big amount of the population being old in age, or, if younger, commuting to other cities for work (Ibid, pp. 9-10). The text does not discard budget limitations as a challenge that smaller cities have to face when planning transportation methods (Ibid).

Extending these challenges that sustainable transportation faces not only in small European cities but also in larger cities around the world, Litman and Burwell in their text "Issues in Sustainable Transportation" state that sustainability issues co-exist and overlap in three different categories: economic, social and environmental (Litman, T. and Burwell, D., 2006, p. 334). To exemplify this argument, they take the case of pollution and describe it as "*an environmental concern, which also affects human health (a social concern), and fishing and tourism industries (economic concerns)*". Looking in depth into each sphere, economic issues refer to things such as business activity, employment and tax burden; relevant social issues include equity, human health and public involvement and, finally, environmental issues refer to things such as pollution emissions, climate change and biodiversity (Litman, T. and Burwell, D., 2006, pp. 332-334).

Important to note that the authors affirm that:

"*sustainability planning does not always require tradeoffs between economic, social and*

environmental objectives, but rather a matter of finding strategies that help achieve all of these objectives" (Ibid, p. 335).

Out of the other things they discuss, important to this research is the "*automobile dependency*", a debate that is *"often framed in terms of economic vs. environmental goals (as sustainability requires sacrificing economic development objectives to protect the environment)*" but it is not fully based around that. According to the authors, "*there is evidence that beyond an optimal level, increased automobile use has negative economic impacts*" (Ibid, p. 340).

Another relevant document from the European Union, connected to the one mentioned above, is the "Status of SUMP in European member states", written by Thomas Durlin and the European Platform on Sustainable Urban Mobility Plans in 2018. One of the particularities of the text is the fact that each EU member state participates in the making of the status, with their own reviews and perspectives about the state of SUMP in their respective countries. Naturally, the case of Denmark is of great interest to this research, with the city of Aalborg being mentioned and confirmed as one of the Danish cities in which SUMPs have been developed, taken into account and completed. Connected to this notion but acting as a regional example, the SMaRT project (Sustainable Mobility for Rural and Urban Transport), which was concluded in September 2022, acted as a collaboration between cities to "*find ways to stimulate changed travel behaviour and persuade more people to choose sustainable alternatives*" (Smartprojekt, 2022, 'Om oss', translated by author). Both Aalborg University and Aalborg Kommune collaborated on this project, whose objective, in Denmark, was working and understanding commuting traffic (Ibid).

Furthermore, another book that helps set the context, the "White Paper on Transportation", written by the European Commission for Mobility and Transport, states there are certain primary goals to achieve a resource-efficient transport system, including finding new sustainable fuels, optimising logistic chains and increasing the efficiency of transport systems using technology. The paper makes a great emphasis on technology as a potential solution for existing transportation problems. The "White Paper" states that "*a transformation of the European transport system will only be possible through a combination of manifold initiatives at all levels*" (European Commission for Mobility and Transport, 2011, pp. 1-18).

Referring again to the paper "Issues on Sustainable Transportation", the authors argue that there exist two perspectives of problem solving in sustainability. The "*reductionist*"

perspective involves utilising existing transportation planning to solve a set of individual problems; and the "*comprehensive*" method argues that achieving sustainability means exerting a change in current transport decision-making practices as these cannot effectively address the existing problems. Therefore, "*sustainability requires more comprehensive and integrated planning, which accounts for a broad set of economic, social and environmental impacts, including those that are difficult to measure*" (Litman, T. and Burwell, D., 2006, p. 340).

Also connected potential solutions to the problems faced by sustainable transportation is the text "Towards User-Centric Transport in Europe 2", by Müller and Meyer. This paper makes emphasis on the importance of achieving user-centric (putting the end user as a focus when developing transport solutions) transportation across Europe. The authors argue that three main categories have to be fulfilled to achieve this: inclusiveness, seamlessness and sustainability, which concern having things such as a universal design in the development and implementation of transport systems, a support system for this planning and a "*truly European*" mobility system while always following sustainability requirements (Müller, B. and Meyer, G., 2020, pp. v-viii). This could be anything from car-sharing, achieving zero-net emissions in cars, electric buses or a more developed traffic management system. For them, these are the potential solutions to solve some of the problems faced by sustainable transportation in the European continent (Müller, B. and Meyer, G., 2020, pp. 151-169).

Connected to this last text is that of "Smart and Inclusive Bicycling? Non-users' Experience of Bike-Sharing Schemes in Scandinavia" by Breengaard, Henriksson and Wallsten. There, the authors suggest that the "*development of Smart Cities and the smart mobility solutions within these cities, is focused on technological solutions*" but, for smart transport solutions to be able to succeed, they have to meet the needs of the citizens of those cities (Breengaard, M., Henriksson, M., and Wallsten, A., 2021, p 545). Again, a user-centric approach to the case.

These aforementioned papers, guides and books set the bases and state what are the problems and potential solutions that European-wide sustainable transportation and mobility has been facing in recent times. These issues and solutions have been thoroughly considered and then placed in the perspective of the city of Aalborg in an attempt to identify if any of the concrete problems and potential solutions the authors write about, are present in this particular research case. Therefore, besides serving as context support and background

information, concepts and ideas from this part of the literature provide backbone support for the rest of this paper.

The Notion of Behavior and Practices in Transportation

Another key topic to explore in this literature review is the case of behaviour and practices connected to transportation. Since this notion is what motivates this research, it was pertinent to explore what had been previously written and researched about it.

Author Steward Barr, in his text "Beyond behaviour change: social practice theory and the search for sustainable mobility", states that "*appeals to change our* [transportation] *behaviours have largely become ones that are dismissed*" specifically by a surrounding infrastructure that supports a living arrangement that depends significantly on driving as a tool to accomplish different economic, social and cultural goals (Barr, S., 2015, pp. 91-92).

According to the author, "*behavioural change approaches have become stuck*" (Ibid). Also worth noting, there are multiple things to take into account in each of the individual practices. With the example of car driving, the author says that "*there will be multiple segments that are defined by demographic, economic, social and cultural attributes, alongside social-psychological constructs*" (Ibid, p. 95). This notion will be taken into account for the construction of surveys and interviews and the continuation of the research.

Also important for the investigation is the author's explanation of how, due to "*decades of planning focused around the car, mobility practices* [evolved to] *long commutes, weekly shops by car, driving to school*" etcetera (Ibid, p. 100).

The author also agrees that combining a practice approach with a study of mobility can be useful to "*highlight the reflective nature of mobility practices of dominant socio-economic conditions*" (Ibid, p. 102).

Lastly, to conclude with the notion of behaviour and practices, it is relevant to see, on an individual level, what can be understood by personal mobility. According to authors Jensen, Sheller and Wind, one person's mobility patterns may have a direct impact on another's capacity to be mobile (Jensen, O., Sheller, M. and Wind, S., 2015, p. 366). Therefore, in some cases, mobile subjects have to be considered as clusters of interacting agents, not simply singular and individuated actors -how, for example, the mobility election of a family member can influence the rest of the family to transport themselves in a certain way- (Ibid, p. 375).

Also, key for the idea of mobility practices, the authors argue that one of the most important contributions of mobilities research is the lively experimentation with multiple methods. They argue that "*recent mobilities research draws on phenomenology as a way to describe a kind of 'place-ing', in which there is a relational emergence of the body-in-motion, perception, and place*" (Ibid, p. 364). In this particular case, it is believed that phenomenology gives similar options to hermeneutics due to its similarity with this method, but always differing from an overall perspective.

Moreover, they dissect the idea of individual mobility into specific factors that make it up. For example, they concur that something as trivial as route choice is not simply about getting somewhere and that it is not always "*super logical*", but actually concerns how to make oneself feel better through the process of moving (Ibid, p. 373). This is relevant for this research as something that perhaps was, at first, not taken into account (like route planning) suddenly becomes relevant and important when attempting to answer the problem formulation.

In conclusion, all the aforementioned texts, both related to sustainable transportation and behaviours and mobility practices, provide a clear and concise context, ideas and concepts from other research papers that are related and intertwined inside the same field of study as this one. Some of the main findings present in these literature reviews include, but are not limited to, the notion of what sustainable mobility is and how recent projects have tried to achieve it. Also, key in this notion of how behaviour works in the transport field important to note, is that some authors suggest that it is difficult to change transportation behaviours in general, how influential the car can be in daily life and what we can understand by personal or individual mobility.

The Current Transportation Panorama in Aalborg

The following section will seek to explore and understand more about the general and current transportation situation in the city of Aalborg. This means having a general overview on the different transportation methods around the city, including car, bus and bike. The purpose of this descriptive analysis is to enable the reader to position themselves at a vantage point regarding the city of Aalborg and the main features of its transportation infrastructure.

Also, this section aims to expand in depth the knowledge and status detailed in the introduction of this research paper.

Automobiles and Motor Vehicles

As stated in the introduction above, around one of every two-three inhabitants of Aalborg has ownership of a car. According to the Denmark Statistics office, around 120 families in Aalborg Kommune own two personal cars -only surpassed by Aarhus Kommune-, and 13 families own three personal cars -more than anywhere in the country- (Statistik Denmark, 2021, 'Familiernes bilkøb', translated by author).

In terms of car infrastructure, the main artery into the city is the E45 highway, which comes from Aarhus and splits in Nørresundby into two: one branch that continues on to Frederikshavn and one that diverts to Hirtshals via Hjørring, both important trade ports in Northern Denmark. While the main highway runs through the eastern part of Aalborg and crosses the Limfjord via a tunnel, car drivers also have the option to cross into Nørresundby through the city centre and the Limfjord bridge and join the highway again. Despite having these two options, the Danish Parliament approved the plans for the construction of a third highway branch that would divert in Svenstrup and join the highway again in the E39 to Hirtshals, lowering the car numbers in both the E45 tunnel and the Limfjord bridge (Heiberg, M., 2021, 'Se Planerne', translated by author). Figure 4 showcases the planned road for this new highway, called the Egholm Motorvej (highway) due to it crossing through the island of Egholm.

Figure 4 - Egholm Motorvej Plans (Vejdirektoratet)

This project has been met with controversy from the citizens of Aalborg, who believe that such a construction would not only not relieve the Limfjord bridge or the Limfjord tunnel enough (Aalborg Borgerbevægelsen, 2023, 'Nej til Egholm motorvej', translated by author) but also would increase noise pollution in Aalborg and Hasseris and change the nature of Egholm as an island and tourist destination (Aalborg Borgerbevægelsen, 2023, 'Hvorfor imod', translated by author).

Inside the city itself, several roads connect the different suburbs of Aalborg to the city centre. The municipality of Aalborg is responsible for "*over 2000 km of roads, and makes everything to provide the best in connection with: new roads, cleaning, snow removal and slippery road conditions*" (Aalborg Kommune, 2023, 'Veje', translated by author). Moreover, the city of Aalborg showcases around 25 different parking spaces only in the downtown area (Aalborg Kommune, 2023, 'Parkeringspladser', translated by author), each of them with different prices and available parking spots. Figure 5 showcases these parking options in downtown Aalborg. Drivers can also purchase a "parking licence" that enables them to park anywhere in Aalborg downtown without a time limit (Ibid, 'Køb parkeringslicens', translated by author). The most recent project undertaken with the approval of Aalborg municipality includes the opening of a new parking facility with around 600 parking spots in Nørresundby. It is intended for the parking lot to offer other commodities, like a space to lend/drop shared

bikes and shared cars (Kjær Jørgensen, E. 2023, 'Over 600 pladser: nyt parkeringshus er åbent', translated by author) .

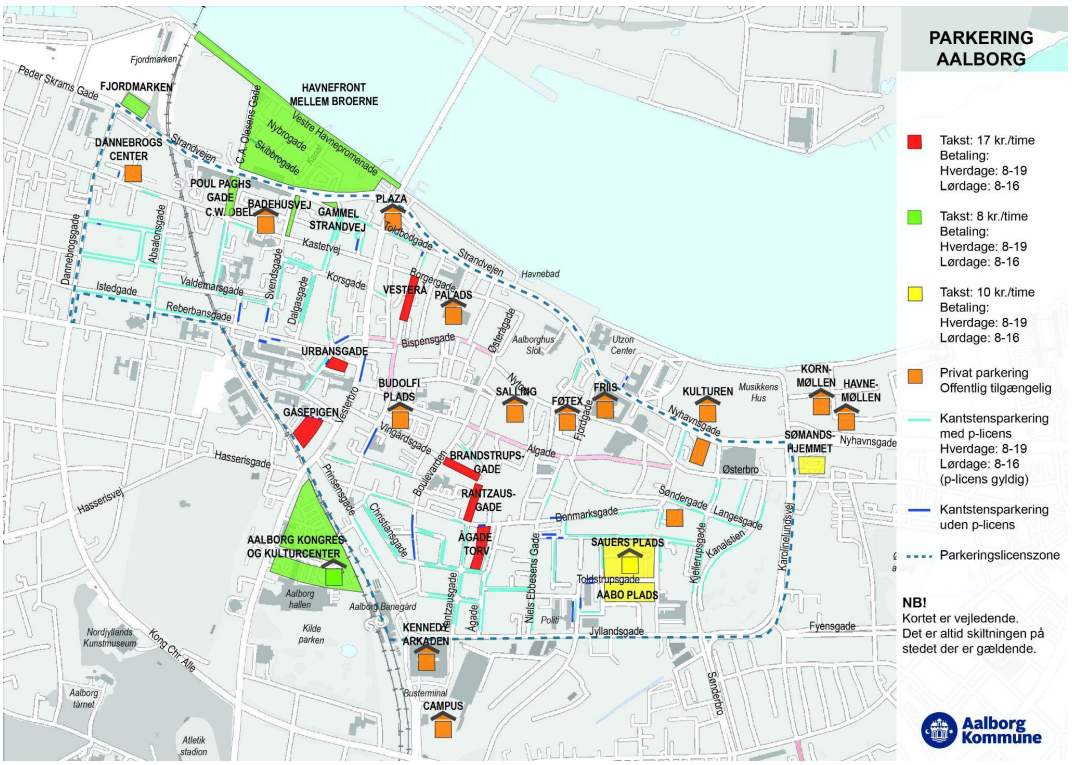


Figure 5 - 'Parkeringspladser' (Aalborg Kommune)

Worth noting, Aalborg does feature a so-called "*low-emission zone*" in the centre of the city. A low-emission zone is an "*automatically enforced*" area of a city in which "*diesel-powered lorries, buses and vans* [both Danish and foreign] *must have a particulate filter fitted to enter*" (Miljøzoner, 2023, 'Where are the zones'). Should the vehicle not meet the requirements, drivers "*have the option to retrofit* [their] *vehicle with a particulate filter*" (Ibid). In the case of Aalborg, drivers are allowed to go through certain "*transit routes*" regardless if they fit the requirements or not. This is done to enable all vehicles to have access to areas such as the Limfjord bridge (Ibid).

Being implemented from 2024 on, a new system of road tolls will also charge trucks for driving in North Jutland (including Aalborg) "*depending on how much CO2 they emit per journey*" (Worm Pederse, A. and Winther Møller, L., 2023, 'Vejafgifter truer nordjyske virksomheder med nedlægning', translated by author). While no plans have been made just yet, an option to implement a similar system for certain zones in the city of Aalborg could be a possibility to reduce CO2 emissions in the future. This system of tolls and charging for driving in certain environmental zones is in place in several countries in Europe, including France, Italy and Sweden (FDM, 2023, 'Vejafgifter, miljøzoner og mærkater i Europa').

Also part of the city of Aalborg, but located in the southwestern outskirts, the shopping area "City Syd" also plays an important role when it comes not only to parking availability but also commercial opportunities, as it features two shopping centres and a number of mega-stores, both from Danish brands and international ones. "City Syd" is described by EnjoyNordjylland as "*one of the Aalborg residents' favourite go-to places for large and varied shopping because everything* [they] *need is there*" (EnjoyNordjylland, 2023, 'City Syd i Aalborg', translated by author). While this area can be reached by bike and bus, it features 4500 parking spaces which makes it convenient for car drivers to choose it as an option when it comes to both leisure activities and shopping trips (Ibid).

In summary, the city of Aalborg features a developed and maintained road network that enables car owners to move around the city and beyond. National plans (like the Egholm highway) seek to improve this road network, creating more options for drivers to move through and around Aalborg.

Public Transportation

As discussed above in the introduction, buses in Aalborg and surrounding areas are run by Nordjyllands Trafikselskab. At the moment of the writing, there are around 15 different city bus lines in Aalborg (NT, 2023, 'Aalborg Bybus'), which cover all the city and the suburbs. Figure 6 shows the bus routes in Aalborg as of 2023.

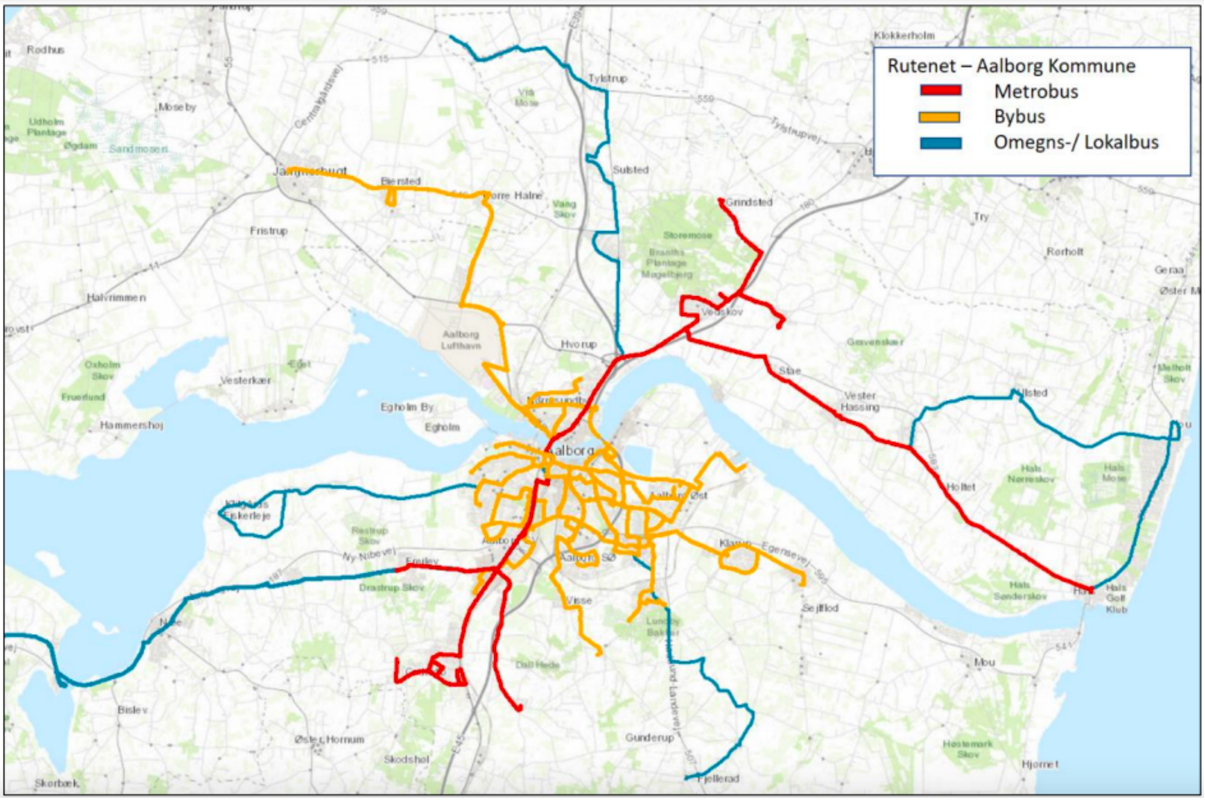


Figure 6 - Bus Routes in Aalborg city and surroundings (Øhlenschlæger, J. 2019)

The red route represents the so-called "Metrobus", which consists of Line 1 and its derivations. The reason behind the colour and name is the frequency in which the buses run, which is once every 15 minutes or so (NT, 2023, 'Linje 1').

While ticket prices change depending on several factors (including owning or not a travelling card, and how long the trips are), these range from 18 Danish crowns for a 2-zone trip to 240 Danish crowns for 24 zones (NT, 2023, 'Priser', translated by author).

Briefly mentioned above, the construction of the "Plusbus" will modify the public transportation panorama in the city of Aalborg. The Plusbus will include 12 km of dedicated lanes stretching from Vestbyen to Aalborg Universitet campus (Plusbus, 2023, 'Om Plusbus', translated by author). Figure 7 shows the official plan for the Plusbus route.

Figure 7 - Plusbus Route (DR.dk)

Besides having dedicated lanes, the Plusbus aims to "*solve concrete challenges for the city's traffic by*": having priority in traffic lights, driving on a new pavement without holes, a quicker entry and exit of the buses and vehicles with capacity for 150-200 people (Ibid). The Plusbus would appear to be Aalborg's equivalent of the metro, in Copenhagen, and the tram in either Aarhus or Odense.

Despite its expected performance and the possibility to improve public transportation in Aalborg, the Plusbus, scheduled to be opened around September of 2023 (Bisgaard Pedersen, A, 2023, 'Den er kæmpestor: Nu er de første Plusbusser kommet til Aalborg', translated by author), has been considered and developed by the municipality since 2004 (Andersen, M., 2008, p. 7).

As it can occur with projects of this magnitude, several delays have set barriers to the completion of the project. For example, during the construction of the Plusbus, there have been budget adjustments that postponed its opening. Lack of materials, fuel prices and so on have also impacted on the estimated opening date.

Bikes and Electric Bikes

Besides the aforementioned transportation methods in Aalborg, there are also several bike paths that cross the city through. The municipality looks to "*continuously improve conditions for cyclists*" (Aalborg Kommune, 2016, p. 1, translated by author). According to them, as stated above, bikers can get from downtown Aalborg to any area of the suburbs in a maximum of 35 minutes (Ibid). This is due to the developed cycling paths found across the city, both the main paths -described as those "*paved with either asphalt or solid pavement,*

which run along the road or in their own route"- and the recreative paths -which are "*gravel paths suitable for cycling* [which] *run through green areas and lead to tourist attractions or excursion destinations*" (Ibid).

Figure 8 displays this as a radius, with the main biking paths marked in red.

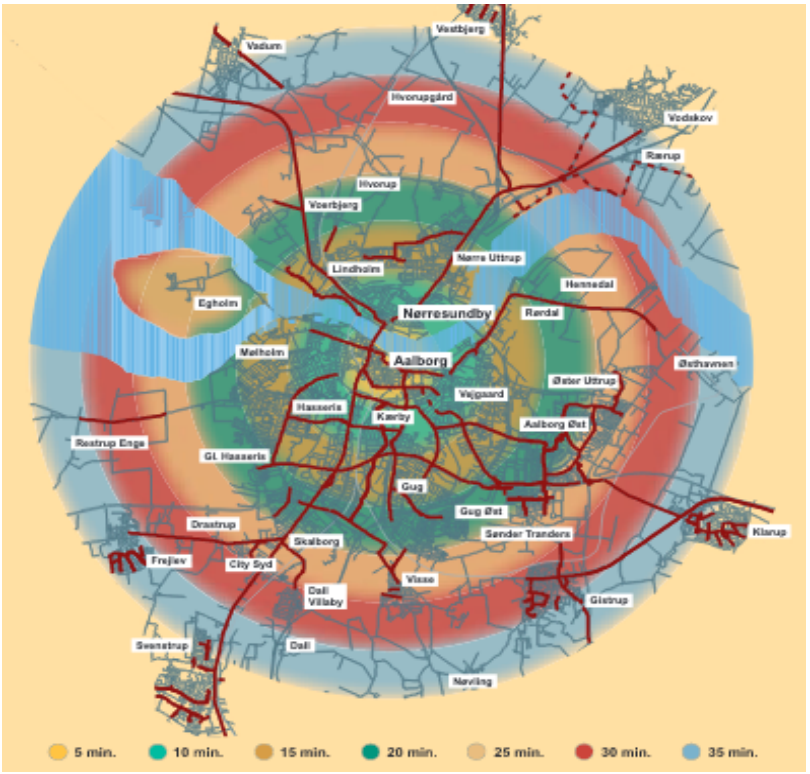


Figure 8 - Biking distances from Aalborg downtown (Aalborg Kommune, 2016)

Aalborg Kommune has worked on improving and creating new paths for cyclists, both inside the centre of the city and in the suburbs (Ibid). There is also an extensive network of parking spots for bicycles across Aalborg municipality (Ibid).

Theoretical Approach

In this section, the theoretical position of this project, its function and its purpose will be outlined. The problem formulation states that the focus of the research is to uncover the mobility practices and the perspectives of the inhabitants of Aalborg regarding the city's transportation structure.

Every person transports themselves in some way or another, and hence creates different practices around the way they move. Therefore, practice theory will be applied to understand the mobility practices of the inhabitants of Aalborg city.

Practice theory is widely used and multiple scholars have applied and contributed to it, most notably Bourdieu, Foucault and Giddens but also more recent scholars such as Schatzki (1996), Reckwitz (2002), Shove et al. (2012), Warde (2005), and Gram-Hanssen (2009), amongst others.

Practice theory is broadly used within research on consumption and mobility, where multiple mobility studies have applied practice theory. This is because mobility can be seen not as an individual behaviour, but as a part of an overall practice, which could refer to trivial things such as going to school, work or leisure activities. For example, for some individuals, the practice of driving to work cannot be naturally extracted from the practice of working as a corporate professional, since the nature of their job depends upon the ability to be flexibly responsive to client demands on-site attention during the day.

The theory section will primarily reference Spurling and McMeekin (2015) but also Kent (2022), Larsen (2016) and Barr (2015), as they apply practice theory in similar cases as this one.

Practice Theory

Since studies of transport have been through multiple focus areas, different theoretical views have been applied to understand how and why humans transport themselves.

Traditionally, the most popular view has been the mainstream rationalist-instrumental approach, which follows the assumption that travellers make decisions based on objective notions of utility maximisation. Here, the individual chooses from alternatives with the aim of maximising personal utility (Kent, J., 2022, p. 223). A key critique of utility theory is that it fails to recognise that the way we travel is a product of more than rational decisions to

avoid disutility such as lost time and money, unreliability, or avoidable effort (Ibid, p. 223). New approaches have therefore emerged to understand this complexity.

Focusing on the importance of these complex factors, activity and accessibility-based paradigms reflecting on mobility as a demand derived from the location of destinations are increasingly popular (Ibid, p. 224).

This shifts the intense focus of transport research away from the individual and instead looks at unsustainable transport practices, such as car dependency. Ways to increase access to destinations by decreasing distances have thus become common goals of research and practice seeking to encourage sustainable transport shifts (Ibid, p. 224).

Appeals to change human behaviours have been difficult and lost amongst the overwhelming infrastructure that supports the normality, carefree, and supposed freedom afforded by the motorcar (Barr, S., 2015, p. 91).

This has not emerged because we have become addicted to the motorcar per se, but rather because we have designed a living arrangement (beginning in the 1920s) that necessitates driving to fulfil economic, social, and cultural goals (Ibid, p. 91).

As a result of decades of planning focused around the car, mobility practices have developed within these physical choice architectures that necessitate long commutes, weekly shops by car, driving to schools to drop off children, and generally planning life around the affordances of the car (Ibid, p. 100). Furthermore, with the current materialistic way of life standing out; cars are seen as status symbols and the convenience of having a car at your disposal at all times is hard to give up (Carmen, R. et al., 2021, p. 1269).

To counter this way of structuring our cities and way of life, we have to understand the practices of the common person/family, as it can help us understand how we should build our cities.

Practice theory is broad and contains several concepts that are used within multiple contexts, where scholars have expanded it. This makes it somewhat difficult to specify, but likewise, provides the option to choose the elements and concepts that suit the investigation's context.

Within the travel and mobilities study, the following definition was adopted for this research paper:

Social practices are conceived as being routine-driven, everyday activities situated in time and space and shared by groups of people as part of their everyday life . . . Social practices form the historically shaped, concrete interaction points between, on the one hand actors, with their lifestyles

and routines, and on the other hand, modes of provision with their infrastructures of rules and resources, including norms and values. (Verbeek, D. and Mommaas, H., 2008, p. 634)

Furthermore, scholars have, almost consensually, agreed on a few elements that are part of a practice: Shove et al. (2012) group them as "materials", "competences" and "meanings".

'Materials' '*include things, technologies, tangible physical entities and the stuff of which objects are made*'. They stress the significance of designs as material, rather than as symbolic, objects in accomplishing practices (Larsen, J., 2016, p. 878).

'Competences' refer to '*skill, know-how and technique*'. Mastering a practice is a learning process and it takes time to acquire the necessary skills to '*carry it out*' (Ibid, p. 878).

Finally 'meanings' refer to '*symbolic meanings, ideas and aspirations attached to specific practices within a larger context which can have both positive and negative meanings at the same time'* (Ibid, p. 878).

The three elements are '*connected*' as an '*entity*' and they have enduring existence across individual moments of activity (Ibid, p. 878).

Practices hinge on the connections between these three elements and they change in meaning or popularity when these connections are remade because of some new innovation, policy, political movement, fashion or consumer preferences.

Furthermore, practices need to be performed to exist. This is what Shove et al. call '*practice-as-performance*' and they need to be filled out and reproduced through repetitive doings. This means that cycling only exists if there are active cyclists who '*carry out'* this practice (Ibid, p. 879).

The final element of a social practice is recruitment. For a practice to endure, it needs to recruit a cohort of practitioners, which means another practice must recede and be abandoned by said practitioners. It is through examinations of recruitment and defection that the practice approach is able to incorporate its cultural meaning (Kent, J., 2022, p. 226).

Humans generally do not spontaneously perform a practice without having an awareness that it is a potentiality, and we usually know this through other people. For example, walking a child to school is a possibility before we come to the activity of transporting our own children (Ibid, p. 226).

Practices compete with each other for recruits and carriers and specific practices need to be studied in relation to their competing practices. Cycling lost both old and new

practitioners and enthusiasts to motorised transport and public transportation, and the other way around (Larsen, J., 2016, p. 879).

Materials

As mentioned, materials are physical entities and stress the significance of designs as material (rather than as symbolic) objects when performing a practice. Physical entities can comprise of several aspects, within cycling, for example, the direct materials are bikes and equipment (e.g. bike parts, locks and helmets), but materials, as Larsen points out should include environments (e.g. the weather, roads, topography) and '*biological bodies*' (e.g. fitness) to this list of materials when, for example, analysing practices of cycling (Larsen, J, 2016, p. 881).

Bike lanes are the 'materials' used to design an inclusive environment for cycling to be perceived as culturally acceptable, safe and time effective, and the required competences are minimised, so that new practitioners can be recruited and old ones keep cycling (Ibid, p. 881).

The same can be said of how the practice impacts one's physical body, for example, sweating can be part of the experience. One's biological impact, therefore, needs to be considered as a part of the materials within a practice. The same considerations should be on the impact weather has on performing a practice, where snow and rain might push practitioners away from cycling towards cars or public transportation. Therefore, all physical aspects or traits are important to acknowledge when examining the materials of a social practice.

Competences

Competences refer to '*skill, know-how and technique*'. Mastering a practice is a learning curve and it takes time to require the ability to '*carry it out*'. Skills and techniques are broad concepts and all practices have different areas that need learning, but within transportation, this can be simplified. For example, cycling competences include '*bodily fitness*'; steering and balancing skills; and knowledge of the local traffic systems are the primary skills to learn. Especially, knowledge of the traffic or transport culture is important as not all people (yet) have the necessary competences to ride in a particular environment (Larsen, J., 2016, p. 878).

Most Danes learn from a young age to cycle. Still, if a Dane visits a non-bike friendly city like New York, then they are not going to bike before they have the knowledge of the mobility structures and practices in that specific context. Therefore, context is important when analysing what competences individuals need to transport themselves.

While car competences are formally taught and require a licence in Denmark, there is no such teaching process when it comes to cycling or public transport.

As cycling can be suggested to be a cultural part of being a Dane, there is not a need to have formal teaching programs or publications on 'how to ride a bike'. This illustrates the point within practice theory that the elements influence each other (Ibid, p. 882).

In the form of public transportation, you can argue the competences needed are rather low, but there is a lot of "know-how". The public transportation in Denmark is mostly structured around the "rejsekort", a physical card that you only can get if you have an address in Denmark or at certain shops in the country. Furthermore, most information and tickets are digitised, so foreigners, tourists and the elderly might have difficulties learning all the information. This might be the same in other countries as there is no universal way of structuring public transportation in the world or in Europe.

Meanings

Finally 'meanings' refer to '*symbolic meanings, ideas and aspirations attached to specific practices within a larger context'* (Larsen, J., 2016, p. 878).

Practices can have meanings that can be both positive or/and negative depending on the person viewing or using that practice. For example, cycling is portrayed as dangerous and a source of stigmatisation, while at the same time, cycling is seen as a source of freedom and well-being. Cycling is therefore a contradictory and contested practice that people associate with different meanings (Ibid, p. 878).

It truly depends on the context, as in some areas mobility choices might compete and the opinion towards each other is rather hostile. For example, the relationship between cyclists and car drivers in Australia is known to be contested, so the meaning of driving a car and cycling depends on the person's own practice and opinion (Ibid, p. 883).

Cycling is getting '*normalised*' by making '*alliances*' with other commuters and their organisations. Rather than being in competition with public transportation, the two need to be

'*bundled*' (Ibid, p. 883).

Copenhagen is well-known as a bike friendly city where cycling is said to be '*civil*' here, and not '*hostile*' as in car-based cities where cycling is contested and cyclists and drivers fight with each other. Cycling is portrayed as ideal for short trips but less so on longer distances where cycling cannot compete with the speed and comfort of motorised commuting (Ibid, p. 883). In Copenhagen, the meaning of choosing a bike or motorised commuting is not a competition, as each transport method suits different needs.

Three intervention framings

The first section introduces the three elements a social practice includes, and how they differentiate from each other. Furthermore, how to apply a practice theory is widely discussed, especially within mobility. Spurling and McMeekin have therefore focused on the use of three intervention framings to distinguish between types and scales of different mobility practices. These intervention framings '*zoom in*' to look at practice elements (recrafting practices), and '*zoom out*' to look at the interlocking of multiple practices (substituting practices and changing). This last intervention framing, about how practices interlock with one another to create demand for mobility, forms the most valuable aspect of recent practice thinking (Spurling, N. & McMeekin, A., 2015, p. 79).

Recrafting resource-intensive practices

Recrafting practices focus on reducing the resource intensity of existing practices by changing the elements of which they are composed. Each time a practice is performed, the three elements are combined, and it is not possible to perform a practice unless all the requisite elements are available.

When analysing a social practice you have to understand each element and its importance for the practice to recraft its resource usage. For example, to reduce the amount of driving, policymakers can make these elements the targets of interventions. For materials, industry standards for products (those that address material elements), the use of new technologies (for example, ultra-low emission vehicles), or making the infrastructure less car friendly with fewer parking spots, and so on, emerge as a few examples, as do forms of training (for example, the driving test or focus on gasoline management) to increase driver safety. An alternative option could be creating social marketing and information campaigns

(that commonly address the meanings associated with social practices) such as don't drive your kids to school to minimise the cars around school districts.

The focal point is to reduce the resources and environmental impact of a social practice, and not necessarily make them change their practice (Spurling, N. & McMeekin, A., 2015, p. 79).

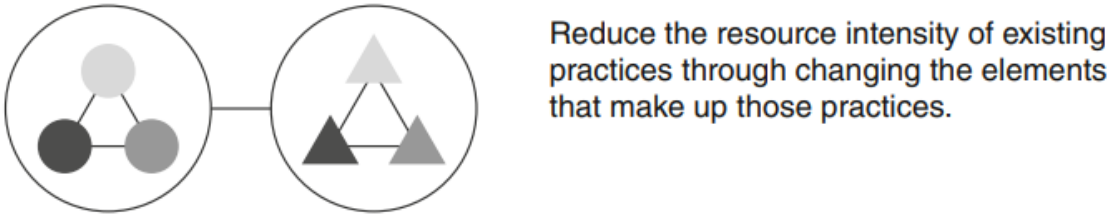


Figure 9 - Recrafting practices (Spurling, N. & McMeekin, A., 2015)

Substituting practices

Substituting practices suggest that policy might focus on discouraging current unsustainable practices and replacing them with existing or new alternatives.

This framing focuses on potentially substitutable practices, from a resource-intensive practice to a more sustainable counterpart, and intercedes in both practices at the same time, to change the balance of competition between them. This is achieved by recrafting each of the practices to stimulate fewer performances of the less sustainable practice, which means replacing them with performances of the more sustainable alternative.

As for transport policies, the focus is not on minimising the current amount of movement that takes place, but seek to change the mode by which this movement is achieved.

Policies might intervene to shift the balance of competition between more and less sustainable practices, changing these (rather than focusing on individual behaviour) such that more or fewer performances occur. Put simply, policy might recraft practices, but with the goal of substituting one for another, rather than reducing their resource intensity (Spurling, N. & McMeekin, A., 2015, p. 79).

Figure 10 - Substituting practices (Spurling, N. & McMeekin, A., 2015)

Changing how practices interlock

The three elements connect to form social practices which creates different patterns in our behaviour. These patterns are known as '*complexes*' and '*bundles*'. As with practices, these practice bundles are (re)produced via their regular performance in everyday life. The third intervention framing focuses on this '*bundling*', reframing the challenge of sustainability as one of changing how practices interlock.

Rather than viewing current practices, or amounts of mobility, as above with '*recrafting*' and '*substituting*' practices, here it is speculated how policymakers might intervene in the wider system of practices that produce the need for mobility.

The focus is to look for the possibility of intervening in the practices that are currently dependent on some form of mobility in order to change the level, scale and character of current need or demand. In other words, rather than focusing on mobility practices in their own right, the focus shifts to recrafting those interlocking practices, such as how households are provisioned, where children go to school, and how work and leisure are organised.

Instead of changing the way parents transport their children to school, then the idea is to analyse what different practices are used, and maybe look into how school districts and housing should be structured to create more sustainable options to get children to school (Spurling, N. & McMeekin, A., 2015, p. 80).

Philosophy of Science

The current section will introduce the project's philosophical foundation, which will appear as a central focal point in connection with the methodological reflections, analysis, and the validity of the study's conclusions.

The section will be structured according to the following stages: 1) *the thesis´ cognitive interest,* 2) *the main essence of hermeneutics* and 3) *the hermeneutically inspired analysis approach*.

The thesis aims to uncover how mobility practices impact the life of the residents of Aalborg, and understand their perception of concepts as sustainable transportation. In this respect, we have a cognitive interest in investigating what sustainable mobility means for the common Aalborg resident and, to a degree, try to understand how they move or, at least, if they consider applying more sustainable transport methods in their practices. Therefore, the direct focus is not on solving all mobility problems in Aalborg, but rather on seeking an understanding of the meaning our actors attach to transporting themselves in their respective contexts (Laverty, S., 2003, p. 30).

In this context, hermeneutics captures the essence of our cognitive interest, as its focus on uncovering meaning through interpretation is a relevant conceptual apparatus (Fuglsang et al., 2018, p. 291).

Furthermore, this approach requires engaging actively in the subject field, as the interpretation process presupposes a productive involvement of our horizon of understanding (Ibid, pp. 301-302). In a project context, the theoretical conceptual apparatus and the existing literature will primarily act as a starting point for our horizon of understanding (Ibid, p. 320). Within hermeneutics, prejudices and preconceptions are brought into the cognition process, however, with the caveat that our horizon of understanding is nuanced/revised in line with our understanding of the actors' respective horizons of meaning (Fuglsang et al., 2018, p. 304).

In what follows, an idealised interpretation of hermeneutics will appear, which does not go into depth with the various nuances within hermeneutics, but rather relates to the basic ontological, epistemological and methodological implications of an hermeneutic orientation.

In this context, the terms '*horizon of understanding*', '*prejudice*', '*subjective meaning*', '*fusion of horizons*' and '*the hermeneutic spiral*' will be included, as they have a central function in connection with the process of understanding.

Ontology

What is real? Ontology: *"The doctrine of being; that which, within a scientific approach, is perceived as the subject field, the being, and the way this being exists."* (Fuglsang et al., 2018, p. 32).

The project's ontological standpoint is characterised by the fact that: '*human reality is a notion in our consciousness*' (Ingemann, J., 2013, p. 160), which implies that we must seek an understanding of the actors' horizons of meaning (Ibid, p. 115). In this sense, hermeneutics is grounded in an idealism which assumes that the object field functions depending on the researcher, since we deal with an object field which is made up of reflexive subjects (Ibid, p. 37).

Epistemology

What is true? Epistemology: *"The basis of knowledge. In a scientific approach the basic axiom of how the subject field can be studied."* And:

"For example, through the compilation and testing of empirical statements, through the development of an interpretive science or through concept development combined with various forms of empirical material." (Fuglsang et al., 2018, p. 32).

The epistemological starting point of hermeneutics requires that reality be understood indirectly, which means that the truth is approached incrementally through our understanding of the horizons of meanings of the respective actors (Ingemann, J., 2013, pp. 115-116). The German philosopher, Hans-Georg Gadamer, characterises this cognitive process as a '*fusion of horizons*' where our horizon of understanding merges with the actor's horizon of meaning, and we are thus able to grasp and understand the subjective meaning that the actors attach to their mobility practices (Fuglsang et al., 2018, p. 303).

He points out that our horizon of understanding is made up of prejudices and preconceptions, and that the '*fusion of horizons*' should not be understood as an expression that we agree with the actors in their interpretation of reality or, for that matter, take over their respective horizons of understanding (Ibid, p. 303). In the meeting with the object field, our

prejudices are reassessed, and the dialogue with the involved actors helps to expand our horizon of understanding. In this context, prejudice must be understood as a preconceived opinion about reality, while preconception refers to an understanding that precedes the current understanding of the object (Ibid, p. 301).

The methodological (how we generate knowledge about the object) starting point relates to a gradual cognitive process, where the interaction between part and whole has a significant function. In the dialogue with our object, which, in the case in question, concerns the actors, the interpreter (the researcher) will seek an understanding of the actors' horizons of meaning (Fuglsang et al., 2018, p. 300). Since any movement is conditioned by the acquisition of further insight, the previous '*hermeneutic circle*' has been substituted with the '*hermeneutic spiral*', as the interpreter does not return to the same starting point (Ingemann, J., 2013, p. 110).

Gadamer attributes vital importance to language in the cognitive process, and points out that the dialogue with the object field leads to an expansion of the horizon of understanding (Laverty, S., 2003, p. 25). In this sense, the interview method would appear to be an appropriate approach in connection with the collection of empirical evidence, since the process of interpretation in the '*hermeneutic spiral*' results precisely in the acquisition of additional insights, so that the interpreter's horizon of understanding is expanded during the dialogue (Ibid, p. 24 -25; Fuglsang et al., 2018, p. 309).

The interview method is joined by a survey, as statistical knowledge of a greater population will greatly expand our understanding of the Aalborg residents.

We believe that an abductive approach, in connection with our analysis, seems appropriate, as we involve our theoretical apparatus as well as existing literature in relation to uncovering the meaning our actors are attaching sustainable mobility to their transportation practices (Fuglsang et al., 2018, p. 33). However, we are conscious of revising and enhancing our horizon of understanding during the interaction with the subject field's actors. These new insights from the empirical review will appear in the section 'the approach of the project'.

To begin with, the interpretation process continues until: "*...a moment in time where one has reached sensible meanings of the experience, free from inner contradictions*" (Laverty, S., 2003, p. 30).

In the final stage, there will be a brief introduction to the central characteristics of the hermeneutic analysis, while the specific application of the analysis in question is first elaborated at the start of it.

The hermeneutic analysis approach intends to seek a deeper understanding of:

'*...the actions of social actors as meaningful phenomena, to understand which meanings the social actors attach to certain forms of action and social contexts, or how meaning and significance determine the actors' practice*' (Fuglsang et al., 2018, p. 317).

In this regard, it seems extremely important that we are aware of which theories (seen in the 'Theoretical approach' and 'Literature review') we bring into our limited subject field, as these constitute our horizon of understanding.

Furthermore, a hermeneutically inspired analysis has no intention of providing causal explanations, but rather of generating insights about the context-dependent and meaning- and understanding-oriented relationships (Ibid, p. 318). In relation to the formulation of the problem in question, we must, through the ability to feel empathy, familiarise ourselves with the context in which our actors find themselves, in order to be able to seek an understanding of their respective opinions attributed to everyday mobility.

Within the hermeneutically inspired analysis: "*understanding occurs through a fusion of horizons, which is a dialectic between the pre-understandings of the research process, the interpretive framework and the sources of information*" (Laverty, S., 2003, p. 30), which requires that we interpret the actors' definitions of meaning based on their respective contexts. In this respect, '*the interpretive framework*' will take its point of departure from the '*hermeneutic spiral*', since the understanding of the actors' horizons of meaning, as is well known, requires the inclusion of our own horizon of understanding (Ibid, p. 30).

In the introductory meta-text to the analysis, it will be laid out how the analysis can be appropriately structured according to the respective contexts of the actors included, in order to better seek a deeper understanding of the meaning they attach to their transportation and sustainability practices. As it appeared earlier, we operate with an approximate truth, which can be characterised by coherence (Ingemann, J., 2013, p. 116). On this occasion, it should be included that the criterion of truth indicates whether a coincidence can be uncovered between the interpreter's horizon of understanding and the actors' respective horizons of meaning, but that universal and definitive insights are not acquired in the process (Ibid, p. 116). The purpose of the semi-structured interview guide is both to incorporate our theoretical

assumptions, but also to be more responsive to the actors' respective horizons of meaning. We are aware of coincidences by continuously supplementing the main questions with questions related to whether we have understood the interviewee correctly.

As it appeared at the outset, these philosophical insights will be continually included in a dynamic interaction with the other sections of the thesis, as they contribute to our critical reflections on how the study in question can be appropriately designed in relation to our cognitive interest. In this respect, the above insights are far from exhaustive, and several of the aspects (including the '*hermeneutic spiral*', '*horizon of understanding*', '*subjective meaning*') are deepened during the project.

Methodological Approach

The Methodological Approach section will deal with different aspects of the methodology followed to attempt to answer the problem formulation to its biggest possible extent. This part of the research aims to inform the readers on topics such as the relevance of the project, how it was designed and the quality criteria, survey, interviews and ethical considerations taken while researching this topic. Moreover, the scientific approach chosen will also be detailed.

Relevance

The different transportation methods and systems are, undoubtedly, in a period of great development. New innovations (such as the ones mentioned above in other sections of this research) continuously bring new options and changes to transportation as a whole around the globe. In the country of Denmark, where this research focuses its attention, it is estimated that 3,126,221 inhabitants (or, approximately, 54% of the country) own at least one car (Statistik Denmark, 2021, ‘Familiernes bilkøb’, translated by author), 2,5 million own a public transportation card (Rejsekort, 2023, ‘Om Rejsekort’, translated by author) and around 70% of Danes own a bicycle (National Videnscenter for Cykelfremme, 2022, ‘Cykeltrafik i Danmark’, translated by author). Transportation involves much more than driving to work,

taking a bus to school or cycling to the supermarket, it actually involves the very nature of how people move and the thought processes (practices) behind their transportation choices. While transportation challenges (and its potential solutions) are a common occurrence in different places around the globe, the city of Aalborg, in focus in this investigation, presents a particular case compared to others in the sense that, out of its total number of inhabitants - 143,239 in 2022- (Aalborg Kommune, 2022), a bit less than half of them own a private vehicle. While this number might not be as large as other cities, it still becomes a rather interesting case in the sense that, as presented and detailed above, the city of Aalborg features a well-developed public transportation and bicycle infrastructure. As seen in other sections of the project, bus routes have good coverage of the city, while inhabitants are able to bike to any of the suburbs in a maximum of 35 minutes from the centre of the city. In such a scenario, the question around why the people from Aalborg choose to transport themselves the way they do therefore grounds this thesis.

Expressed in general terms, this research gathers relevance due to the very nature of the observed field. As seen in other sections of the research, the decades-long development and usage of certain transportation methods have had a clear impact on climate change in the form of CO2 emissions which cause harm to the Ozone layer (Ritchie, H. 2020. 'Cars, planes, trains: where do CO2 emissions from transport come from?'). Henceforth, in more recent times, new technologies have been researched and perfected so as to help in the evolution of different sets of transportation into a more sustainable and environmentally friendly option (Transportministeriet, 2008, p. 1, translated by author).

While progress has been made (again, seen in the aforementioned sections of this project), the idea of a fully sustainable transportation system is still an unfulfilled goal, leaving, therefore, room for scientific exploration from different points of departure. Sustainable transportation itself can be divided into several subcategories (Ritchie, H. 2020. 'Cars, planes, trains: where do CO2 emissions from transport come from?'), this means there is space for improval not only in the area of car traffic but also in many others as well.

In terms of this particular research, this investigation gathers relevance not only in the field of study but also in the area or object of study. While the amount of research on transportation has increased in recent years, not many investigations focus on the city of Aalborg (and on Denmark) itself. Besides having an affinity with the city, the case of Aalborg gathers importance in the fact that it is considered a small-sized city according to population numbers but, at the same time, despite having a developed public transportation system and

bicycle infrastructure, the car and driving still play a central role in everyday life. As stated before, it is estimated that, in Aalborg, there is one car in every two-three inhabitants (Statistik Denmark, 2021, 'Familiernes bilkøb', translated by author), and the ownership of cars has risen steadily since 2006 (Ibid), hence creating a solid background for the relevance of this research and the corresponding problem formulation.

Case design

The thesis' problem formulation centres around a single case study, which involves an intense study of a delimited subject field. This case aims to uncover how mobility practices impact the life of the residents of Aalborg, and also understand their perception on how they transport themselves and how they regard sustainable transportation, therefore closely focusing around the inhabitants of Aalborg.

The project is attributed to a single case study, and will have elements of an idiographic approach, as the project attempts to create knowledge that describes topics that are unique and irreplaceable (Bryman, A., 2014, p. 61). The project is primarily based on the typical case design, also known as an exemplifying case, where the objective is to capture the circumstances and conditions of an everyday or commonplace situation. In this case, Aalborg provides a suitable context for understanding and maybe improving sustainable transportation (Ibid, p. 62).

Furthermore, according to the hermeneutic approach, the interest lies not in generalising the deduced insights to other contexts, as hermeneutics is grounded in an idealism which assumes that the object field functions depending on the researcher, and therefore will present difficulties when generalising (Ingemann, J., 2013, p 37).

Still, it can be argued the case study has some characteristics of a critical case, more specifically a "most likely" case, since the Danish government prioritises and, therefore, seeks to invest in sustainable transport methods (Transportministeriet, 2012, p. 8, translated by author), and, in a similar fashion, Aalborg describes itself as a city that wants to be a more eco-friendly city (Aalborg Kommune Plan, 2013, 'Bæredygtighedprofil', translated by author).

Furthermore, the climate barometer clearly shows that global climate change is strongly present in the minds of the Danes. 88% answer that they consider climate change to be a "very serious" or "somewhat serious" problem, and there is broad agreement that it is

necessary to change lifestyles in order to deal with the climate crisis (Madsen, M & Fertin, R., 2022, p. 7). 84% of Danes state that they mostly or completely agree that Denmark should prioritise cycling, and that, amongst the more popular reasons to support this change, it was stated that: cycling is good for public health and reduces public health expenditure (87%), good for the climate (87%) and reduces congestion (66%) (Cykelistforbund, 2019, 'Danskerne: Vi skal prioritere cyklerne af hensyn til klimaet', translated by author).

With a government and municipality that wants to prioritise more sustainable mobility and a population that favours biking and seeks to, in general, change their lifestyle, then it could be suggested that Aalborg has some good conditions, both in infrastructure and resident behaviour to achieve this change of practices.

Taking all of this into account, it is likely the residents of Aalborg City want to transport themselves sustainably, and if Aalborg has multiple difficulties encouraging its residents towards sustainable mobility, then same size cities might have the same difficulties. Of course, it is important to remember each city has its own context and cultural understanding of transportation, so direct generalisation is not possible, but the transferability can be rather broad.

The project also applies a theory-interpreting case study as the thesis is based on the theory of social practices in a mobility context with the intent of applying them to gather new empirical knowledge. The theories will be used as an explanatory framework to structure our empirical data and discuss the limits of the subject field. (Antoft, R & Salomonsen, H., 2007, p. 39).

The Approach of the Project

The project's scientific approach primarily applies abduction with a sense of induction. Based on our problem formulation we want to uncover the mobility practices and the opinion of the inhabitants of Aalborg regarding the city's transportation structure and approach towards sustainability.

In the light of hermeneutics, we operate with an interplay between our preconceptions including the theory of social practices, literature review and the empirical data from the interviewees and surveys, which gives a holistic view of the interviewee's society and horizon of understanding. This is one of the cornerstones of abduction, which focuses on describing and understanding the meaning and perspectives of the participants' worldview (Bryman, A.,

2016, p. 394).

Thus, we can abductively agree with the explanations related to the actors' determination of meaning, considering their respective contexts. In this respect, it is taken into account that the inhabitants of Aalborg have different mobility needs and views, making it important to understand each respective context.

The abductive aspect provides further new explanations of the actors' determination of meaning, which are not necessarily grounded in theory.

Furthermore, abductive research strategy differs from induction and deduction in that it is not primarily aimed at developing or testing general laws, but instead focuses on the context that triggered the researcher's wonder and not following a series of steps in a predetermined order (Atumidt.dk, 'Deduktion, induktion og abduktion - en note', translated by author).

The project does not seek to produce a new theory about sustainable mobility practices amongst Aalborg inhabitants or try to test the theory or hypotheses on practices. On the contrary, the idea is to understand the subjective meaning the inhabitants of Aalborg attach transportation to their everyday life.

Abduction is a broad approach, with parts of both induction and deduction, therefore some areas of the project will contain aspects of both induction and deduction, for example, the interview guide contains parts of practice theory and literature review, but also is focused around our own observations and preconceptions.

In the full picture, we argue abduction is the primary approach, as the main goal is a holistic understanding of the interviewees and their mobility practices.

Quality Criteria

The purpose of the quality criteria is to ensure consistency between what we want to investigate and what we are actually investigating, and that other groups and researchers can replicate the same research at a future time.

There are different quality criterias for different approaches, wherein quantitative research is mostly known for the terms of "Validity" and "Reliability". Validity, reliability and empirical generalisability are usually not directly applied to qualitative research because of the different frameworks, sampling approaches, size of sample and goals of qualitative research (Bryman, A., 2016, p. 41).

Qualitative research is focusing on different concepts, such as credibility, rigour, reflexivity and transferability (Kitto, S., Chesters, J. & Grbich, C., 2008, p. 243).

Firstly, clarity of the research question reflected in the aims of the study is essential for evaluating results and their interpretation. Therefore, it's important to be consistent with the problem formulation and what is being examined. To ensure this, the interviews and thematic analysis are based directly on the problem formulation, theory, literature review and gathered data (Ibid, p. 244).

This thesis applies empirical evidence from both quantitative and qualitative sources. The thesis' quantitative part of the analysis will be based on the collected empirical data from a specifically created survey, which is aimed towards residents of Aalborg. This intends to provide information about practices and perspectives of a broader array of people that interviews simply cannot provide. The survey will not be the primary method but, instead, contribute to an understanding of a larger population pool.

The reliability of a survey depends on whether the results are repeatable and correct in the sense that they measure what they claim to measure (Bryman, A., 2016, p. 41).

The survey is built rather straightforward, with questions focusing exclusively on the respondent's transport practices and their individual opinions on transportation systems in Aalborg, therefore, in other cities or in a future Aalborg, the survey could be still relevant and will not need to be changed drastically. The full survey can be found as Appendix 25-26, both in Danish and English.

In practical terms, the survey aims to measure the resident's mobility practices, behaviours and opinions on transportation. It is argued that the survey measures what it claims it does. The survey has been shared on social media, primarily on different Facebook groups related to the city of Aalborg. These groups are available to any other researcher that could wish to replicate the survey at another given time.

Validity is the integrity of the results – does the survey measure what it is supposed to measure? Because of the simplicity of the created survey, it can be said that, for the purpose of this research, the questionnaire measures what it is intended to measure. Furthermore, as transport is not a contested topic, it is believed that biases were minuscule (Ibid, p. 41).

The survey was active from the start of March 2023 to the start of May 2023 and, in that period, gathered approximately 261 responses out of a total potential population of approximately 140.000 inhabitants.

These numbers achieve a confidence interval (also called margin of error) of 6, which means a confidence interval of 6. Moreover, since 51% of the respondents affirm that they

use the bus at least once a month, we can be "sure" that the entire relevant population between 45% (51%-6) and 57% (51%+6) would use the bus (Calculator.net, 2023, ‘Sample Size Calculator’).

Commonly, for applying surveys, a confidence interval of 5 is used, to be as statistically valid as possible, and, as this survey is close to that number, then it can be argued that the questionnaire can show a statistically valid view of the mobility practices of residents of Aalborg and their opinion on transportation in the city (BUSPH Learning Modules, 2023, p. 3).

Qualitative interviews are the main method used to collect empirical knowledge, which focuses on a different quality criteria than the quantitative ones.

Rigour concerns the transparency or “explicitness” of the description of the exact way the research was conducted. To strengthen our rigour, there will be a focus on transparency in the description of how the research was conducted. Transparency in the research process will make it possible for researchers to put the results to further test.

To do this, firstly, all the interviewees are introduced and an explanation on why they are connected to the problem formulation and the theory is given, therefore enabling other researchers to understand the thought process conducted in the research and, optionally, find relatively alike interviewees to repeat the analysis.

We believe there is an importance in achieving the biggest possible transparency regarding the preparation of the interview guide, and the subsequent processing of interview data (Ibid, p. 244).

Interview guides are attached, in full, in appendices 22 to 24. These include all the insights into the questions asked and their individual purpose.

Furthermore, human subjects are sentient beings who are trying to understand the situation they are in. Whether in the laboratory or the real world, humans have an impulse to adapt the demanded characteristics of the experimental situation, which Kihlstrom defined as “*the totality of cues which convey an experimental hypothesis to the subject*”. The subjects’ understanding of the experiment might differ from that intended by the experimenter, in which case, a laboratory experiment would lack ecological validity (Kihlstrom, J., 2021, p. 466).

Therefore, to uphold the project's ecological validity, the interviewee has to be in their natural environment without outside interference, so the interviewee’s statements are

consistent with their actual reality (Ibid).

Due to the fact that the project uses interviews as a source of empirical data, the ecological validity is slightly weakened, as the researchers, in some shape or form, will influence the interviewees so they are not completely in their natural environment.

Nevertheless, to minimise our impact on their environment, the interviewee will have complete control over how and when the interview will take place. Therefore, some interviews will be made physically and some virtually, depending on what the interviewee wishes.

At the same time, reflexivity correlates slightly with ecological validity as it is where researchers openly acknowledge and address the influence that the relationship amongst them, the research topic and the subjects may have had on the final results. It is acknowledged that, through hermeneutics, researchers are a part of the subject field (Kitto, S., Chesters, J., & Grbich, C., 2008, pp. 245-46).

Lastly, transferability and generalisability are two concepts not completely alike. In this research, findings become difficult to generalise, as it cannot be confirmed that the same situation occurs in other cities. Transferability, on the other hand, refers to making a critical evaluation of the findings in other similar contexts (Ibid, pp. 245-246), but, as this research has characteristics of a "most likely" case type, it can be possible to generalise some of the findings.

Survey

One of the methodologies applied to attempt to answer the problem formulation is the use of surveys. This approach was favoured over others as it allows the researchers to effectively cover a large population sample in order to generate the largest overview possible regarding the inhabitants of Aalborg's own mobility practices. The use of surveys itself becomes relevant for this case in the sense that having "*information from a sample of individuals"* can enable *"to make some inference about the wider populatio*n" (Kelley et al., 2003, p. 261). Another important factor is the notion that "*there is no attempt to control conditions or manipulate variables,* [as] *surveys do not allocate participants into groups or vary the treatment they receive*" (Ibid). In this particular case, the survey aims to create a space in which Aalborg inhabitants can briefly express, both in quantitative and qualitative

terms, how they perceive transportation in Aalborg and how they themselves move around the city.

To attempt to have as many responses as possible, therefore getting a larger perspective on the population, two identical surveys were created. One of them was done in English and the other one in Danish, so respondents have the option to select which of the two they feel the most comfortable with. Since the two surveys are identical in nature, the responses from both will be combined in the general statistics, and, in the case of the Danish survey, translated when and if needed to depict a specific aspect of transportation in Aalborg, for example, a qualitative opinion on a certain element of it. Both surveys were created and shared utilising Google Forms, a software dedicated exclusively to the creation of questionnaires. Google Forms also enables sharing of the surveys easily, and its high level of customisation permits the creation of the best possible tailored survey for this particular research. Both surveys can be found in appendices 25 and 26 of the research, and their corresponding answers in appendices 27 and 28.

The surveys themselves are divided into different sections, approximately 11, including general demographics, general transportation habits, usage of car/bike/public transportation and a closing section. This division was made in order to make it easier for the respondent to answer according to their own habits and behaviours. Moreover, not all sections are compulsory, so, for example, if the respondent does not own a bike, or car, or does not utilise public transportation, that section is automatically skipped altogether. The survey is, therefore, tailored, in a sort of way, to each respondent's own practices, eliminating unnecessary answers.

Figure 11 provides a visual example of the survey structure with its corresponding sections and how the general layout is. Again, depending on each respondent's individual practices, sections might be skipped, therefore, the survey can appear different depending on each respondent. The arrow details the general flow of the survey and the multiple possible "paths" that the survey can take. Once again, the structure is the same for the survey done in Danish and the survey done in English, the only change lies in the language of the questions and answers.

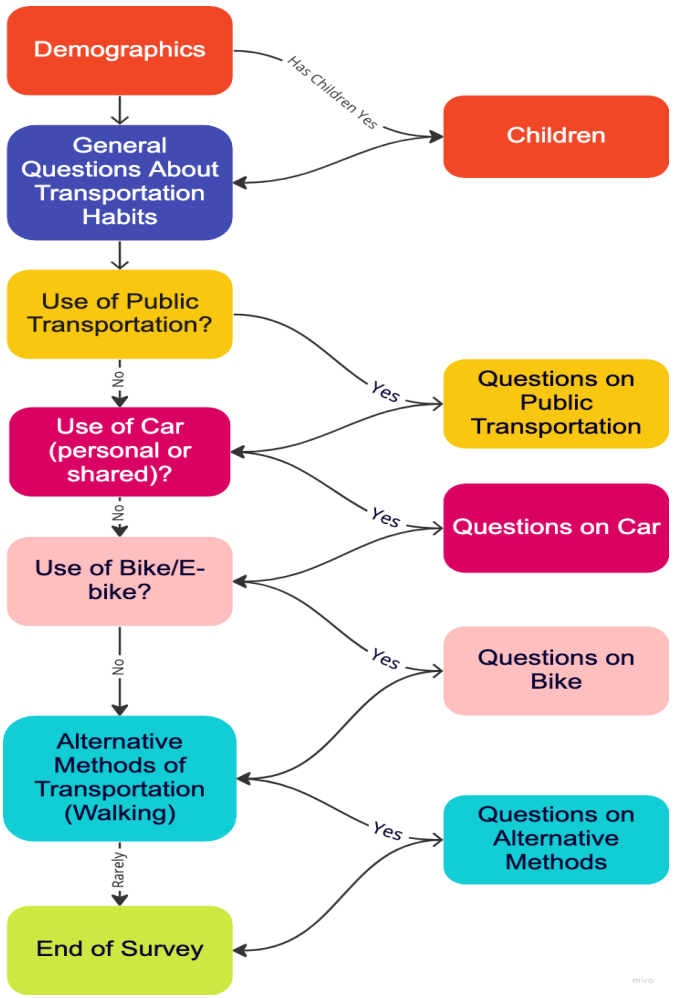


Figure 11 - Structure of the survey

Going into detail in the different sections, the survey opens with a few demographic questions to have a general idea of the background of the respondent, including age group, gender identification, postcode and highest completed educational level. All the questions in this section (with exception of the postcode) are multiple choice questions.

The next section of the survey is the first one that is dependent on previous answers. Respondents are asked if they have or do not have any children living at home. Should the answer be "yes", the respondent has to answer three questions regarding the mobility dependency of the children (if they get driven to school/leisure activities and how far).

The questionnaire then continues with its largest section: the general transportation habits questions. This part of the survey attempts to create a general overview of the respondents general transportation behaviours, including: how they move (meaning transportation methods, such as car, bike, walk, bus, etc.), how often they transport themselves and where to, and how far away they transport themselves. The second part of

this section presents respondents with a number of statements regarding transportation in the city of Aalborg. Questions here deal with various general comments/opinions about different transportation methods, adapted by the authors to fit Aalborg. To answer these questions, a scale system is used, ranging from “Strongly Disagree” and “Disagree” to “Agree” and “Strongly Agree”. Alternatively, the option “Do not know” can also be selected. There was a deliberate decision to leave out the option “Neither Agree nor Disagree”, as it becomes much more relevant to the nature of this research if respondents either take a stance regarding the statements they are presented with or, in a case where a position cannot be determined, simply answer they do not know about that particular comment.

The next three sections of the survey, the same as the first one, vary and directly depend on the respondents’ own transportation habits. They are focused around the use of the car, the bike and the public transportation system. The three sections include similar types of questions (scale grading and multiple choice), but also feature open answered questions to also gather qualitative responses. Examples of these open-ended questions include: “What, in your opinion, should be done to improve buses in Aalborg?”, “Why do you not own a car?”, “What are your reasons for owning a car?” or “Why do you bike?”.

Lastly, a single closing question is presented: “Do you consider yourself environmentally conscious?”. Respondents can choose any value from 1 (Not at all) to 10 (Very much so) to answer. There is also the option to leave some contact information, in the form of an email, to enable the researchers to reach out to those survey respondents that are interested in expanding on their answers in a one-on-one interview.

Demographics

After maintaining the surveys open from the start of March to the start of May, a total of 261 responses were collected combining the English and the Danish version of them. Going into detail, 42 responses were recorded in the English version while 219 responses were found in the Danish version.

When combining the gathered data from both surveys, it can be seen that about 25% of all respondents are between 26-35 years old, while 19% are between 22-25 years old. Other significant age groups include 56-65 years old (15,7%), 36-45 years old (14,6%) and 46-55 years old (11,5%). Smaller age groups, representing less than 6% of the total respondents include 66-75 years old (5,7%), 19-21 years old (5%), 75 years old or older

(2,7%), and, to conclude, 16-18 years old (1%) and 0-15 years old (0,8%). Important to note is that, while the given percentages add up to 101% instead of 100%, this is due the statistics consensus of rounding up to one decimal place or truncating down in certain cases.

Focusing on gender, 54% of the survey respondents identify as female, while 44% identify as males. 1% identified as non-binary, while less than 1% preferred not to answer.

When it comes to residence, in general terms, 56% of respondents state they live in the centre of Aalborg or the closest neighbourhoods. 31,8% live in Aalborg Øst, while the rest of respondents are evenly distributed amongst the surrounding areas: 2,7% have residence in Aalborg SV, 2,3% in Nørresundby, 1,2% in Aalborg SØ and 1,1% in Svenstrup. The remaining 5% is divided in other, more peripheral areas away from the city centre.

In terms of highest acquired education, 31% of respondents have acquired at least a bachelor's degree, while 26,1% have a master's degree or more. Meanwhile, 22,6% have completed a vocational education, and 20% have obtained (or are in the process of obtaining) a maximum of a high school education degree.

Lastly, 27% of survey respondents have kids living at home, while the remaining 73% do not, or they do not live at home.

Interview

The objective of the thesis relies on uncovering the mobility practices and the opinion of the inhabitants of Aalborg regarding the city's transportation structure.

Therefore, interviews contribute as a supplement to surveys to gain in-depth knowledge regarding normal mobility practices (which surveys themselves cannot offer). Combining them will therefore expand the total empirical knowledge.

The focus will be on the individual interviewees, thus, it will be difficult to generalise since each interviewee has their own meaning and experiences, but as most interviewees share similar life situations (for example, they are all employed and not studying), some strong similarities and understandings might occur.

The selection of interviewees is guided by both the problem formulation and the empirical material, as the problem formulation focuses broadly on the general Aalborg population, but the empirical studies and the expert interviews focus more on families and people that have finished their education.

Two expert interviews were conducted in which both researchers were present. This

contributes to the general knowledge about Aalborg city mobility plans and structures. On the other hand, the individual interviews with selected Aalborg inhabitants have been done separately as they were smaller in length and content.

The first expert interview was a dual one which included two experts from both Aalborg Municipality -from the Public Transport area- and Nordjyllands Trafikselskab, one each. The other interview was done with an expert from Aalborg municipality from the Mobility Planning, Mobility & Infrastructure department.

In the case of Aalborg residents, the ideal interview subjects are parents with children living at home. This was established based on what the expert interviews mentioned related to the usage of public transportation, which is that, as soon as you are "*finished with an education*" and/or "*form a family*", then your usage of public transportation drastically deteriorates (Appendix 20, p. 5, translated by author). This pattern is not as notorious when looking at bikes, but, after surpassing an age gap of 30 years or more, the usage also falls (National Videnscenter for Cykelfremme, 2022). Therefore, people that are finished with their education are the primary interview targets, where families emerge as especially interesting to interview.

Furthermore, the interviewee's nationality was considered not significant, as it also becomes intriguing to learn if there are any different mobility practices between residents born in Denmark and those born abroad. Therefore, both Danes and Aalborg residents from other countries are being interviewed. Some interviews were directly translated into English, while others were transcribed in their respective language (Danish or English), with the help of a Danish software called "My Good Tape", which assists in the transcription process while also complying with the GDPR and privacy rules established. When quoting the interviews in the text, they will be either included in English or translated into English (for those interviews done in Danish).

Overview of Interviewees

In general, there is some disagreement about how many interviewees a qualitative project should have amongst researchers in the field. If the number is too small, it can be difficult to clearly test a hypothesis, while, on the other hand, it can be a problem to have too many interviewees as there may be a risk of not being able to get in-depth within the field. Ideally, researchers should interview enough people to hit a saturation point, in which new

knowledge is not gained by interviewing anymore. We have chosen to interview 19 interviewees as we believe it was an appropriate amount to reach the saturation point, as repeated interviews contributed to less new information (Ingemann et al., 2018, p. 170). Moreover, the chosen methodology suggests, as an estimated, to conduct between 10-20 interviews in qualitative research of this magnitude (Braun, V. and Clarke, V., 2023, 'FAQs').

"One-on-one" interviews have been chosen to attempt to get the interviewee's full attention (Ingemann et al., 2018, p.170).

Covid-19 has also had an impact on the view of the interviews: where before physical interviews were primarily used, the appearance of social distancing has now made Danes and internationals alike rather accustomed to online alternatives. Therefore, the interviews have been done both online and physically to be as convenient for the interviewees as possible. In the case of online interviews, several softwares were utilised to conduct the interview and record, including Microsoft Teams, Zoom and Facebook Messenger. There are advantages and disadvantages to both methods. In computer-assisted interviews, the advantage is that the interviewer and the interviewee will be able to see and talk to each other in a comfortable form, but do lack the physical presence which can also generate an important meaning. On the other hand, interviews can be done over long distances or be convenient (Ibid) thanks to computer assistance.

In addition, the interviewees might showcase a degree of bias, as the subject of environmentalism and sustainable mobility is increasingly becoming more important, and people against environmentalism might not say the whole truth, as it can be seen as a taboo. Therefore, broad questions will be applied, so the interviewees do not feel pressured to give a more biassed answer for fear of being negatively judged.

Method for Gathering Interviewees

The two expert interviews were directly contacted through official channels, where the contact information was found on NT's website and Aalborg municipality's website, respectively.

Contacting Aalborg residents was done through multiple channels and methods. Some of the interviews were organised through the researcher's own contacts. This method to gather interviewees has its positive and negative outcomes, where the positive one lies on

accessibility. The researchers have this way, relative ease to gain interviewees, as long as these fit the pre-established criteria. The negative aspect could be that the interviewees might have some predetermined biases towards the researchers, which can get the interviewees to say something they would normally not, or maybe even withhold information they do not want to share.

The second method was contacting Aalborg kindergartens, to help send information out to parents that might be interested in scheduling an interview. This was done because it is believed that, based on the aforementioned established characteristics, that almost any parent could fit inside the perfect interviewee profile.

The last method of gathering interviews is directly connected to the conducted surveys. Respondents had the option to leave their contact information voluntarily should they wish to be interviewed to speak more about their mobility practices and opinions. Some of the interviews were therefore scheduled based on the survey respondents that were willing to be contacted.

Introduction of the Interviewees

To gain better knowledge of public transportation in Aalborg, a dual interview with Christoffer Holland and Morten Jensen has been conducted. This was the first of the two expert interviews.

Christoffer Holland is a civil engineer in road and traffic planning who graduated from Aalborg University. He has worked for the last five years at Nordjyllands Trafikselskab (NT) which operates all public transportation in Aalborg city. Before that, he worked for several years at COWI, a consulting engineering company, where he specialised in public transportation.

Morten Jensen is also a civil engineer in road and traffic planning, also graduated from Aalborg University. He has worked for the last 20 years at Aalborg municipality within the public transport department.

Through Jensen's time at Aalborg municipality, he has cooperated more or less constantly with Holland, both when he was in COWI and NT. This constant close collaboration, and their knowledge about public transportation in Aalborg will, therefore, be highly valued.

To further understand the transport situation in Aalborg city, an interview with Brian Høj from Aalborg municipality was conducted. This was the second expert interview.

Høj is also a civil engineer in road and traffic planning, and has worked at Aalborg municipality since 2010. He collaborated on projects related to the city and traffic planning, and has especially focused on bike and parking policies. He has, therefore, vast expertise with bike and car policies and infrastructures in Aalborg, and his knowledge greatly contributed to understanding the mobility plans for the city.

Inhabitants of Aalborg

For the purpose of this research, a total of 19 people were interviewed, all who reside in Aalborg or in the outskirts, a maximum of 15 km from the city centre. As mentioned, the ideal interviewee was an individual that had completed a formal education and with children living at home. In general, people who are finished with education are the primary criteria to be selected for interviews.

There is a small majority of male interviewees, accounting for 13 total interviews, whereas female interviewees accounted for 6 of them. The age group was kept diverse, ranging from 22 to 64 years old. The majority of interviewees are, however, around 28 to 35 years old.

Half of the interviewees have between one to three children living at home, often in the lower age group (i.e. before they start primary education), and the majority have completed either a bachelor or master's degree, with others having different types of education. Furthermore, the interviewees come from different cultural and ethnic backgrounds with the majority being Danish while five interviewees originate from different countries.

Interview Guide

Prior to the realisation of the interviews, three primary interview guides were constructed: one for the dual interview involving Christoffer Holland from NT and Morten Jensen from Aalborg municipality, one for Brian Høj from Aalborg municipality and, lastly, one for the Aalborg residents whether they had previously taken part in the survey or not.

Semi-structured interviews have been chosen for all three interview guides, with some rather broad and open questions being the focal point. The questions are divided into separate themes, with the option to deviate from the interview guide by asking follow-up questions. This is an advantage because new knowledge can be gained or new information acquired that can be pursued because there is a certain openness and responsiveness from the interviewees (Brinkmann, S. and Tanggaard, L., 2015, p. 37).

The two interview guides for Holland and Jensen, and Høj are somewhat alike, whereas the interview guide for Holland and Jensen is more structured after public transport and Høj's interview guide after bikes and cars, as that is their respective expert areas.

Each expert interview is not heavily structured after practice theory, as it is not their practices that emerge as a focal point, but expert opinions of the overall transport situation in Aalborg.

The interviews are structured after some primary focus areas, which tend to start with a broad question. An example can be "what is your/Aalborg municipality's take on the situation and status of transportation in Aalborg at the moment?". This is followed by more specific questions to guide the interviewee towards the focal point of the interview, such as "what challenges and possibilities are there for biking and public transportation?"

Afterwards, questions about either public transport, cars, bikes and urban design are asked, with the sequence slightly differing in each interview.

These expert interviews are important to gain a greater understanding of Aalborg's mobility options, and the form on which Aalborg wants to develop. With the newly gained knowledge, the researchers can better prepare for the interviews with the Aalborg residents.

The interviews with Aalborg residents are structured utilising: own curiosity (the problem formulation), knowledge from the expert interviews, and practice theory, which follows the rhythm of the other aforementioned interview guides. The interviews start with a broad question about everyday routines and how transport impacts them, followed by specific questions such as transportation to work, if they transport their children (should they have kids), leisure activities and so on.

Afterwards, the interview guide varies depending on the interviewee, and their context. If the interviewee primarily drives, then the question will primarily focus on that practice, and the other way around if the interviewee uses a bike or public transport.

Furthermore, each interview provides knowledge and a new horizon on the subject, and, by applying the hermeneutic spiral, the researchers gain a new depth of understanding from each new interview, and this new understanding provides new knowledge that might reshape the next interview (Ingemann, J., 2013, p. 160).

Ethical Considerations

While at first glance the nature of the topic that is being researched does not seem to present any concrete ethical dilemmas, certain ethical considerations have nevertheless been taken into account to attempt to answer the problem formulation as most completely and correctly possible.

In the case of this project, ethical considerations have been taken into account especially during the interaction with survey respondents and interviewees. In the case of the survey, respondents do not need to enter any specific sensitive personal information (like name or address). The only personal information required is gender, educational background, postcode and age group. An email can be optionally written at the end of the survey should respondents want to be contacted to form part of the interviews. This omission of information such as name and surname can, in turn, enable the respondents to feel anonymous and therefore achieve the most accurate and honest answers possible.

When it comes to the individual interviews, all subjects have previously agreed to be part of an interview and have been informed of why the interviews are being conducted and how their responses will be handled. While expert interviews require a name and surname and a relevant job position to be stated, individual interviews with transport users in Aalborg will also be conducted anonymously to, again, achieve answers that are as honest and accurate as possible.

The deliberate decision to anonymise certain responses was done in order to focus on the responses themselves. Moreover, it has to be considered that some respondents can regard the topic (especially the ownership of goods such as cars or bikes, or even everyday actions and practices) to be, to a bigger or lower degree, too personal to disclose.

In both cases, all information has been handled with utmost care and with all the relevant General Data Protection Regulations taken into account.

Reflexive Thematic Analysis

Having detailed and explored the different considerations and criterias taken into account inside this methodological approach, it now becomes important to explain the approach taken to analyse the content of all the available data, both surveys and interviews. To make a sense and organise the very nature of the qualitative and quantitative feedback gathered, a thematic approach will be favoured. Widely used in different fields, the objective surrounding thematic analysis is to "*develop patterns of meaning ('themes') across a dataset that address a research question*" (Braun, V. and Clarke, V., 2023, 'Understanding TA'). These patterns or themes are created "*by the researcher through a rigorous process of data familiarisation, data coding, and theme development and revision*" (Ibid). One of the main characteristics and advantages of utilising this type of analysis lies in the fact that thematic analysis is a highly applicable, highly versatile approach that can be utilised to address many different types of research questions in different theoretical frameworks (Ibid). Moreover, as the focus of the approach is that of qualitative data, this method "*share[s] a focus on developing themes (patterns of meaning) from qualitative data*" (Ibid). This method therefore is relevant in this study as both data types are present in the investigation.

The thematic analysis relevant for this research is, therefore, reflexive thematic analysis, created by the aforequoted authors Braun and Clarke. The main characteristic of reflexive thematic analysis is its "*theoretical flexibility*", which means it can be used to address different types of research questions (Ibid). In this case, following the authors' guidelines, the research question can be related to what they consider "*people's practices or behaviours, the things they do in the world*" (Ibid).

Focusing on the different ways to approach reflexive thematic analysis, the theory and literature that support the research question, added to the quantitative and qualitative data gathered, make it so a more "*constructionist, deductive and latent*" (Ibid) approach is favoured. These approaches or "*ways*" refer to how the codes and themes are generated prior to analysis of the data proper (Ibid). The constructionist approach entails an "*analysis* [which] *focuses on exploring the realities produced within the data*", while the deductive way states that "*coding and theme development are directed by existing concepts or ideas*", and, lastly, the latent way implies that "*coding and theme development report concepts and assumptions underpinning the overt content of the data*" (Ibid).

While at first, they might appear similar, themes and codes do not refer exactly to the same concept. According to the authors, "*a theme captures a common, recurring pattern across a dataset, clustered around a central organising concept*" (Braun, V. and Clarke, V., 2023, 'FAQs'), while codes "*tend to be more specific than themes. They capture a single idea associated with a segment of dat*a [and] c*an be conceptualised as the building-blocks that combine to create themes*" (Ibid).

Another important point behind the choice of reflexive thematic analysis is the ease of replicability of such a method. In similar conditions, researchers could adapt this particular research on the city of Aalborg into similar sized towns and cities, and/or cities that also present a similar transportation panorama. The ability to reproduce the study can help develop a general view of motivations, behaviours and practices around different small-to-medium sized cities around Europe or, provided local adaptations are made, any other city in the world.

Themes and Codes

The following section of the methodological approach will serve as a brief introduction to the generated themes and codes, based on what has been stated above regarding Reflexive Thematic Analysis. These themes and codes will, in turn, provide a foundation for the corresponding analysis of the gathered data in an orderly manner. To maintain a certain organisational level for the sake of the reader, the themes will be presented separately from each other and then the codes related to each theme will be described inside the theme subsection. To have greater comprehension and ease of use, the interviews have been transcribed from audio into text. The gathered qualitative data has been processed utilising the software NVivo, which enables the information to be categorised into the selected and created codes in a simple and condensed manner. The quantitative data, on the other hand, has been drawn directly from the source, Google Forms, as graphs.

The themes and codes were created based on a mix of sources, including one-on-one interviews, expert interviews, surveys, theoretical concepts, literature review and so on. As our horizon of understanding is constantly expanded through the hermeneutic spiral, the themes and codes were also constantly reviewed and modified. These include varied regards, such as the notion of convenience and inconvenience, general social and cultural factors, and the recrafting or substituting of practices. Some of the codes have been generated following

pertinent theories regarding practices, while other codes (such as convenience and inconvenience) have been directly drawn from the gathered data itself, with the requirement of having been a widely mentioned concept by most interviewees. To gather the relevance of being an independent code generated from the gathered data, a certain belief would have to be expressed by the interviewees a considerable amount of times. While not expressly mentioned as concepts, the notions of "*inclusiveness, seamlessness and sustainability*" (Müller, B. and Meyer, G., 2020, pp. v-viii), drawn from the literature review, were taken into account when establishing the codes. Similarly, the concepts of "*materials, competences and meanings*" (Shove et al., 2012, pp. 22-25) were also considered, and, in general terms, all the created codes refer indirectly to these one way or another. Therefore, these terms will be applied when analysing the practices.

This method of generating codes from both theory and acquired data is referred to as "*constructionist, deductive and latent*" by the authors behind the chosen methodological approach (Braun, V. and Clarke, V., 2023, 'Understanding TA)'. The generated themes were established taking into account the structuring of both the survey and the interview guides, so as to maintain a general, clear and concise research design and to make the most effective use of the gathered data.

For the purpose of the analysis of the data and of waging each means of transportation against the other, all themes and codes will reference the three explored transportation possibilities in the city of Aalborg: driving, taking public transportation and cycling.

The State of Practices in Aalborg

The different characteristics that compose practice theory can provide a good foundation to perform an analysis of the gathered data, and the elements of "*materials*", "*competences*" and "*meanings*" will be regarded and explored in the codes.

Of course, as stated in the theoretical approach of the project, it is understood that practice theory is far from perfect, but nevertheless highly applicable in this type of research.

Combining the use of practice theory with the literature review and the introduction, the concepts of social and cultural factors will be utilised as guiding themes to organise the gathered data.

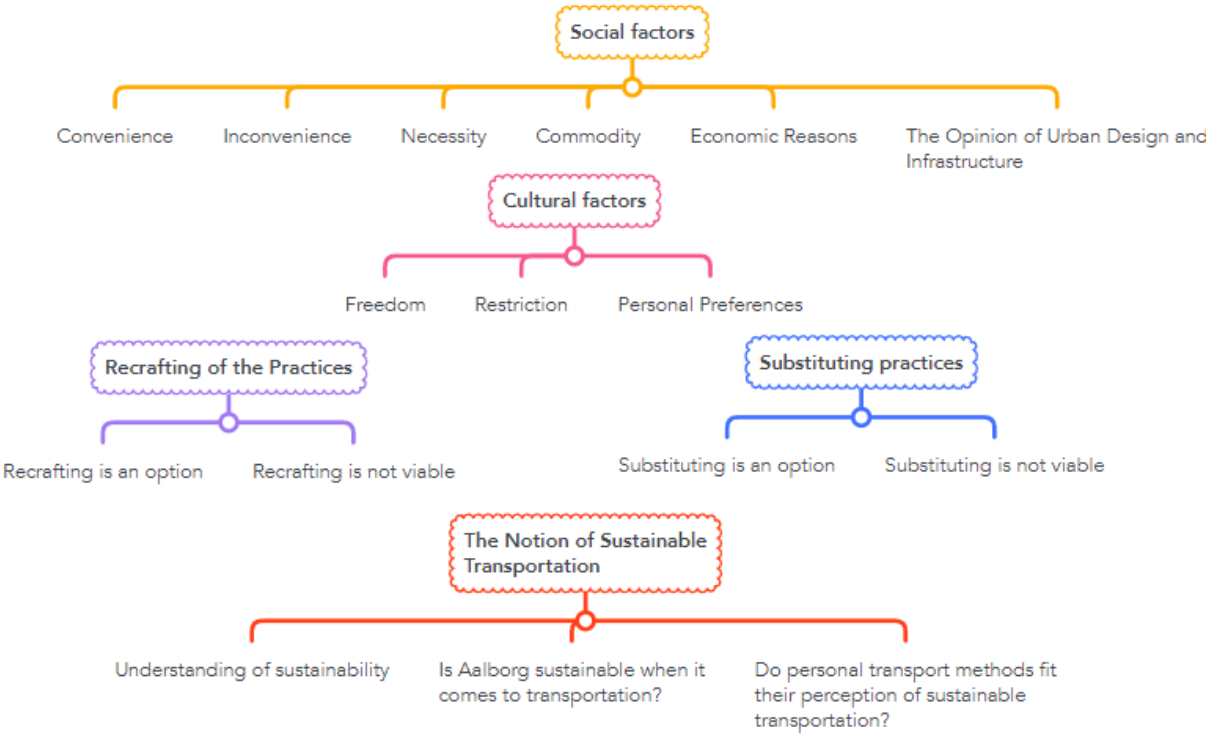


Figure 12 - Themes and codes

Social Factors that Motivate the Practices

This theme, directly connected to the different texts that refer to the factors that make up transportation and sustainable transportation, will group certain codes that have to do with those factors that alter transportation practices and that have their origins in society and its institutions.

Presenting it from a transportation angle, the codes introduced in this theme will be directly related to external and internal factors that modify, change or have an impact on defining how people move around Aalborg. External factors are referred to as factors that cannot be directly controlled by the transportation users, like the urban design of Aalborg or decisions by the municipality of the city or Nordjyllands Trafikselskab. Internal, on the other hand, are those factors on which the user has a direct influence on, like personal economy or need to transport in a specific way.

Convenience

This code, generated directly from the conducted surveys and interviews, will explore and ponder all those comments and opinions that denote a sense of convenience or ease of

use of a certain transportation method compared to another. Another way to see this code can be under the light of the question: “what is easier for me to do?”.

Inconvenience

On the other hand, the code “inconvenience” serves as the polar opposite of the previous code. Also generated from the gathered data, all comments and opinions that denote or express a sense of inconvenience at the usage of a certain transport method will be grouped here.

Necessity

While at first glance similar to “convenience”, this code “necessity”, also emerging from the data, will include those comments that express the usage of a certain transportation method which, without it, the development of daily activities would be greatly hampered or even impossible. This code understands (and will serve as a point of debate) that in some specific cases, residents of Aalborg might not have the luxury of multiple choices when deciding how to transport themselves.

Commodity

Opposite to the last code, “commodity” recognizes that, in other cases, residents of Aalborg might decide to transport themselves in a certain way even though other options are available. The objective of this code is to be able to explore which reasons might lead to specific practices. “Commodity” is also generated from the conducted surveys and interview responses. Contrary to the abovementioned code of “convenience”, the code “commodity” will respond to the question: “what do I, as a transport user, choose to do?”.

Economic Reasons

Directly obtained from the pertinent literal review, this code will group those comments and opinions that explicitly refer to economic factors as a determinant element when deciding to use a certain method of transportation in the city of Aalborg. While they could be considered as a separate theme, these economic factors are, for the purpose of this research, included inside social factors.

The Opinion of Urban Design and Infrastructure

While considered part of the external factors, and therefore users do not directly have the option to modify it, the urban design and the infrastructure of transportation in Aalborg play a pivotal role when it comes to the development of mobility practices. Comments regarding the urban design and the city of Aalborg are widely found in the conducted interviews and surveys. Therefore, it becomes pertinent to address these opinions and comments under a specific code, to then combine with the other social factors during the analysis of the data.

Cultural Factors that Motivate the Practices

Complementing the aforementioned theme, and also drawn from the theoretical approach and literary review, "cultural factors" will refer to those factors that make up the practices of Aalborg residents that vary depending on elements such as beliefs, values, norms and other intangible results of personal experiences and upbringings.

This theme aims to explore the feelings and attitudes that both survey respondents and interviewees associate with certain methods of transportation and practices. Similarly, the notion of identity and personal experiences has been determined to play a great role in the practices, behaviours and choices of the residents of Aalborg when it comes to transportation. Anything from growing up in the countryside, cultural conceptions, belonging to a different generation or even just imitating the role models of childhood can have an impact on the selection or preference of a certain mobility practice over another one. While being a more specific and personal approach to transportation behaviours, all comments that demonstrate favouring a practice over another due to any life experience events will be briefly touched upon under this theme. It is important to note that this theme and codes can only be analysed from an individual point of view (i.e. that each individual has their own experiences, identity and backgrounds) and therefore should be understood accordingly.

Freedom

Going into the first code in this theme, the notion of "freedom", "liberty" or "independence" has been expressed multiple times when referring to certain transportation practices. Therefore, this code, generated from the data, will include those comments and opinions that denote a lack of restraints thanks to a particular means of transportation. As mentioned above, feelings and cultural factors are the primary focal point in this theme.

Restriction

Opposite to the last code, "restriction" logically refers to those opinions that express a feeling of dependence that makes choosing a certain transportation method unpreferred compared to other practices. For this code, biological (such as sweating), meteorological (such as weather) and geographical (such as terrain) factors will be taken into account as restrictions. This code was also generated from the pertinent data.

Personal Preferences

Categorising all those comments that correspond to individual and personal reasons behind favouring a certain practice over the other, the code "personal preferences" will serve as a unique view, positive or negative, on private decisions and processes of thought that might lead to a way of transportation around Aalborg. This includes any of the factors mentioned above, such as age, upbringing, personal experiences and so on. This code was generated from the relevant literature review.

Recrafting of the Practices

In contrast with the previous ones, this theme is directly generated from the pertinent theory. In the concept of "recrafting practices", the focus lies on reducing the resource intensity of certain mobility practices through a change of the elements that make up said practice.

A clear example can be seen in the use of the car as a primary method of transportation, as options to reduce the resource intensity of driving a car might be considered limited. However, as evidenced by some of the interviewees (to be expanded below) recrafting this practice could lie in, for example, choosing to purchase an electric car or make use of carpooling as a means to commute. This theme will therefore include comments and opinions related to the tangible possibilities to recraft a practice and the why/why not that results in the recrafting of a behaviour.

Recrafting is an option

While the above mentioned example of the car serves as an "ideal" situation to show a recrafting of a practice, this code will be more specific and directly include those comments and opinions that set recrafting of practices as a viable option at least considered by the

residents of Aalborg. Any comment that expresses a positive reaction towards the potential recrafting of a practice qualifies for this code. This code was created by the authors having into account the theory.

Recrafting is not viable

Also created by the authors according to the theory, the code "recrafting is not viable" will group those comments that denote an impossibility to recraft a practice, either because of a lack of motivation to do or because of a literal infeasibility to do so. It is also understood that a practice such as biking or walking is almost impossible to recraft, by the user, to be more sustainable.

Substituting the Practices

This theme has been generated, similar to the last, following the relevant theoretical approach chosen. Substituting practices focuses, in this situation, on replacing less sustainable practices with more sustainable ones. Sentences and comments that denote situations where a bus, bike or walking is a possibility instead of driving a car, for instance, will be taken into account inside this section.

Substituting is an option

As it occurs with the theme above, this code will be utilised as a starting point to group those comments and opinions, gathered in interviews and in the surveys, that express the viability of substituting the current practices of the residents of Aalborg in favour of other, more sustainable, ones. Any comment that expresses a positive reaction towards the potential substitution of practices qualifies for this code. This code was created by the authors having into account the theory.

Substituting is not viable

Those cases where substitution of a practice is not considered viable or possible by the interviewees or the survey respondents, whether it is because of personal reasons or logical reasons, will be included under this code. Logical reasons can refer to a lack of "competences", while personal reasons can vary from individual to individual, but are still valid and relevant. This code was also created by the authors having into account the theory.

The Notion of Sustainability in Transportation

The concept of sustainability focused on transport can be a complicated item to define. It has been observed that its general definition varies depending on thoughts, experiences and opinions of the interviewed subjects. This theme includes: those definitions of sustainable transportation; How it is perceived; and What interviewees think about sustainable transportation practices within the city of Aalborg and within their own daily lives.

Understanding of sustainability

This code will include all definitions, given by the interviewees, of what sustainable transportation is and how it is perceived by these subjects. As the definition will greatly vary from interviewee to interviewee depending on multiple factors (like personal experiences, beliefs, and so on), this will serve as a pivotal point of departure for the discussion regarding sustainable transportation's academic definition against what the residents of Aalborg see it as. This difference (and potential discrepancy) can, for example, greatly alter the notions of recrafting or substituting practices.

Is Aalborg sustainable when it comes to transportation?

This particular code will gather all comments regarding the thoughts and opinions about sustainable transportation in Aalborg, and if the city fits into the interviewees' own defined perceptions of sustainable transportation.

Do personal transport methods fit their perception of sustainable transportation?

The last code will include the interviewees' own opinions on themselves based on the definition they gave about sustainable transportation, more specifically, if they consider themselves to be sustainable or not. Quantitative answers given in the survey will also be included under this code.

Analysis

Taking into account the theoretical background, the problem formulation and the literature review supporting this research, the first part of the analysis will consist of an evaluation and comparison of the state of transportation practices in Aalborg.

The analysis will be separated into sections, following the thematisation done above, but, nevertheless, these sections will be intertwined and not independent of each other, as all themes are, one way or another, directly related to each other. This division is done for organisational purposes but it is important to have in mind the connections between the themes and codes.

To begin with, the first section will look into the different social factors that motivate the development of a practice, including discussions on the idea of what is convenient and what is not, or what is considered necessary for transportation and what can be just done for comfort. While looking into these debates, theory and literature will be applied, compared and contrasted with the notions of personal preferences and general thoughts on infrastructure.

After that, the analysis will explore the different cultural factors that lie behind the development of a practice, including the widely mentioned concepts of freedom and restriction, beliefs, norms, values and personal experiences. Same as in the previous part, literature and theory will be present in this section, together with the findings regarding personal preferences and the infrastructure of the city.

Lastly, also directly related to the problem formulation that guides this project, the last section of the analysis will dive into the understanding of sustainable transportation, including the scholarly definitions of the concepts, directly compared to those definitions given by the interviewees. This part of the analysis will also include the perspectives of Aalborg residents regarding the city's focus on sustainable transportation and their own horizon of understanding regarding themselves and their methods of transportation.

At the same time, the theoretical guiding concepts of recrafting and substituting a practice will be included and taken into account in all parts of the analysis.

Social Factors that Motivate the Practices

Convenience vs Inconvenience

As stated above, this analysis will begin by exploring the social factors that served as a structure when collecting the data. Generally speaking, this part of the analysis provides a base to attempt to answer one of the secondary questions of the problem formulation, specifically, "*What characterises the individual mobility practices in Aalborg?"*.

One of the main ideas that were conveyed by a great number of interviewees and survey respondents is that of how transportation practices are tailored to what is convenient and discarded when faced with inconvenience. Again, as stated in the corresponding codes, convenience and inconvenience can also be seen as "what is easier for me, as a transport user, to do?".

As these concepts are being analysed from both a general and an individual point of view, the definitions behind what is convenient or what is inconvenient to do vary greatly. Multiple interviewees interpreted the concept in multiple ways. Also important to take into account, is that interviewees come from multiple backgrounds and cultures, and that logically accounts for different cultural and subjective meanings, and interpretations of similar concepts. The choice of transportation practices, as evidenced in the text by Jensen, Sheller, and Wind, has to be taken into account from a larger perspective, and not "*simply* [by looking at] *singular and individuated actors*" (Jensen, O., Sheller, M. and Wind, S., 2015, p. 366). In other words, what a resident of Aalborg can regard as an inconvenient or a convenient form of transportation around can be rooted in factors over which the individual has no control over. It has been seen that public transportation, biking, driving and other forms of mobility can be convenient or inconvenient according to those who analyse them, so it becomes impossible to say a certain practice is totally convenient for residents of Aalborg or totally inconvenient.

Taking that into account, it is no surprise that the association of what is convenient and what is inconvenient varies depending on the individual perspectives on different practices. However, a trend can be seen in certain practices being regarded as more convenient than others. To begin with, the practice that is seen by interviewees as the most convenient in the city of Aalborg is that of driving. Cars have been associated directly with the notion of being convenient and easy to get around with, especially when it involves things

like saving time. Interviewee 11 says that "*Once every other year I try to take a train down there* [to work in Hjørring]. *And I find out that it takes twice as long. And then I drop it. It's embarrassing" (*Appendix 11, p. 1). Diving briefly into the theory, in this situation substituting practices becomes a titanic task. If users value their personal time more than anything when choosing transportations methods, especially when it comes to long distances (in this case, Aalborg to Hjørring) the way to achieve a substitution of this practice would require the creation of faster and more efficient options that could compete with the current norm.

Another aspect that highlights the convenience of cars is the ease to get from point A to point B. Interviewee 13, for example, remarks "*the best thing is that you can just stop wherever you want [...] I just hop in the car, which is in the back of my building because I got parking [...]. I go to work, I park the car and then I'm in the office in 15 minutes"* (Appendix 13, p. 2). Added to this, the car also presents an advantage when compared to competitors in terms of available space, being recognized as particularly useful when it comes to shopping trips and/or carrying luggage by several of the interviewees. In general, these trips vary depending on the individual, with some of them being large grocery shopping that require carrying "*kilos of stuff*" (Appendix 7, p. 3). However, other interviewees admitted that they also do very short trips (approximately 500 metres) that, on their own terms, could be done by walking. with the car just for the sake of convenience when carrying luggage (Appendix 14, p. 1). Despite this apparent advantage of the car in terms of available space, there is a transportation option that could potentially substitute the practice of the car in favour of a "greener" alternative, without sacrificing space: cargo bikes. Whether electric or not, some interviewees (in a majority, those who had children living at home) admitted they would consider substituting the car for a cargo bike, with sufficient space for luggage, weather permitting. Interviewee 15 emphasised this point by describing cargo bikes as "*a fast vehicle, that can carry a lot* [which is] *a bit expensive, but it's much cheaper compared to driving a car*" (Appendix 15, p. 4).

When weighing the different analysed practices against each other, the bicycle emerges as an option that was mentioned less than the car but more than the bus, at least when it comes to convenience. It appears that, in terms of transportation, the individual will always tend to choose what is more convenient for them. The reasoning behind this choice varies depending on multiple factors. For example, certain residents of Aalborg feel more inclined to choose a transportation method if they consider that the urban design and infrastructure of the city are appropriate and complement their mobility practices. In this

regard, taking into account the conducted interviews and only considering this factor, the bicycle infrastructure was regarded as the most convenient in Aalborg, even to the point that some interviewees consider that "*the bicycle structure is perfectly managed* [and] *it is hard to find things to complain about*" (Appendix 18, p. 8). Practicality and time-saving were also considered as convenient factors that result in the use of the bike.

It is pertinent to review that, for some authors "*the challenges that mobility in smaller cities is facing nowadays include being more car-oriented, having low frequencies and poor coverage when it comes to public transportation*" (Brand, L., Böhler, S. and Rupprecht, S., 2021, p. 8). This is also confirmed in one of the expert interviews, with the interviewee stating that "*car traffic is rising* [in Aalborg]″ (Appendix 21, p. 2, translated by author) and by the statistics showing that there is around one car for every two-three inhabitants of the city (Schouenborg, J, 2021, 'Familien Aalborgs bilpark vokser kraftigt: Se hvor meget og i hvilke bydele de har har flest', translated by author). Nevertheless, it can be argued that, while the infrastructure surrounding cars is being somewhat prioritised in smaller cities, there are great possibilities (at least when it comes to the idea of convenience) for the practice of cycling to emerge as a rightful substitution for the car, at least in the particular case of Aalborg. Of course, as denoted by a few interviewees, there are still improvements that can be done in terms of bicycle infrastructure, like improving routes (Appendix 19, p. 5).

Some interviewees went as far as to state that, while the car is the most convenient transportation method, they would prefer for the "*community* [and] *the politicians*" to make it "*a little more difficult to take the car*" (Appendix 3, pp. 7-8) in favour of fomenting other practices. Potential suggestions on how to make the use of cars more inconvenient include new parking policies, bans on motor vehicles or increasing costs related to certain means of transportation. Of course, these hypothetical ideas are still dependent on a number of administrative factors. For some interviewees, that could be said to similar subjective meanings, a change is already being produced, product of the many urban renovations of the city and the construction of the Plusbus, even generating a "*car-hate in Aalborg*" (Appendix 14, p. 2).

On the other hand, the notion of inconvenience follows suit compared to its counterpart, with the usage of time (or, in this case, time waste), and the difficulty to move around being considered the main factors behind it by the interviewees and survey respondents. As briefly explored above, public transportation was the target behind most of the comments that denote inconvenience when it comes to transportation methods. For example, buses were deemed to be "*sometimes very late* [...] *if somebody is actually using the*

bus to get to places on time, it's not convenient" (Appendix 12, p. 3) or "[when taking the bus] *you are bound on when to leave and when to get off, there is no flexibility at all*" (Appendix 14, p. 2). These particular quotes also align with other codes, such as "restriction". While corresponding mostly to economic reasons, costs and prices were also deemed to be one of the main factors labelling public transportation as inconvenient. Summarising on these ideas, Interviewee 18 states:

> "*in these times where the climate is changing and people want to start saving the environment, the thing is that, with all the 'demands' of public transportation, like traffic, like buses never being on time and the outrageous prices it is just not worth it*" (Appendix 18, p. 4).

Interviewee 3 also reinforces the idea of public transportation being "*too expensive, too slow, too difficult and too few bus stops*" (Appendix 3, p. 4).

From a more practical perspective, these two elements can determine and directly affect (almost trivial) aspects of everyday life, such as the selection of where to shop. The data gathered presented a great duality on an interesting discussion surrounding the Aalborg city centre and the so-called shopping area "City Syd". As explained above, City Syd is an open space that features several large Danish and international mega-stores, while also having two shopping centres. One of the main features of City Syd is the availability of a large number of parking spots divided into several parking lots, contrary to what occurs in Aalborg downtown. Directly connected to the notion of being "car-oriented", seen in the theory before, and also dependent on the available infrastructure and the urban design of Aalborg, the duality "City Syd vs City centre" emerges as an interesting perspective for the different interviewees, with some stating that "*If it's not because I have to go to the city centre I'll drive* [to City Syd] *because it's easiest to park there*" (Appendix 14, p. 2). However, it can also be argued that:

> "*City Syd is super nice. But the cafe and the city environment you don't have in the city centre. Those who go to the city centre don't need it* [referring to City Syd]. *Then it would not matter, but if there were more parking spaces, they would maybe come here* [downtown] *instead.* [...] *I've also experienced several times where it was actually a problem. Where people who live in the city centre and have their cars parked in the city centre actually take away parking spaces for people who go to cafes and restaurants"* (Appendix 16, pp. 2-3).

It can be suggested that, unless looking for particular stores or a particular atmosphere, the convenience for car drivers lies in doing their shopping in City Syd, and it is mainly from a practical point of view related to the available infrastructure. Nevertheless, it is pertinent to see that there are cases in which this distinction does not matter, with interviewees also commenting that their preference:

"*depends on who it is with. For example, I have colleagues who live in this area, so I'd say we go to the City Syd. And if it's with the football team, then it's often the city centre. It's very different depending on who's there, and not so much based on the traffic*" (Appendix 10, p. 4).

To conclude with this particular part of the analysis, it can be suggested that, in light of the conducted interviews and of the corresponding surveys, that the notion of convenience and its counterpart of inconvenience play pivotal roles for individuals when it comes to establishing different mobility practices. It is understood that different individuals also have different opinions and subjective meanings on what is convenient and what not, and, therefore, different transportation methods are suggested to have their advantages and disadvantages. In spite of this, there is a trend to see the car and the bike as more convenient transportation methods, while public transportation falls behind as a more inconvenient option.

Commodity vs Necessity

The second two contrasted codes to be analysed are those of "Commodity" and "Necessity". While these two terms might present similarities with those of "Convenience" and "Inconvenience", there is an important differentiator in the fact that the concept of commodity is seen as "what do I, as a transport user, choose to do?" rather than "what is easier for me, as a transport user, to do?". For this research, "commodity" is rooted in individual choices that make mobility practices, especially centred on those transportation users that have the possibility of choosing between different options when it comes to moving around the city of Aalborg. In a sense, it can be argued that convenience can be an answer to the question posed by "commodity".

Also relevant for this section of the analysis are those comments included under the code "necessity". While, in some cases, it can be taken for granted that, in such a globalised world, multiple transportation options are available at all times. However, this was deemed not to be the case for the city of Aalborg, as some interviewees explicitly stated that, for one reason or another, it is not always possible to choose how to transport oneself.

Commencing with this part of the analysis, there are multiple reasons behind the impossibility of having the option to select between transportation options. Interviewee 8, for example, needs to move by car for medical reasons: "*my wife can't bike. She's not even good at walking* [...] *We don't have a handicap sign or anything like that in our car, but she needs one*" (Appendix 8, p. 2). In this case, there is a determinant factor at play which is that of health and wellbeing, as the interviewee's wife is unable to do anything by herself. In this

case, the car is a requirement to attend important doctor's appointments, instead of just being a tool to facilitate mobility practices. This individual goes as far as to comment that he feels "*jealous in a certain sense*" when seeing families biking together, carrying their kids (Ibid, p. 4).

It is also important to point out that, in most of the other explored cases, the car becomes a necessity for other reasons, especially being able to go to work or visit family. In this regard, Interviewee 12 states that she "*also has a work car. So, for work reasons, I use that one. And sometimes it is so hard to get around to the places we have to go for work*" (Appendix 12, p. 2), in a sense that, without a vehicle, she could not perform vital work tasks. Similarly, Interviewee 14 finishes his work schedule in the later hours of the night, making it difficult to move around by bus (or even bike) to and from his workplace, which, due to the nature of his job, also changes and is not a fixed office, for example (Appendix 14, pp. 1-2). When it comes to family visits, some interviewees, for personal reasons, happen to live far away from their relatives, and, in most cases, require a car to visit them. This necessity to utilise a vehicle to be able to see their families directly contradicts what author Barr defines as "sustainable transportation", which is to "*reduce the need to travel by making places where people live economically viable and vibrant*" (Barr, S., 2015, p. 103). At least five out of the 19 interviewees stated having a car for, amongst other reasons, visiting family situated in various places around Denmark, from West Jutland, where going via public transport:

> "*is a bit long* [...] *If we compare a bit, I usually walk or take the bus to the station, half an hour before you're supposed to be there* [...]*, then on the bus for two and a half hours, and it doesn't take me all the way home* [...] *so it often takes a bit over four hours to get there, whereas in car I can be here in 2 hours and drive when it suits and don't need to be on a schedule*" (Appendix 10, p. 5);

to smaller towns in Northern Jutland where "*there is no way of getting a bus to get there and the only way to get there in a reasonable amount of time is taking the car*" (Appendix 13, p. 4).

These situations serve as some examples to denote cases in which the car becomes a must for the development of a certain part of life. It can be argued that, generally speaking, the main factor underneath these decisions is the lack of alternate options and the poor connectivity between the outer surroundings of the city of Aalborg. While this research focuses mainly on the closer surroundings of the city, it is worth noting that this concern goes beyond the one-on-one interviews, as, in the first expert interview, Christopher Holland, from NT, commented on how he decided to move with his family to the outskirts and that "*taking a*

bus was not part of the considerations, because it was almost not possible" as, in this opinion and similar to the reviewed authors, "*the city has been developed in a way that supports the use of a car*" (Appendix 20, p. 5, translated by author).

It can be suggested that, as the distance from Aalborg centre increases, connectivity is slightly lost and the car dependency increases, at the same time that the trips to downtown decrease. As Interviewee 2 states: "*If I have to move a kilometre first* [to get to a bus stop] *to then go* [to downtown] *and eat with some friends and so on, I don't think I want to*" (Appendix 2, p. 4). This phenomenon, together with certain cultural factors, will be explored further in this analysis by looking at other interviews and survey answers.

While in most of the observed cases, there is a level of dependency on the car as a tool for life, it is also important to note that, in other cases, there is a dependency on other transportation methods, such as the bike or public transportation. Reasons can vary, from personal economy (not being able to afford a car), the lack of the so-called "competences" (not knowing how to drive or bike or take public transport) or the lack of "materials" (for example, a bus card), can also determine in the usage of one practice but not necessarily its voluntary selection. This was seen especially in the surveys conducted, where most of the younger respondents (in their majority, students) lacked the economic capability or simply did not see the use for having a car, whether they are concerned about reducing their carbon footprint or are satisfied with alternate methods. 67% of the respondents of the survey conducted in English cited these reasons for not owning a car, while in the Danish survey it was 28% of respondents (Appendix 27, p. 14, Appendix 28, pp. 19-21, translated by author).

Concluding with this notion of necessity, it is also understood that, while in some cases substitution of a practice is not an option, the recrafting of a practice (in this case, the car) might be an option. In other words, if the car, for example, is a must, could it be recrafted to have less impact on the environment? For some of the interviewees, the electric car emerges as a potential recrafting opportunity, considering it as a "*smart and nice* [option]" (Appendix 10, p. 5), while having to first solve certain difficulties surrounding it, for example:

> "*I live in an apartment, so it's maybe not so practical to have a charging station and so on, but it's really smart, maybe not so nice when the electricity prices went up, but other than that, I think it's quite nice*" (Ibid).

A couple of interviewees already stated their desire to have their next car be an electric one, while others have already made that recrafting, like Interviewee 15:

"*The car we are getting rid of now is a leased car that runs on gasoline. The car we have bought, the one we own, is a Tesla that runs on electric power. So we were also quite... It was not a discussion at all that it was the leased one that runs on gasoline we were getting rid of*" (Appendix 15, p. 5); or Interviewee 18: "*if you buy a car like mine* [also Tesla] *and you drive 10,000 kilometres with it, then you already offset the particles produced during the manufacturing of the car*" (Appendix 18, p. 6).

Carpooling was also mentioned as a recrafting method by interviewees that need to utilise a vehicle because they, for example, have a long distance to work. It can be argued that, despite being a good option for commuting, it has been recognised by interviewees as being more restrictive and even uncomfortable when it comes to comparing it against having your own car. However, certain options have emerged in recent times that attempt to make carpooling in Aalborg both easier and faster. While these options have not been the focus of this research, their existence does provide a recrafting opportunity. Shared cars were also mentioned as an option that would meet both carpooling and owning a particular car halfways. Living in Aalborg but with previous experience of living in Aarhus, Interviewee 16 said: "*Many of my friends live in large new apartment complexes where they have just added a shared car for use. I know that they use it a lot*" (Appendix 16, p. 3). While Aalborg is a smaller-sized city, the possibility of these new alternatives cannot be discarded.

Analysing the other half of this discussion, there are several interviewees who transport themselves in a certain way despite having other options available. Again, this notion of "commodity" is rooted in individual choices that make up mobility practices. Therefore, what can be considered comfortable for a particular transport user can be different from another user's perspective. For "commodity" to be considered, the survey respondent or the interviewee has to, in a greater or lower sense, denote that they are able to get from point A to point B by choosing between a range of transportation means (specifically, car, bike and/or public transport). It is understood that, for this to happen, there is a need for a suitable infrastructure and urban design that enables multiple choices. In the first expert interview, Holland stated that:

"*you can maximum prioritise two mobility forms in one road*. [...] *So, to be aware of, there are some streets where cars are highly prioritised, while there are other roads where it is bicycles and buses* [that are prioritised]" (Appendix 20, p. 7, translated by author).

While Holland speaks of this "prioritisation" of a certain mobility form, his comment evidences the availability of "*at least two mobility forms in one road*" (Ibid).

In general, as stated above, reasons for choosing a certain transportation method vary greatly according to personal preference, specific situations, or even external factors, like weather. Taking into account all interviewees, it can be argued that a great majority of them have the option to build their transport practices around their preferences, and either own or have access to several transport methods for their daily travels. Same as before, infrastructure and urban design also play a role in the transportation decisions of Aalborg residents. Interviewee 10, for example, prefers to go to City Syd by car (when he does not have to drink), while, if he has an event or appointment in downtown Aalborg, he takes his bicycle due to what he perceives as a lack of parking spots (Appendix 10, pp. 4-5). In his case, he argues his use of the car is "*not at all for short trips, it's 100% for longer trips"* (Ibid). Another example of combining multiple transport options depending on the occasion can be seen in Interviewee 15, that

"*primarily use a car to get to and from work, and pick up and bring my daughter. I also use a running jogger, because I like to run, and I do that in my spare time. So, to get more of that in my everyday life, I sometimes use it as a means of transport. I put my bag on my back, run to and from work, and take a bath at my workplace. I use it because I am not a big fan of sitting in the car all the time.*" (Appendix 15, p. 1).

In this case, a personal hobby, such as running, turns out to serve as an effective transport method, replacing the car. Finally, other interviewees prefer to ride their bikes to work when weather permits (Appendix 18, p. 7), even going as far as to "*have a vehicle for every occasion*" (Ibid). Similarly, Interviewee 9 prioritised different transport methods for different moments, "*If I'm going to play football, I usually take the car, because of the distance and time. If it's just me going to Aalborg, I usually take the bike. If I'm going to the city, and have something to drink, I take the bus*" (Appendix 9, p. 1). In his situation, economic factors (to be explored later) also play a role in his practices, preferring to take public transportation instead of the car due to associated costs (Ibid).

Nevertheless, despite these examples, a great number of interviewees have the option to choose from more than one transportation method (whether they own a bicycle or live close to public transportation) but base their mobility practice on a particular method, usually, the car. Reasons for this selection are varied, but a trend is seen in the prioritisation of elements such as comfort over anything else. Interviewee 12, for example, states "*There's a lot of situations where I could choose not to use the car and maybe go by train or by bus. And I just, yeah, for the comfort of it, I don't*" (Appendix 12, p. 4). Survey respondents also share this sentiment, with some responses on "What are your reasons for owning a car?" including

answers such as "*Commodity and facility to go long distances*" (Appendix 27, p. 14). Similarly, Interviewee 7 clarifies that "*We* [his family] *are more comfortable with the car because it makes me save a lot of time and also money and I do not have to wait in this harsh weather* [...] *I would have bought a car before as well*" (Appendix 7, p. 2), while also praising the connectivity of public transportation in Aalborg, and its costs: "*Any address in Aalborg municipality is not much far away or is not beyond the reach of the public transport. So, good connectivity.* [...] *And the prices are also not that exorbitant like in Copenhagen"* (Ibid, p. 4). This dual perspective (stating the benefits of public transportation while choosing to utilise a different transport method over it) can be considered a pivotal aspect of this notion of "Commodity" in the analysing of mobility practices. However, it cannot be discarded that, provided some changes are made, individuals will be able to have more choices and also consider other options when it comes to transporting themselves. Both survey respondents and interviewees commented on this regard, with the implementation of more night buses, better bus seating layout (as older people might struggle to "climb" up to the seats), improved conditions inside the bus (like temperature control) and the improvement of bikes lanes in neighbourhoods such as Vejgaard (Appendix 28, p. 11, translated by author) emerging as potential options that could extend public transport reach and/or bike usage as suitable options for users to consider.

Important to note, and as also seen in the text from Jensen, Sheller and Wind, the mobility practices of a family member can influence the rest of the family to transport themselves in a certain way (Jensen, O., Sheller, M. and Wind, S., 2015, p. 375). These can be seen in those interviewees and survey respondents who favour transport methods because of their families, for example, choosing a car when taking kids to leisure activities "*because our son gets so tired and it's a long trip home. He is hungry and tired, so* [we go by car] *because it's practical"* (Appendix 3, p. 2). This connects to the argument Holland and Jensen gave in the expert interview, stating that "*historically, it is the young and the elder* [that utilise public transportation]", showing that families tend to prefer transportation methods more comfortable for them, such as the car or even a cargo bike (Appendix 20, pp. 4-5, translated by author).

To conclude with this segment of the analysis and the discussion between "Commodity" and "Necessity", the polarity between these two terms serves to provide concrete examples of when there is, and where there is not, a possibility to make a concrete, significant choice when it comes to mobility practices. If there is no choice behind a transport

method (like using the car for medical or work reasons), the user is left dependent on external factors to be able to even consider a change in practices. If a user leaves work late at night, carrying equipment, and the closest bus stop is kilometres away, then their selection of a transport method like the car is easy to understand. Again, by also remembering that each case has to be explored individually, and, as stated in the theory and the literature review, mobility practices are dependent on several internal and external factors, it becomes difficult to, in a way, find new transport opportunities for these users that have almost no options.

When it comes to those individuals that have multiple forms of transportation at their disposal, the analysis has somewhat strongly suggested that the human, in most cases, chooses comfort and prioritises itself over several other factors. If the usage of public transportation results in twice as long of commuting time, then it makes sense why an individual might discard that option altogether in favour of, for example, the bike or the car. However, it is the availability of those options, together with the acquisition of those "materials" and "competences" and the formation of "meanings" that become key factors in the creation of specific mobility practices. It is also interesting to understand and see the large role that external factors (such as weather) play in choosing transportation methods.

Economic Reasons

Another factor that was seen as having a level of impact on the choice of transportation options, these "economic reasons" (as detailed before taken from Steven Barr's paper on social practice theory and the search for sustainable mobility) were deemed to influence the mobility practices of residents of Aalborg. As stated above, they were not regarded as a separate factor, and instead included inside social factors.

Nevertheless, interviewees and survey respondents have made a point on how their economies have an impact on the mobility practices they conduct. In this situation, and connected to the code of "Commodity", a trend that suggests that having more available income allows for a user to have greater transport options was seen, especially in the field of cars. Being able to afford and maintain a car is something that not all transport users can do. In the conducted surveys, it was seen that more than 16% of respondents (most of them, from the English speaking version of the survey) have explicitly cited economic reasons why they do not own a vehicle (Appendix 27, p. 14, Appendix 28, pp. 19-21, translated by author). While the number might not appear to be significant, it still shows a particular reality (especially for a number of students, most of them international) when it comes to

transportation possibilities. Economic concerns do not only affect transport users that do not have, for example, a car. In the case of other individuals, the recrafting of the practice of driving has been halted by economic reasons. In the case of Interviewee 9, for example,

"*We've actually just bought an Opel Crossland X. We've considered an electric car. But we've chosen not to get one because we think it's too expensive.* [...] *And if you want to have an electric car where they have a size that makes it attractive as a family car, then they're just too expensive*" (Appendix 9, p. 5).

Interviewees 7 and 8 also voiced their concerns about the price of electric cars, citing similar reasons for not getting one (Appendix 7, p. 4, Appendix 8, p. 4). However, as evidenced by Interviewees 15 and 18, recrafting to an electric car can end up being cheaper in the long run, compared to owning a diesel car when regardings fields such as maintenance or electrical consumption per month vs price of gasoline (Appendix 15, p. 4 and Appendix 18, p. 6). Moreover, also stated by Interviewee 9, the substitution of the practice of driving (and not only the recrafting) was also hampered because of monetary reasons: "*We've considered buying an electric cargo bike.* [...] *But we haven't bought it yet, because it's a bit expensive*" (Ibid).

Connected to this, a great number of respondents also cited utilising a bicycle because of economic reasons, as they deemed biking as being either "*free*", "*pocket-friendly*", "*cheap*" or "*affordable*" (Appendix 27, pp. 26-27 and Appendix 28, pp. 27-30, translated by author). In total, 21% of the respondents explicitly commented on using a bicycle due to it being cheaper than other transportation methods (Ibid), without having costs of parking and low cost on maintenance.

Lastly, public transportation was explicitly deemed expensive by a total of 70% of survey respondents (Appendix 27, p. 5 and Appendix 28, p. 5, translated by author). A general belief is that, to get more users to use public transport, prices would either have to be lowered or, in the thoughts of some respondents, made entirely free. This importance of prices is something already taken into account by NT, as Holland tells:

"There has been a huge, or fairly large, development in operating expenses. Things are getting expensive because of the war [in Ukraine 2022]*, so we're sitting together in a bit of a sad place right now, compared to these two things, and struggling with how we can provide the best possible public transport for the same money going forward"* (Appendix 20, p. 2, translated by author).

However, few interviewees did regard the bus as a cheaper alternative for long-distance trips,

"*Another thing could be price because say I have to travel to Billund to get a plane then I could go by car but that's going to cost 250 kr. gas just to get there, whereas the bus or taking the train plus a bus would be like 150 or something or like 200 kr. max so it would save your money in some cases*" (Appendix 13, p. 4).

Again, this understanding is personal to this individual, as, while not being the focus of the research, long distance train trips, for example, have been also deemed expensive in other interviewees' perspectives (Appendix 16, p. 6).

In a more concrete example, Interviewee 17 developed a dislike of buses due to an increase in the price of them while he was living in the city of Fredericia:

"*I got an aggression against buses, when I lived in Fredericia, and I drove a lot by bus, and then suddenly the prices went up, because no one was driving the bus, and I thought, 'that's stupid, they raise the prices for you because there are not enough people using the bus'. Then I thought, 'that's terrible, I don't want to drive the bus anymore'*" (Appendix 17, p. 4).

While for some interviewees and survey respondents reducing the price of the buses would somewhat reduce their economic reasons behind choosing other transportation methods, it has to be understood that both Nordjyllands Trafikselskab and Aalborg Kommune have a certain budget (and within that budget, limitations) and costs to consider when discussing bus routes and prices. In an ideal situation, the price of bus tickets and bus frequencies and amount of stops could be increased, but, as Interviewee 13 pointed out,

"*with public transportation, maybe it could be a bit more often and a bit closer to people, but then I'm not sure if it makes sense for them. They have to pay a lot of money for that to happen. If you would make it really close and like really often, then buses would have to go more often, more in the city and like more buses, more stops, more people to pay and everything. It would be really expensive.*" (Appendix 13, p. 3).

In this sense, it can be seen that economic factors also affect the providers of public transportation, which also determines how their service will work, and how they will make themselves available for transport users. While not being entirely the focus of this project, it is a clear example of how the vision or opinions of the transport users do not always align with the possibilities of, in this case, the transport providers.

Concluding with this section of the analysis, and again referring to Interviewee 9,

"*If I have to go somewhere, I'll always take the bike. If it's with my family, we'll take the bus. If it's all about being 'real sustainable', then we should have bought an electric car.* [...] *There's also an economy that plays a role in it, and daily life. You have to prioritise that a bit more than sustainability*" (Appendix 9, p. 8),

economic reasons, same as other types of social factors, can become an enabling or deterrent element when deciding not only how to structure mobility practices, but also how many possibilities there are of recrafting or even substituting certain practices.

From deciding between what is convenient and what is not, when a transport method is there for commodity and when it is a necessity, and even when the personal economic

situation allows between choosing certain practices or having to discard them altogether, these analysed social factors serve as an exciting look into the comments and personal situations of different residents of Aalborg to try to answer the problem formulation and try to establish why these citizens transport themselves the way they do.

Cultural Factors that Motivate the Practices

Freedom vs Restriction, and the influence of Personal Preferences

The second section will uncover the cultural meaning and factors that impact the residents of Aalborg's choices of mobility practices, where elements such as beliefs, values and norms will be analysed within the individual's practices. Similarly as seen above, this section of the analysis will attempt to resolve, to the furthest extent possible, one of the secondary questions posed in the problem formulation of this research, most specifically, discovering "*What is the local perception of public transportation and mobility?"*.

Between the seen cultural concepts, stated by both interviewees and survey respondents, it becomes pertinent to begin this part of the analysis by comparing the feeling of freedom vs the feeling of restriction that surrounds certain mobility practices.

Similar to the factors explored in the above section, it becomes pertinent to establish that all humans have different beliefs and values, making the notion of freedom and that of restriction significantly differ as per each person's view on transport methods. This affects, therefore, how recrafting or substituting practices for more sustainable options is understood in each individual's own context.

However, despite this, some similar horizons have been spotted in the gathered data, especially when it comes to individuals that often use a car, and how they perceive the idea of freedom or independence. For example, Interviewee 7 acquired a car because he "longed" for more flexibility for his family and, being more specific, because he recently became a father, therefore expressing his newly found use of a car as,

> *"It saves time, it saves money and I can be at a place at my choice of the day. I do not have to wait like okay the bus is going to be in the next 15 minutes so I cannot leave before that or I cannot leave after that. So yeah, it gives me freedom of choice."* (Appendix 7, p. 2).

Similarly to the previous quote, Interviewee 1 agrees with this notion, and further develops his beliefs regarding the independence that driving offers compared to:

> *"I don't want to depend on someone, for example, if he has to go home early today to pick up his kids or something* [...] *so it's easier to say, 'Fine, then you pack your car, you can drive and I'll finish up'* [and stay behind]*"* (Appendix 1, p. 4, translated by author).

These symbolic meanings of freedom and independence from other people can be suggested to be a major part surrounding the practice of driving, and, as long the car symbolises this freedom feeling, then aiming towards more sustainable transportation will prove a true challenge.

As author Steven Barr synthesises it: "*as a result of decades of planning focused around the car, mobility practices have developed within these physical choice architectures that necessitate long commutes, weekly shops by car, driving to schools to drop off children, and generally planning life around the affordances of the car*" (Barr, S., 2015, p. 100).

Summarised in the same text, "*we have designed a living arrangement that necessitates driving to fulfil economic, social, and cultural goals*" (Ibid, p. 91), and that strongly argues in favour of the car symbolising one's perception of freedom. Barr is supported by NT's Holland, who commented that for a lot of people "*taking a bus was not really part of the considerations at all,* [...] *as the city has been developed in such a way that it supports using a car."* (Appendix 20, p. 5, translated by author). Holland continues by stating that, when individuals first have a car (and this, in turn, symbolises freedom and independence, while having the necessary infrastructure that suits its requirements), then it becomes difficult to move mobility practices away from using a said vehicle (Appendix 20, p. 6, translated by author).

Trying to counteract this situation, Aalborg Municipality's "Mobilitet 2040" plan for transport in the city aims to make it more inconvenient to drive a car while also making it easier to bike and use public transportation. The other expert, Brian Høj thinks that:

> *"It's too easy to drive in the car. It's too easy to have a car. It's too easy to get rid of it again.* (Appendix 21, p. 2, translated by author). [...] *It is also necessary to 'swing the whip', which is somewhat the prerequisite for getting more people to cycle: making it a bit more difficult to drive* (Ibid, p. 3, translated by author).

One of the proposed methods to get people to substitute their mobility practices away from cars is through infrastructural changes, as it is believed that, if using the car gets too difficult and/or annoying, then the notion of freedom might change for some individuals and, as a result, their perception on other types of practices. However, as it stands now, the car is the ultimate sign of "mobility freedom", and changing that belief will need both infrastructural and societal transformation.

In an attempt to not entirely modify beliefs, but try to find an effective recrafting of the practice of driving, a possible better strategy for certain residents can be drawing attention and focusing on electric cars, where the support and feelings towards, seen in the gathered

data, are generally positive. When it comes to certain interviewees (those who own a house and have the option to acquire, for example, the necessary materials for the electric car) they either have one already or talk positively about them. For example, Interviewee 5 bought one of these vehicles at the start of 2022, where:

"I looked a bit at the operating costs of a car at the time, with the electricity prices and with the options that were there. So it was much better for both business and the environment to buy an electric car" (Appendix 5, p. 5).

The electric car is now thought of as a good alternative to the gasoline car, but many mentioned its price as the greatest barrier to overcome when acquiring one, as families are sometimes in need of a car of a certain size, which often becomes too expensive if the vehicle is fully electric. But, as Interviewee 5 also stated, the operation cost and price on consumption are significantly lower in electric cars compared to diesel cars (Ibid), so, it can be strongly suggested that, if the initial price of electric vehicles decreases or a market for used electric vehicles is established, then recrafting to electric cars will become a solid and strong option.

While the price of the vehicles plays a great role when looking into a recraft of the practice, other factors also have to be taken into account. It is paramount to understand the basics of how an electric car works to encourage transport users towards them. In this regard, options to charge the cars become vital, and, as mentioned above, not having access to a charger (either at home, work or other places) makes it inconvenient to consider recrafting to an electric car. In this regard, Interviewee 1 states:

"*First of all, there is this thing with charging stations. One of the important things, lack of charging stations, and especially when you consider that I live on the 3rd floor in Vestbyen. [...]* [There are] *between 100 and 150 apartments and there is room for 20 cars. If you then start to say that this is a charging station parking space only for electric cars, or something like that, that is not logical*" (Appendix 1, p. 9, translated by author).

Further explaining this problem, Interviewee 10 says: *"I don't have an electric car myself, but they're nice, and that's really smart. Now, I live in an apartment, so it's maybe not so practical to have a charging station and so on, but it's really smart"* (Appendix 10, p. 5).

People living in apartments do not always have the possibility to install their own charging stations, which emerges as the second major barrier to recrafting practices towards electric cars. Therefore, to sort out this issue, the charging infrastructure for electric cars needs to be more extensive, operational and effective before electric cars can fully compete with gasoline cars. As Interviewee 15 (who, again, owns a Tesla) states:

"I don't think it's sufficient with the number of charging stations there are now. Because we have experienced that we have to wait in line for the charging stations. Because people have realised

that [having an electric car] *is probably the way forward. And that's what you buy as your next car, or buy an extra one. So I think it will be a problem if more* [charging stations] *are not being built"* (Appendix 15, p. 6).

On the other hand, she does see more charging stations being constructed, especially in Nørresundby, but the question lies in if they are installed fast enough to encourage more to recraft towards electric vehicles and satisfy the demand for them. When it comes to the residents of Aalborg, the survey results showed a very polarised and uneven opinion on cars, where 43% say that there should be less cars in the city of Aalborg, while another 43% disagree with this statement. Figures 13.1 and 13.2 evidence this polarisation:

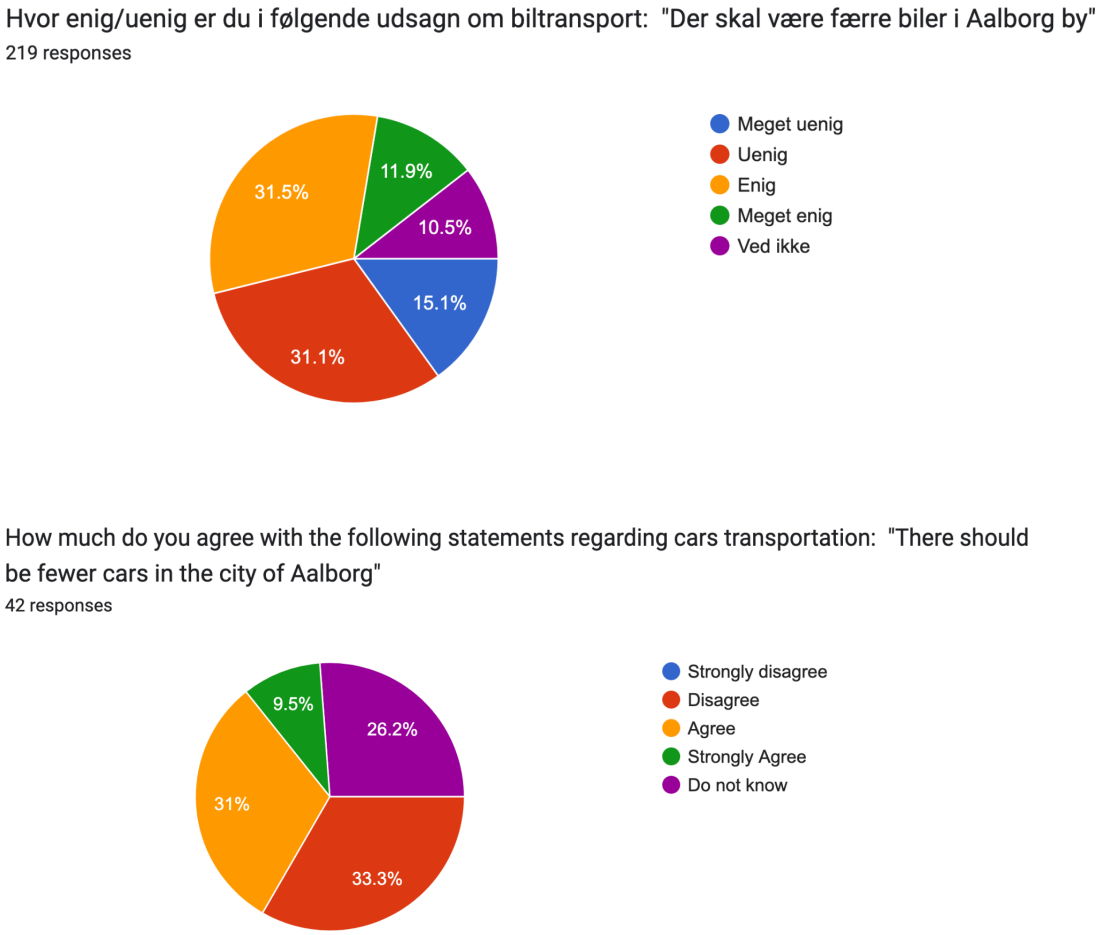


Figure 13.1 and 13.2 - Should there be more or less cars in Aalborg?

The opinion towards cars can be seen as greatly polarised and that includes the notion of freedom. It can be suggested, therefore, that the practice of driving a car has not fully monopolised the idea of freedom, as 80% of survey respondents say the bicycle infrastructure is good/excellent and 62% agree that bikes are more convenient than other transport methods

(Appendix 27, p. 7, Appendix 28, p. 7).

Interviewee 10, for instance, focuses more on that feeling of freedom in the sense of not needing to worry about other factors and concern himself on traffic, stating:

"Time means a lot to me. I actually find transport super boring. Traffic and long transport [...] *I'd rather not have much more than half an hour.* [when transporting himself]. [...] *The funny thing is that when biking half an hour, I don't think you lose that time. I think you can be more in your own thoughts, where you don't do that in traffic"* (Appendix 10, p. 6).

This "freedom from traffic" is mentioned multiple times, in the sense that, on a bike, you are not always directly impacted by, for example, traffic jams and/or accidents. Interviewee 9 supports the aforementioned statement by saying:

"In relation to cars I think that if you live north of the Limfjord, you have to go to Aalborg and work there, and you spend a lot of time in traffic when you go home. If you have normal working hours... I think that's one of the reasons why I cycle. You don't get so bound by traffic when it's 3 o'clock. It's faster to get home, and it's not as 'vulnerable' if an accident happens" (Appendix 9, p. 3).

Therefore, the meaning associated with biking for some of the interviewees and survey respondents relies on being able to transport oneself from point A to point B without delays if there is traffic. If, somehow, it becomes even easier for bikes to get around traffic, more people might gain the same feeling and substitute driving towards biking.

Still, it is acknowledged that achieving this is easier said than done, as 80% of survey respondents agree the bicycle infrastructure is good or excellent (Appendix 27, p. 7, Appendix 28, p. 7) but, despite this, around one of every two-three inhabitants of Aalborg owns a car (Statistik Denmark, 2021, 'Familiernes bilkøb', translated by author). This statistic shows that appropriate bike infrastructure can, by itself, not be enough to draw people's mobility practices away from the car. Not only that, but when compared to the last chosen mobility option, public transportation, multiple different restrictions have been mentioned against it. It can be suggested that the notion of freedom is not usually related to the personal perspective on public transportation, where users are dependent on, for example, a bus network instead of their own choices.

Even though this is a widespread thought inside the conducted interviews, Interviewee 19 demonstrated that this cannot be considered a general case, as he himself chooses the train for going to work in Hjørring, feeling a sense of freedom when doing so compared to when taking the car: "*I prefer to take the train because I like being free to do what I want* [...]. *And what I like about the train is that you are free to do something else while you are driving"* (Appendix 19, p. 2). Again, as stated above, personal factors will likely alter perceptions and

feelings towards different practices. Interviewee 19 emerges as the opposite of the majority of interviewed people who live in Aalborg but work outside the city. Interviewee 11, mentioned in the former section, once a year tries to take the train to work but immediately "drops" it as it takes her twice as long to get to work (Appendix 11, p. 1). She, instead, chooses to focus more on carpooling as a more sustainable transport practice, also due to the fact that, in her neighbourhood, there are around five coworkers that could easily carpool to work.

"*We have some colleagues who meet at a resting stop at Vestbjerg and drive together. But my colleagues are not so friendly. They do not want to as soon as it's just a bit annoying. Then people will not join. And I just can't understand it, because it takes five minutes to go over in another's car. So in periods we are some coworkers that drive together* (Appendix 11, p. 1).

She believes that it is the freedom of not being dependent on others that draws colleagues away from carpooling, exemplifying this using the argument of "*what if the kids get sick?*" (Ibid, p. 2) and you cannot depend on others, or what if her colleagues seek that freedom to go to where they have to when they need or want to? She does believe there are possibilities for carpooling in the future as:

"We have so many that meet at eight o'clock. But it takes a bit of work to look into each other's schedule and maybe having to wait an hour. But in relation to the fact that it takes twice as long with public transportation, I think it's good to wait an hour. We also have private desks, so we can sit and wait and prepare for lessons a bit" (Ibid, pp. 1-2).

Interviewee 11 and Interviewee 19, on the other hand, have different views on what freedom and time mean. As touched upon above, Interview 19 finds freedom on the train and, for example, doing some practical things while commuting (Appendix 19, p. 2), whereas Interviewee 11 would not mind waiting an hour at her workplace and doing some practical things there before going home by car (Appendix 11, pp. 1-2). However, it can be argued they both strive to transport themselves more sustainably, but each has different meanings attached to transportation: while one likes the freedom a car provides, the other finds freedom in doing something else while transporting himself.

As mentioned before, Interviewee 19 can be considered a particular case, since a large number of the other interviewees presented different restrictions when it comes to public transportation. Survey respondents were rather aligned with these restrictions, with almost 80% writing that public transportation is not effective enough, while only a meagre 43% use public transport, but perhaps not on a daily basis (Appendix 27, p. 5, Appendix 28, p. 5, translated by author). The residents of Aalborg, in general, are not per se against using public transportation, as 60% agree that, if it was more effective, they would be inclined to use it

more often (Ibid). A further 67% agree there should be a bigger focus on public transportation than there is now (Ibid, p. 6).

A trend in support towards public transportation can be seen, with most comments from both the survey and interviews denoting positive attitudes towards options like the Plusbus, with almost 75% of respondents stating that they will use or will maybe use the Plusbus after its inauguration (Ibid, p. 10).

However, it also has to be said there is a strong consensus between the survey respondents and the interviewees towards the evident personal restrictions behind taking the bus. As briefly explored in the previous section of the analysis, frequency and price are mentioned as restrictions in almost all the conducted interviews and also in the majority of comments from survey respondents. As seen in a previous section, 70% say it is expensive and (Ibid, p. 5), as also quoted above, Interviewee 17 is the best example on this belief:

"*But it could also be that I got an aggression against buses, when I lived in Fredericia, and I drove a lot by bus, and then suddenly the prices went up, because no one was driving the bus, and I thought, that's stupid, they raise the prices for you, because there are not enough people using the bus. Then I thought, that's terrible, I don't want to drive the bus anymore"* (Appendix 17, p. 4).

As shown and also debated above, increasing prices might not only drive users to find alternate transport options, but, in this particular case, Interviewee 17 has developed a general "*disbelief*" of buses, which can require many other factors that just reduce prices to revert. As also explored in the "Economic Reasons" section of the analysis, the importance of prices is still a pivotal factor that has been taken into account by Nordjyllands Trafikselskab, evidenced, again, by Holland's comments.

As also briefly debated above, NT can be confirmed to have certain difficulties when accommodating the requirements Aalborg residents set when it comes to the use of public transport. While it is not entirely certain, there is a possibility that NT will perhaps need more subsidies or financial support from Aalborg municipality or the Danish state to provide the optimal service and lower price that could drive more residents of Aalborg to utilise the bus system. It can be also seen that NT is well aware of the complicated situation they find themselves in, with Aalborg Municipality beginning to design a city that invites usage of public transportation (such as the aforementioned Plusbus) and making it less convenient to drive a car. These decisions have not had a positive effect on all Aalborg residents. One survey respondent, for example, commented on the bus and urban design by stating:

"It would be so nice to have less traffic in Aalborg city, but it will unfortunately mean that the city centre will close as people don't bother with public transport. The buses in Aalborg are far too expensive for, say, a family of four" (Appendix 28, p. 11, translated by author).

This resident seems to have a rather concerning view on the transport options in Aalborg, and, while they may have often visited the city centre to do activities or shopping in the past, due to infrastructural changes and high bus prices, that might not be a clear option anymore. The survey respondent does not seem to comment on a potential substitution of practices to other mobility options when visiting the city centre, but it can be suggested that, as a great number of other interviewees mentioned, they will much rather change the destination altogether to, for example, City Syd, as this option greatly accommodates the use of cars.

Furthermore, as mentioned, frequency and inconsistency are the main reasons for people not using the public transportation system, with multiple comments denoting a grade of apparent mistrust towards the bus. Especially, if it involves having to be at a certain place at a certain time. As Interviewee 18 states, public transportation:

"It's inconsistent, so it's hard to rely on. If I have an important meeting, I have to come way before just to make sure that my bus will not leave me stranded. Which is also pretty concerning. So it's hard to rely on" (Appendix 18, p. 8).

He is one out of many that expresses a feeling of inconsistency when it comes to moving by bus, but, interestingly, it is easier for him to find negative experiences when it comes to taking public transportation, suggesting that some interviewees might have a preconceived bias towards this system of transportation. As mobility has been determined to be an important part of an individual's life, being on time is incredibly meaningful and often a requirement for a lot of people when it comes to transportation. Therefore, it seems that being delayed by the bus one or more times can make people distrust their usage. The bus needs a high success rate before users fully trust them for important appointments or events, but, with buses utilising the same roads as cars, there might be delays because of traffic that can be suddenly created by accidents, construction work and so on. Substituting practices towards buses can be, therefore, difficult as long as the negative reputation towards them persists in the minds of some Aalborg residents. Infrastructural changes could be made to fight back this idea, for example, having roads or lanes meant specifically for buses might help diminish unforeseen traffic problems. This could be a general reason why the support and expectations surrounding the Plusbus are generally positive. Should the method of transport prove

effective, perhaps more residents might be inclined to substitute their practices towards the usage of public transport instead of, for example, the car.

Taking into account and analysing now another chosen transport method, appropriate bike infrastructure does not necessarily incline Aalborg residents to exclusively bike. While the sense of freedom can be said to be well represented, the residents of Aalborg have presented multiple restrictions that draw them away from biking. Interviewee 2 sums it up by stating:

"*When I get on a bike, I also know that, when I get to the destination, I'm sweating. There's just no such thing as 'low gear'* [biking slowly when] *going out to eat. You are sweating and boiling hot and I don't want that"* (Appendix 2, p. 6).

This "material" impact that biological factors such as sweating can have is enough to restrict some individuals from biking, instead making them seek different means of transportation, such as driving. On this note, sweating from biking has been widely mentioned as an important detractor when choosing this transport method, as individuals dislike the unpleasant feeling it gives when having to go to work or school. Other external factors also play a role when it comes to restrictions: weather conditions such as wind, rain and snow are often mentioned with the same frequency as biological factors. Of course, these factors are nearly impossible to sort out, nor are they expected to be resolved.

However, when it comes to internal factors, there are also individuals whose personal identity, beliefs or values emerge as being directed against biking or the use of public transportation for different reasons. An example of this can be seen in Interviewee 1, whose beliefs determine that the feelings of convenience and freedom the car provides are difficult to match. He summarises it as:

"When you are born far out in the countryside, it's just the way it is, and it sticks (even if you live here in the city) to the lifestyle I have, with the choices I've made. [...] I'm not a 'city rat', you could say it that way, I'm probably more of a 'field vole'" (Appendix 1, p. 10 and p. 6, translated by author).

From the gathered data and the explored cases, it can be suggested that Aalborg is a diverse city, encompassing all age groups, featuring people who were born and raised in it and others that moved to it from the countryside, other Danish cities or even other countries, all of them having grown up with different values, beliefs, personal preference and mobility practices. It is not a surprise then that some residents present certain "identity restrictions" towards some mobility practices. As Interviewee 2 points out, society nowadays is always

inclined to go for the "easy option" when presented with different alternatives: *"I belong to a generation where it needs to be easy. So, if I have to move a kilometre first* [to get to a bus stop] *to then go in and eat with some friends and so on, I don't think I want to*" (Appendix 2, p. 4).

As seen in the Social factors people will often be inclined to choose the most convenient, comfortable and independent option when it comes to transportation, which, naturally, makes it difficult to substitute practices towards more sustainable mobility options. Interviewee 3 addresses this topic by saying:

> *"We live in a society where everything is getting faster and faster. There are more and more expectations. There is less time for transport, because there are so many things to do. It's a time-priority thing"* (Appendix 3, p. 7).

Both these last two interviewees agree that the society we are building is going fast, and, therefore, transport needs to be easy, so not too much time gets "wasted" on it. Interestingly to note, this is also the only moment in which the horizons of these two interviewees coincide with each other, as, in this case, political beliefs between them are polarised regarding their thoughts on, for example, existing infrastructure. Interviewee 2 states she will not visit the city if it is not easy for her to get there, whereas Interviewee 3 embraces the possibility of restrictions towards the use of the car by saying:

> "*When I look out the window, as it's raining today, and I have to go to the dentist later, I end up taking the car. I do that because of my own preferences as I like to bike in the rain.* [...] *A brave city could say 'It's not about your convenience, it's about not burdening the earth more than necessary. [...] Time has run out for all those cars. It's a luxury'.* [...] *In the development* [of cities] *maybe we should be a bit less spoiled"* (Appendix 3, pp. 5-6).

Naturally, it is difficult to structure a city and a society which encompasses all the different values and personal ideas that each person might have. The cultural meanings associated with transport have also made it almost impossible to create any significant changes without having a consensus from all layers of society. Cultural, personal beliefs and values are difficult to change and, at least for the moment, the joy and feeling of freedom that some transport methods can have, added to the restrictions and negative feelings other methods provide, will still be a pivotal part of the identities, and therefore, the decisions and the preferences that transport users in the city of Aalborg will take into account when defining their unique mobility practices.

The Notion of Sustainability

Closing with the analysis, it becomes interesting to dive into the notion of sustainability that has been generated around the city of Aalborg, including what sustainability means for Aalborg residents and if they believe they are (or not) sustainably responsible; if they consider their city sustainable or not; and how could the city itself enhance and promote sustainable practices. This part of the analysis seeks to not only respond to the pertinent problem formulation, but also to try to comprehend how sustainability and sustainable transportation is perceived by the interviewed individuals (especially when comparing the concept to the academic definitions).

The Definition of Sustainability and Sustainable Transportation, what does it mean for Aalborg Residents?

According to the "Brundtland Commission" and the United Nations, the well-known "Our Common Future" report defines the concept of sustainability as the "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (Brundtland Commission, 'Report of the World Commission on Environment and Development: Our Common Future', p. 41). Taking this definition, other researchers have expanded this concept to different areas. In some of these, sustainability is divided into three intertwined spheres (sometimes called the "Triple Bottom Line" or "Three Pillars of Sustainability") which represent three spaces that need to be in focus to achieve a fully sustainable world. These pillars are: social sustainability, economic sustainability and environmental sustainability (McGill University, 2013, p. 2). Referenced above in the literature review, but not explained in detail, the term social sustainability refers to the fulfilment of "*Universal human rights and basic necessities* [that] *are attainable by all people, who have access to enough resources in order to keep their families and communities healthy and secure*" (Ibid). Further on, economic sustainability is seen as being achieved when "*Human communities across the globe are able to maintain their independence and have access to the resources that they require, financial and other, to meet their needs*" (Ibid). Lastly, environmental sustainability can be considered present when "*Ecological integrity is maintained, all of earth's environmental systems are kept in balance while natural resources within them are consumed by humans at a rate where they are able to replenish themselves*" (Ibid).

Having determined what several sources consider as the definition of sustainability, it now becomes pertinent to remember, referring to other parts of this research, what does "sustainable transportation" or "sustainable mobility" exactly mean.

As explored above, Vandycke and Viegas consider sustainable transportation as:

"*the provision of services and infrastructure for the mobility of people and goods [...] in a manner that is safe, affordable, accessible, efficient, and resilient, while minimising carbon and other emissions and environmental impacts*" (Vandycke, N. and Viegas, J., 2020, p. 23).

In other words, it can be understood as any transportation method that, for example, emits less CO2 emissions than an average gasoline car.

Taking this definition from a more structural point of view, Barr explains that "*sustainable mobility involves reducing the need to travel by making the places where people live economically viable and vibrant*" (Barr, S., 2015, p. 103). Of course, sustainable transportation, according to authors Litman and Burwell, is not exempt from these three aforementioned spheres that make up sustainability: the economic one, the social one and the environmental one (Litman, T. and Burwell, D, 2006, p. 334). Another form of seeing sustainable transportation is dividing it into categories depending on transportation options, such as differentiating between trucks, trains, local transportation, aeroplanes, and more (Ritchie, H. 2020. 'Cars, planes, trains: where do CO2 emissions from transport come from?'). This distinction is usually done when research on sustainable transport requires analysing these transport methods separately.

Taking these definitions into account, this investigation also took into account the definitions of individual Aalborg residents when it comes to their personal understanding on what sustainable transportation is. This was done in an attempt to compare and contrast how sustainable transportation can be perceived, and if there are any subsequent actions taken by individuals to pursue more sustainable mobility practices or not.

To begin with, it is pertinent to state that some of these definitions share similar concepts and terminology to those found in the literature review. For example, Interviewee 10 states that

"*Sustainable transport is not a fuel-based transport, and it doesn't emit as much CO2.* [...] *I think that's what I would associate it with. We're talking about electric cars and cycles of course, but not diesel and petrol*" (Appendix 10, p. 6).

Similarly, Interviewee 11 says sustainable mobility "*should be something that's not CO2-polluting. I really want to have an electric car. And we should soon have a new roof,*

and I want solar panels on it" (Appendix 11, p. 6). Other interviewees complement these mentioned ideas: "*I would assume it means trying to go, uh, for renewables and not use gasoline and petrol and diesel anymore in terms of cars and everything with an engine*" (Appendix 13, p. 5), or even divide it into the seen spheres, for example:

"[Sustainable transportation] *can be divided into two: It has to be economically sustainable* [...] *as it's economically bearable; It has to be able to run around without government support* [...] *And the other thing is the environmental aspect: At some point you have to go over to clean electricity. That's something you have to do*" (Appendix 14, p. 7) or:

"*I work a lot with sustainability. It is a three-part thing, including social, environmental and economic* [concerns]. *If you answer purely by the environment, then the sustainability would be to be able to take the bike or walk around or take public transport where you can gather more people*" (Appendix 16, p. 6).

While perhaps focusing more on concrete examples of sustainable transportation, other interviewees have steered from these potential definitions and instead have identified transportation practices that they consider sustainable. These examples see sustainable transportation as "*collective transport*" (Appendix 3, p. 7); "*Bicycles, 100%*" (Appendix 18, p. 8), "*the electric bus probably is a sustainable mode of transportation. I don't know, biking or like biking lanes, biking streets would be a great idea for that*" (Appendix 12, p. 7) and so on. These Aalborg residents define the concept as utilising what could, perhaps, be a representation of sustainable transportation from their own horizons, personal beliefs and experiences.

Lastly, other interviewees have somewhat unique definitions of sustainable transportation that can perhaps be said to be greatly dependent on cultural and social factors like those seen above. Interviewee 8, for example, attributed sustainable transportation to his own upbringing in the American countryside, saying:

"*Sustainable transportation?* [...] *I think mainly like I grew up hearing from my mom and my dad, if I wanted to do something and I asked them to do it, they would turn to me and say, 'are your legs broken?' And I would say, no. I would tell the culture and I would tell the society, 'are your legs broken?' If they're not broken, move, do something. I think for most of us, sustainable transportation means if your legs aren't broken, use them. Get on a bike, walk, and then a car would be the last option*" (Appendix 8, p. 5).

Differently, but also focusing on cultural factors, Interviewee 7 defines sustainable transportation as:

"*One that can have a balance between all the conveniences that my car provides me. It saves me a considerable amount of time. It makes me comfortable to use them. Especially when I have bus stands with closed glass windows so that I can be safe from the wind and the rain when I wait for the buses*" (Appendix 7, p. 5).

It is interesting to note that this interviewee is also not originally from Denmark. This definition can be said to stand out from the rest as it is a personal take on sustainable transportation related to personal benefits, like time-saving and comfort, topics previously discussed in this research. It is also worth noting that, for this individual, the regular gasoline car is included in the definition of sustainable transport.

Concluding with this section, this analysis presents different definitions of what sustainable transport is: from the academic definitions given by authors that specialise in the topic to those given by transport users of Aalborg. Each definition has an importance of its own, as it can be strongly suggested that it is likely that individuals will act on achieving sustainable transportation depending on their own definitions of this concept. In other words, it cannot be "expected" that the transportation practices from residents of Aalborg aim to achieve, for example, the maximum minimisation possible of carbon emissions if their own concept of sustainable transportation refers to, for instance, saving time.

However, the gathered data can also strongly suggest that residents of Aalborg, generally speaking, have a proper understanding of what sustainable transportation is when their definitions are compared to the academic definitions.

Is Aalborg considered a "sustainable city" when it comes to transportation?

This second part of this section of the analysis will put focus on whether the interviewees consider the city of Aalborg to fulfil the above seen definitions of "sustainability" and "sustainable transportation" or if the urban design and the infrastructure of the city are, in the opinions of these individuals, still lacking when it comes to analysing it from that point of view. This section of the analysis will serve to answer one of the secondary research questions, "how could the mobility practice in Aalborg enhance sustainability?".

As mentioned above, Aalborg municipality, utilising different initiatives, has put a focus on the area of sustainability. In their own words, also seen in the introduction to this research,

> *"the development of a sustainable society is both about taking care of the environment, the climate and nature, about building cities for people and about getting the best out of the current economic reality*" (Aalborg Kommune Plan, 2013, 'Bæredygtighedprofil', translated by author).

Evidence suggests that the city of Aalborg and Aalborg municipality make an effort to convey a message of sustainability, for example, in "EnjoyNordjylland", the official tourist

guide for Northern Jutland, Aalborg is said to be "*a small sustainable city* [...] *that creates the framework for sustainable choices*" (EnjoyNordjylland, 2023).

While the city might attempt to showcase itself in this particular way, it also becomes relevant to explore what the inhabitants of Aalborg might perceive regarding this topic. While being a somewhat polarised topic, certain interviewees believe that Aalborg has done considerable efforts to promote sustainability and sustainable transportation. Interviewee 18, for example, considers that:

"*I think it fits pretty well. I like that Aalborg is not designed around cars. And I like the recent changes in the city centre, where more and more streets are actually… They either reduce the maximum speed for cars or they actually close the traffic for cars. I think it's a positive change because it just makes cities more walkable. There's more incentive to take a bike if you live in the city centre"* (Appendix 18, p. 9).

In this case, and aligned to what was analysed and explored before in previous parts of the analysis, the conception of Aalborg being a sustainable city or not goes through, for instance, biking possibilities and reducing car usage. Similarly, electric buses are also seen as a synonym for sustainability by Aalborg residents (Appendix 10, p. 6).

According to other interviewees, Aalborg

"*is* [doing] *pretty good with the… with like… trying to go green and everything with all the electric cars and everything, maybe they should have a bit of… a bit more incentive or they should actually help people and doing what the state would recommend or what would like doing"*

which could include, according to this interviewee, subsidies on electric cars for any citizen that would like to recraft from regular diesel cars (Appendix 13, p. 5).

According to the same interviewee, impulsing a sustainable transportation change lies in providing a substituting or recrafting opportunity for Aalborg citizens. In his opinion, change has to be appropriate "*and not in the way that: 'oh we need to cut these cars these types of cars down' because people are going to get mad. You need to enable some other thing"* (Ibid). In a general sense, this aligns with what Høj stated regarding the "*stick and the carrot*" (Appendix 21, pp. 2, 3, 9, translated by author), or, being able to find a replacement for, in this case, a transportation method when policies are modified. This hypothetical example provides a solid case for a potential recrafting of driving, by banning certain cars from driving in Aalborg (the "stick"), while potentially offering subsidies to buying electric cars (the "carrot"). Of course, this example given is hypothetical and no such arrangement exists. A more concrete, albeit smaller, example of this was stated by Interviewee 11, who said:

"*I don't know* [if Aalborg is sustainable]*, but I know what they're doing. I have a feeling they're going the right way. I think it's really nice that they're now pushing people to pay for parking in the airport, so they can start using the train they've built out there. And the new bus they've built, I think it's a nice addition*" (Appendix 11, p. 7).

While parking can be now deemed a less attractive option, as users will have to pay for it, there are still alternative methods (train and bus) that the city offers to reach that same destination.

Nevertheless, these comments serve, in one way or another, to legitimise the possibility of recrafting or substituting practices for the residents of Aalborg. Same as proposed in other parts of this analysis (exploring social and cultural factors), it can be strongly suggested that, given the right options are provided, and taking into account external and internal factors, Aalborg residents and transport users are open to recraft and/or substitute their current mobility practices. It is understood, naturally, that this statement does not refer to the totality of transport users in Aalborg, but to a seen majority according to the gathered data.

Also seen in the survey data and the interviews conducted, recrafting and substituting possibilities are varied, and, in general, also depend on external factors such as the infrastructure of the city. As seen above, electric cars emerge as a somewhat favoured recrafting possibility, as they are deemed to retain the freedom and commodity a car has, while adding environmental benefits.

In this case, economic and infrastructural reasons (mainly the price of the vehicles and the availability of charging stations) are the main factor that prevents a recrafting, but, as some interviewees expressed, the municipality of Aalborg could help become more sustainable by improving the infrastructure or subsidising the purchase of electric cars. The improvements to existing infrastructure, including the installation of more charging stations for electric cars, have demonstrated that Aalborg Municipality has a consideration on electric vehicles and the role they could play in the future in reducing transport CO2 emissions.

When it comes to substituting practices, some interviewees and survey respondents presented favouritism towards biking as a good replacement for the car. While this is also subject to external factors, such as weather, some interviewees, as seen above, are willing to leave their vehicles at home in favour of the bike. Electric bikes and cargo bikes (for families with young children) have been determined as particularly suitable options in terms of sustainable mobility practices.

Focusing briefly on cargo bikes, this mobility practice has been mentioned multiple times by interviewees as an option they would consider substituting the practice of driving while also keeping a level of commodity when transporting the whole family. Interviewee 15 is a good example on this substitution of practices, as she got rid of her second car, in favour of a cargo bike (Appendix 15, pp. 1-2), as she would like to cycle more in the future and avoid traffic jams. She also describes cargo bikes as being both more sustainable for a family and even more "fun" for her child. Interviewee 9, providing another example, would use the cargo bike to substitute the public transportation system when doing long trips with his family: "*We've considered buying an electric cargo bike. And then we could have* [our child sitting there]*, if we had to go to the city or to the Zoo. But we haven't bought it yet, because it's a bit expensive*" (Appendix 9, p. 4). In this case, the main factor refraining him to substitute for a cargo bike is its cost. However, it can be also said that cargo bikes emerge as a good substitution for both cars or public transportation when it comes to families that aim to transport themselves more sustainably. In this regard, it is also important to note that, while the equipment might be initially expensive, there are less costs associated with maintenance and fewer needs when it comes to infrastructure, where there is no need to install chargers in parking spots but, as some interviewees commented, it might be more helpful to have wider cycling lanes as "*cargo bikes take up a lot of space"* making them a challenge to drive sometimes (Appendix 6, p. 2, translated by author).

Naturally, for some transport users to consider these options in their everyday practices, there is the belief that the city of Aalborg should prioritise this method of transportation over others, for example, when it snows in the winter. As Interviewee 19 says: "*The biggest problem* [with cycling] *is probably in the winter, because then it's about prioritisation. Because you can see snow on the cycle paths, and it's very poorly prioritised*" (Appendix 19, p. 2). As Holland stated in the interview with NT and Aalborg Kommune, "*you can maximum prioritise two mobility forms in one road*" (Appendix 20, p. 7, translated by author), which leaves the possibility for biking to become a higher priority for Aalborg municipality in the search to be a more sustainable city. As the same interviewee also commented:

> "*There are some initiatives that go the right way. But, there's a lot of talk about building better cycle possibilities. If it's being prioritised enough? I'm not entirely sure about that, but it's something you can feel, that there's a focus on in the city*" (Appendix 19, p. 5).

It can be said that, while there is a general sense of positivity towards if the city of Aalborg can be considered sustainable and to be conscious of sustainable transportation, there is still room for improvement across different spheres.

Some interviewees have considered the city of Aalborg to be far away from what they consider sustainable. Interviewee 16, when asked about this topic, said:

"*With what I know, limited. So both, I think that Plusbus seems to be their approach to sustainable transport. They have done it so it is more difficult to drive a car in the city centre, which I personally think is the right thing to do. There are just some conditions and there are some other things that prioritise something else* [...] *so I think there are some conditions on the way that are in the right direction* [...] *Because they are trying to do it right, but they are doing it wrong."* (Appendix 16, pp. 6-7).

In this case, the interviewee believes that, while the objective of Aalborg municipality might be seen as the appropriate one, the methodology is what fails in the attempt to achieve sustainable transportation.

Other interviewees believe that, altogether, the city of Aalborg cannot be considered, at the moment and in their own opinions based on their own perceptions of what sustainable transportation is, a sustainably responsible city:

"*I don't think I have the necessary information to answer that question. But my immediate impression is that it's no. Because the world and Denmark are still just behind. I think it's wrong to say* [it is sustainable] *just because Aalborg has a Plusbus. It has cost a lot of money and resources to build the infrastructure. We haven't gotten any profit out of it yet. I'm sure that we're not in goal, and that it could be much better. The city still 'invites' to drive a car. When I look out the window, as it's raining today, and I have to go to the dentist later, I end up taking the car. I do that because of my oven preferences,* [...] *but also because it's possible. A brave city could say 'It's not about your convenience. It's about not burdening the earth more than necessary'"* (Appendix 3, p. 7).

In this case, Interviewee 3 believes that the city is falling short of being sustainable because there is a lack of "bravery" to impose what, in her opinion, would be necessary restrictions to withhold the use of the car in favour of other, more sustainable, practices. Important to note, and also referenced above, is that, sometimes, these changes cannot be done drastically out of the blue. As Høj referenced, the doctrine of the "stick and carrot" makes it difficult to apply, for instance, a full ban on cars or similar extreme policies. He also remarks that "*politicians have more difficulties when applying the 'whip'"* (Appendix 21, p. 2, translated by author) because of the negative political consequences this can have on their personal image. Taking this into account, the question of whether there should be more or less restrictions on traffic was found to be inconclusive and polarised in the two conducted surveys. In total, 39% of respondents agreed there should be more restrictions to help with traffic in Denmark, while a further 43% disagreed with this statement (Appendix 27, p. 4,

Appendix 28, p. 4). Figures 14.1 and 14.2 evidence this polarity:

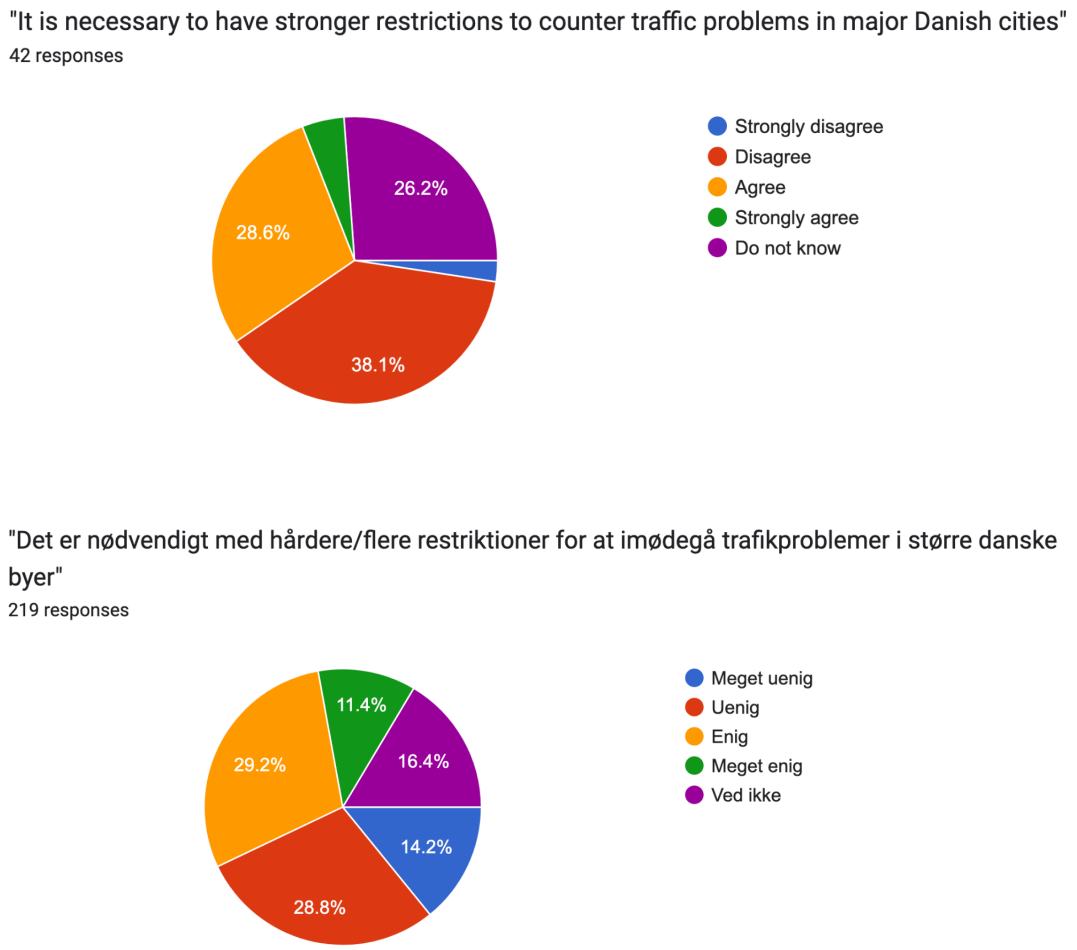


Figure 14.1 and 14.2 - Are restrictions necessary to counter traffic problems? (Appendix 27, p. 4, Appendix 28, p. 4)

Another interviewee attributed this failure at being sustainable and having sustainable transportations methods to Nordjyllands Trafikselskab, stating that "*they 'sailed' for 10 years but haven't been able to live without economic support* [from the municipality]" (Appendix 14, p. 8) In this case the consideration of whether Aalborg is a sustainable city or not is connected directly to his definition of sustainable transportation, which associates the term with economic independence.

In general, it can be seen that most interviewees lean towards a more positive answer when asked if they believe Aalborg fits in their own definition of sustainable transportation (and sustainability). However, it is also clear to see that most of them believe improvements in this field can be done in various shapes and forms, from prioritising other transport

methods and not only the car, to implementing tighter restrictions. In the words of Interviewee 7, Aalborg residents consider their city to be "*Not 100%* [sustainable]. *I'll say 60%*" (Appendix 7, p. 5). Worth noting is that this question is strongly aligned to the one before, with each individual having a different perception of what sustainable transportation is, and, therefore, having different criteria when considering whether Aalborg is sustainable or not.

Also important to stand out is the fact that several of the interviewees would be in favour of a substitution or recrafting of their transport practices, with some of them even going as far as to admit they would not mind a tighter intervention from Aalborg municipality, even if it meant creating inconvenience for some transport users, in favour of improving sustainability in the city. Considering the fact that, as seen in the theory above, "*appeals to change our* [transportation] *behaviours have largely become ones that are dismissed*" especially by an infrastructure that supports a living arrangement that depends greatly on driving as a tool (Barr, S., 2015, pp. 91-92), these statements favouring this "change in behaviour" and the introduction of alternative practices can be regarded as a positive trend towards making transportation practices and the city of Aalborg even more aligned towards sustainability in the near future.

Do Residents of Aalborg Perceive Themselves as Sustainable?

As shown above, the understanding of sustainability varies from person to person, and other factors like personal values, political views and beliefs impact on how they perceive themselves when it comes to being sustainable. Two people that might share similar transportation practices could have completely different views on how they perceive sustainability, and how they believe they fit (or not) into their own definitions of sustainability.

The interviewees do insinuate to be relatively conscious about their transportation usage, and have not tried to either over- or understate their impact, therefore, it can be implied that the answers are both unbiased and honest to a certain degree.

A good example to justify this statement is the difference between the answers of Interviewee 3 and Interviewee 17, as they present completely different views of themselves. For instance, Interviewee 3 can be characterised as an environmentalist, since, throughout the interview, she talked about not "*burdening the earth*" more and how she strives to bike to substitute the use of the car (Appendix 3, p. 7). On the other hand, Interviewee 17 denotes a

love and passion for cars, and the freedom they provide and, therefore, has no plan to substitute his diesel Volkswagen Golf.

When both of them were asked if they believed they fitted into their own definitions of sustainable transportation, Interviewee 17 stated: "*Yes, I think so. Diesel is beneficial when it's driven long distances. I drive to Hjøring, Frederikshavn, France, and Norway. I have long trips"* (Appendix 17, p. 8). He focussed on the efficiency of diesel in long-distance trips in his reasoning for declaring himself to be transporting around sustainably, whereas Interviewee 3, the environmentalist, found herself on the complete opposite side of the spectrum when asked the same question:

> *"No, I don't think so. I should bike all the time. I don't have a good reason to take the car, rain or not. But I do it because it's convenient. It means a lot* [to cycle]*, and I aspire for it more. It would help me to cycle more. It would help me if it was a little more difficult to take the car.* [...] *I'm not afraid that it's going to be a little difficult. I think it's the community, the politicians, that can make it difficult.* [...] *But in practice they don't dare to decide anything that would make a little bit of discomfort or a little bit more difficult. It would just help me if it was more difficult. I would not have anything against it. I would actually think it would be positive"* (Appendix 3, p. 7-8).

It can be seen that the two interviewees have completely different understandings of what sustainable transportation is, therefore impacting directly on how they view themselves as part of that notion of transporting sustainably. As shown above, the majority of the interviewees believe electrifying our transport methods (such as buses and cars) is, perhaps, the best way to go, but Interviewee 17 thinks differently, mainly because of his perception on his practices and on sustainable transportation. Interviewee 3, exemplifying other concepts seen in previous sections of this analysis, sees a danger in the extreme convenience of the car, and pledges the municipality to focus more on other transport means, which can help her and others to substitute their practices towards, for example, biking more.

When it comes exclusively to survey respondents, the largest percentage of them rated themselves between 5-7 points out of 10 when it comes to being environmentally conscious (Appendix 27, p. 17, Appendix 28, p. 30). Meanwhile, 19 people rate themselves with 3 points or less. And also 19 of them rate themselves 9 or 10 points, in a clear example of an even, uniform distribution (Ibid). It was understood that, the higher the number, the more environmentally conscious the individual perceives him or herself. Taking into account, therefore, both survey respondents and interviewees, it can be strongly suggested that the residents of Aalborg see themselves as having an average or slightly above average perception of the notion of sustainability and how it might influence their decisions (both in transportation and outside of it).

Concluding with this part of the analysis and the analysis proper, it can be argued that there are many factors, each varying in nature and importance depending on the individual, that nudge the residents of Aalborg into choosing specific transportation practices in their everyday lives. These factors, which can be, for instance, grouped in spheres such as "social factors" and "cultural factors" present, in this analysis, internal debates that are rooted in both internal and external happenings, from the weather of the city, passing through economic considerations, to own beliefs on transportation freedom and preferences. From all of this, moreover, it can be said that residents of Aalborg have a concrete understanding of what sustainable transportation is and, while definitions vary depending on a multitude of factors, it can be argued there is a tendency to regard sustainability as an important part of transportation options, with several interviewees willing to substitute or recraft a practice in favour or a more environmentally friendly one. It is also important to remember that some individuals do not have the same options as others, with cases such as medical necessities or work constraints making it near impossible to substitute or recraft a practice for the time being, depending greatly on external factors such as the development of transport options in the city of Aalborg.

Regardless, and drawing a general conclusion from this analysis, it can be seen that the residents of Aalborg favour concepts such as convenience, commodity and independence when it comes to selecting their transport practices. Looking back at the case design of this research, which was centred around a "most likely" case type, the initial understanding of the topic, according to nationwide statistics, included the idea that 88% of Danes considered climate change a "somewhat serious" or "very serious" problem (Madsen, M & Fertin, R., 2022, p. 7). After conducting this analysis and gathering the relevant data, it can be somewhat confirmed that Aalborg residents (Danes and internationals) rated themselves as average to above average when it comes to being sustainable. However, that does not fit entirely in the initially thought conceptions, so, it can be argued that, while climate change can be seen as a major concern, individuals in Aalborg either care less than initially suggested by statistics, or act less on that notion of fighting climate change. In this sense, elements such as convenience and freedom, as seen above, have acted as the main detractors when it comes to substituting or recrafting existing practices. Following the findings and the case design, it can be suggested that, similarly as it happens in Aalborg, there is a large probability that these same problems and barriers are replicated in other similar-sized European cities. It could be argued that this could be a focus area where Aalborg municipality could put more emphasis on, as, if they provide the right tools to make existing transportation methods not only more

sustainable but also be more convenient, feel more independent and have been surrounded by a sense of commodity, it can be suggested that transportation in the city could take an unprecedented turn towards achieving full sustainability. Nevertheless, it can also be said that there is a trend showing that some individuals in Aalborg are already willing to recraft their practices or substitute them altogether in favour of more sustainable ones, provided smaller conditions are met, denoting a general sense of involvement and interest for the environment and sustainability.

Discussion

Complementing the analysis above, this section of the research will help develop some other relevant discussions surrounding certain perceptions seen in the findings of the analysis but that go beyond the analysis proper. These discussions will include, for example, the notion of interlocking practices, also part of practice theory, and the polarisation found between different transport options in the city of Aalborg. The purpose of this brief section is to provide a deeper insight into certain aspects of transport practices in Aalborg that go beyond transportation preferences itself, but that also englobe other aspects of daily life that shape and modify them depending on each individual.

Interlocking practices

A concept briefly explored in the theoretical approach of this research, the notion of interlocking practices refers to a combination of existing practices (understanding that they affect and modify each other) called “complexes” or “bundles” (Spurling & McMeekin, 2015, p. 80). These interlocked practices can be produced and reproduced through their performance in everyday life (Ibid).

In this research, there were several instances in which it was clear that certain practices depended on and modified each other. Without a further case, several residents of Aalborg were seen to base their mobility practices on important parts of their everyday activities such as work. In this regard, the created codes of “necessity” and “commodity”, and what was seen in “sustainable transportation” present good examples of how practices interlock and produce different transportation results. Again, it is important to remark that each person is unique in their habits, values, beliefs, and norms, which also influence and produce unique transport practices.

However, what can be looked into in detail in this section, is the general factors that modify practices due to this interlocking. By taking a step back from the individual transport users and into more generic areas in the city of Aalborg, it can be seen that "everything is dependent on everything", and therefore, while some practices "lock" other practices, it can also be discussed how certain policies might "unlock" other, more sustainable practices. It is also important to remember that practices compete with each other for "*recruits or carriers*" (Larsen, J, 2016, p. 879), so, through external factors like policies, competitiveness might be pushed to specific practices. In other words, if policies are set up to reduce the use of the car, then the bike and public transportation gain an advantage in that competition. Similarly, this scenario can be inverted when and if cities look to be more car-oriented.

Taking this into account, the "locking" or "unlocking" of practices can be exemplified by elements such as political decisions or urban designs, which result in new policies being made that affect, for instance, parking possibilities, creating environmental zones or established meanings towards certain aspects of life. These policies or symbolisms therefore have a direct impact on people's practices, as the meanings attributed to the single family house support the creation of a more car centric city, as houses in Denmark have doubled in size since the 1960s (Olsen, T, Yding, H & Thybo, M., 2023, 'Mindre huse til gavn for klimaet splitter politikere'). This symbolism associated with "owning a bigger house is better" creates more distance between individuals and their destinations, which will, in turn, potentially incline these individuals to use the car.

On the other side, there are more direct implementations to change people's transportation practices, an example of this is the test implementation of the so-called "Heart Zones", which, according to Høj:

"*means that you force parents to drop off children further away from school instead of driving all the way to school. Then you force them to park somewhere else and then have the child walk to school or cycle to school instead"* (Appendix 21, pp. 8-9, translated by author).

It is clear this policy directly impacts how parents feel about driving their kids to school, as there is now a municipal requirement that prevents parents from parking in front of the school, making it less convenient for them to choose the car as a transport method. In this situation, and connecting to what was discussed above, while some parents might choose to drive anyway and drop the kids further away from school, others might change their practices altogether and instead cycle the kids to school. As mentioned above, in cases such as this, a new vehicle like a cargo bike (as some interviewees with children mentioned) can successfully replace the car as the chosen method of transportation as it has a level of comfort

and space that can justify its daily usage. Their investment in a cargo bike, should it happen, can also serve as a more convenient option to also drive themselves to work. It can be seen, then, that policies such as "Heart Zones" can directly modify previously "locked" practices and "unlock" them, which results in more sustainable transport forms to be taken into account by residents of Aalborg.

While being a simple and hypothetical result of the implementation of "Heart Zones", policies like this evidence how practices interlock with each other, and how they can positively (in some cases) modify transportation options.

Looking into future possibilities, this interlocking of practices could be utilised to develop a more sustainable transportation system in the city of Aalborg. Examples of other policies that could impact transport methods include: subsidies to electric car purchases (mentioned by one interviewee), offering "trial periods" or price reductions on electric bikes, or even including sustainable transportation in the curriculum of primary and secondary school children. A useful case including these policy changes can be seen in a recent trial period for electric bikes conducted by Aalborg municipality, where 21 individuals that work in the port of Aalborg were given electric bikes to use for a short period of time. The report concluded that 80% of the individuals used an electric bike every day. Similarly, 80% agreed that the electric bike replaced other of their transport practices, with 65% stating they would buy an electric bike (Aalborg Kommune, 'Leasing af El-Cykler', pp. 1-6).

Also emerging as a growing policy change that can "lock" or "unlock" other practices further is that of parking restrictions in the centre of Aalborg. This has led to a general discontent from certain residents of Aalborg, who have turned to other options as to not lose the freedom and convenience elements that the car provides. As Litman and Burwell say, "*sustainability requires more comprehensive and integrated planning, which accounts for a broad set of economic, social and environmental impacts, including those that are difficult to measure*" (Litman, T. and Burwell, D., 2006, p. 340).

City centre vs City Syd

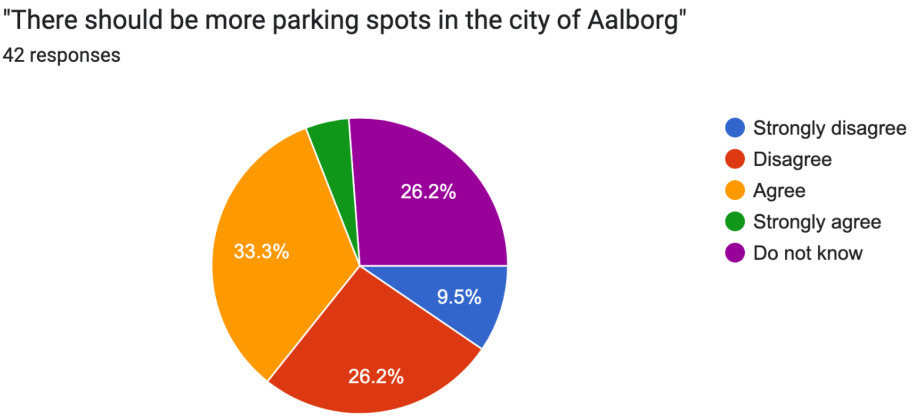
Continuing from the previous section, these policies have led to a strong polarisation on where Aalborg residents go when having to shop or just engage in social and leisure activities. The focus of drawing cars away from the city centre has encouraged car-centric individuals to feel more drawn to do the trip to City Syd for their shopping necessities rather than having to deal with recurrent inconveniences that appear in the city centre. For instance,

as seen above, people with difficulties to move (like the elderly or handicapped individuals) might not have the luxury of choosing between different transportation methods, instead depending on the car. They would naturally be more inclined to go to City Syd if restrictions in the city centre become tighter, having denoted a feeling of "discrimination" from the city centre towards the elderly and the handicapped.

On this note, these decisions made by car users can be attributed to a certain "*automobile dependency*", which, as quoted above, "*is often framed in terms of economic vs. environmental goals (sustainability requires sacrificing economic development objectives to protect the environment)*" (Litman, T. and Burwell, D., 2006, p. 340). Also an emerging part of this discussion of "having to choose" between the centre of Aalborg and City Syd is the "concern" that local businesses in the centre will lose customers to City Syd, and inevitably be forced to either shrink or close. In this regard, multiple actors can influence these interlocked practices in multiple ways. As Høj says:

"*the City Association* [which englobes the interest of several businesses in the Aalborg city centre] *and all sorts of other players have an interest in parking in the city. The City Association believes that, if we regulate car traffic too much, they risk losing some customers to City Syd"* (Appendix 21, p. 3, translated by author). But, as Høj also states, "*you, as a customer, get something else instead, i.e. that fewer cars provide a better urban environment or provide better conditions for cyclists and buses, etc. In other words, you have to get something instead"* (Ibid).

Looking into the survey regarding this matter, Aalborg residents also present an uneven opinion on whether there should be more parking spots in the city or not. A total of 57% agree there should be more parking spaces, while 30% disagree with this statement. A further 12% did not have an opinion about the matter (Appendix 27, p. 6, Appendix 28, p. 6). The next two figures 15.1 and 15.2 showcase these numbers:



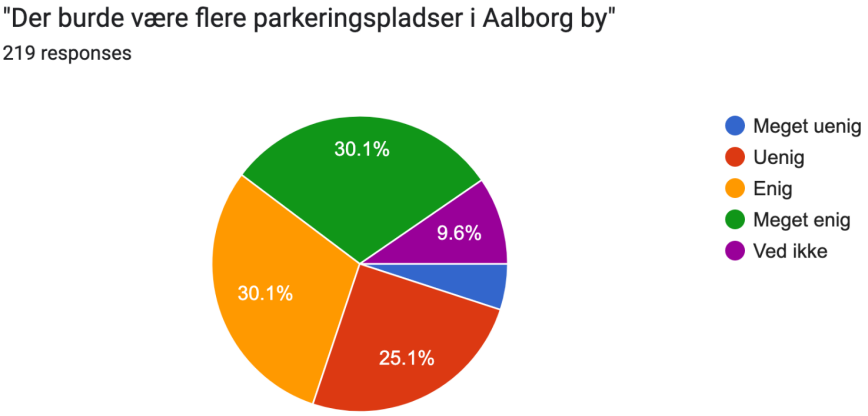


Figure 15.1 and 15.2 - Opinions on parking places in Aalborg (Appendix 27, p. 6, Appendix 28, p. 6)

While parking can be seen to play a major role in the decisions of individuals on where they shop, according to Brian Høj:

"*There are a number of studies* [that deal with] *'if you make it more difficult to park a car, does this mean that customers will disappear elsewhere?'. That does it for some people. For others, it may mean that you get into the city in a different way. It depends a little on what you get instead. That is, if you get a more attractive city instead*" (Appendix 21, p. 3, translated by author).

Høj argues that the lack of parking spots might not necessarily result in a flight of customers from the city centre to City Syd necessarily, but that it might instead invite other people entirely to shop and do social activities in downtown Aalborg.

Furthering his argument, Høj says that:

"*Dansk Industri is very focused on sustainable mobility. And why do they want it? They want that, among other things,* [...] *to use the area they have available, so* [investing in] *parking is money* [they could spend to enhance their economic activity]. *So, if the companies can use the money for*

something other than parking spaces, that assumes customers have access to some other mobilities" (Appendix 21, pp. 9-10, translated by author). In other words, he points out the fact that businesses that invest greatly in parking lots lose part of their physical space that could serve to provide a better economical activity for themselves.

Not only helpful for companies to save resources, the lack of parking spots can also result in an encouragement of employees to utilise alternate transport methods to transport themselves to work, which also helps in the storytelling (within sustainability) of the company.

A follow-up research to this investigation could potentially be to replicate the study a year after new transportation options (such as the Plusbus) are launched, or, if new policies that foment the usage of other transportation methods (such as electric bikes or cars) are implemented, for the sake of analysing if these new options have had an impact in the mobility practices of Aalborg residents.

In conclusion to this section and these two discussions, it can be said that transportation and sustainable transportation in Aalborg can be seen as much more than just as "how to get around" the city, but instead represent an intricate and interlocked web of practices, decisions, preferences, economic reasons, social and cultural factors, and more. The topic of transportation in Aalborg, and how that impacts not only their residents but also the life in the city (including businesses, restaurants, stores and so on), can be seen to be a highly contested and debated matter, with opinions in favour and against multiple options being constantly established depending on a multitude of factors, including sustainability, local and national policies, personal beliefs and infrastructural possibilities.

Conclusion

This thesis has looked in detail at the topic of transportation practices in Aalborg, looking into "why do Aalborg residents choose certain mobility practices, and how this impacts their perception of the city's urban design and transitioning towards sustainable transportation", and the secondary, associated, research questions. This was done by utilising a relevant supporting theory, practice theory, and not before first having conducted extensive research on similar papers, books, case studies and more, all detailed in the literature review. The research was also guided by a particular philosophy of science, which was centred around the perspective of hermeneutics, including the ontological and epistemological points of view. These perspectives were supported by a particular methodological approach, which included the establishment of two surveys and the realisation of multiple one-on-one interviews with the residents of Aalborg. The resulting data was then organised and analysed by applying Reflexive Thematic Analysis, which is centred around the creation of themes and codes.

Having conducted all of the mentioned above, it can be said that the ideas of feelings and meanings, for example the attributed ideas of freedom and convenience, play major roles in the formation of transport practices for the residents of Aalborg. In this regard, it can be strongly suggested that the average Aalborg resident favours the usage of transportation methods such as the car, as these are seen to fulfil the individual's acquired social and cultural factors. In this regard, the notion of sustainability can be seen to not necessarily condition the transport practices of Aalborg residents, but to still have a tangible impact on some residents when deciding how they move around. Similarly to this idea of having a more sustainable transportation (also seen to be favoured by other European cities and the European Union), it also was seen that a multitude of factors, both internal and external, condition the making, recrafting and substituting of the competing, interlocked practices. These include the likes of personal economy, governmental interventions (such as policy making), meteorological factors and others.

It can be said, therefore, that transportation practices vary significantly from individual to individual, and that it becomes pertinent to, while not going into detail, understand superficially the situation each individual finds itself in. However, due to these individual preferences, it can also be said that different mobility practices are regarded differently by Aalborg residents, creating very polarised situations, such as: whether there

should be more or less cars in the city or whether the public transportation functions correctly or not.

Nevertheless, while in some cases certain practices may be favoured, Aalborg residentes, connected again to the notion of sustainable transportation, have made it clear that a considerable amount of them would consider recrafting or substituting their practices in favour of some that could be seen as more sustainable. In this sense, the electric car emerges as a preferred recrafting option (for the diesel car user) while the electric and cargo bike, for example, emerge as favoured substituting options. Also considering this, and while some authors like Barr agree that appeals to change transportation practices have been generally dismissed (Barr, S., 2015, pp. 91-92), it can also be suggested that entities such as the Aalborg municipality have tried, through different approaches, to present residents of Aalborg with alternative ways to transport themselves, such as the mentioned e-bikes or the new bus system, the Plusbus. Of course, and regarding again the uniqueness of each individual's situation and their preferences, it also has to be acknowledged that some individuals prefer not to (or cannot) consider multiple transportation methods when moving around, whether it has to do with physical inabilities, excessive distances or time. As seen in the analysis and exploring the "most likely" case type, it can be argued that the concepts of convenience, commodity, independence, freedom and so on, might also appear as major barriers towards recrafting or substituting to a more sustainable transportation in other similar-sized European cities.

To summarise, Aalborg residents can be seen to construct their transportation practices based on a multitude of social and cultural factors, and, therefore, it can be suggested that, to achieve a greater regard on sustainable transportation, it is these factors (freedom, convenience, comfort, easiness, time saving, and more) that have to be addressed in hopes of a greener future.

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