Social identity and Cycling among Women:
The Case of Tel-Aviv–Jaffa

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The Case of Tel-Aviv–Jaffa

Research thesis

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Abstract

Substantial research has been conducted to understand differences between social groups in cycling for transport purposes. Most of these studies explain these differences based on individual benefits, personal attitudes, and infrastructure-related determinants for cycling. In contrast, only a few studies have explored how social identity guides group members' perception of cycling. Through the lens of the Social Identify Theory (Tajfel, 1974), this research aims to understand how social identity affects the perception of cycling as a mode of transport among women from different income levels. Towards this aim, in-depth, semi-structured interviews were conducted with 25 women from various income and educational levels, both cyclists and non-cyclists, with the purpose of better understanding the social meaning they attribute to cycling and the extent to which this meaning affects their willingness or reluctance to use the bicycle as an everyday mode of transport. Using the case study of Tel-Aviv-Jaffa (Israel), we found that cycling is associated with the distinct social category of 'being a Tel-Avivian', as well as with a healthy and active lifestyle, rather than a practice that 'everybody does'. This link between cycling and lifestyle is likely to enhance uptake of cycling among more privileged groups, who are often able to identify with such social and lifestyle categories. In contrast, we show how it may create a barrier to cycling for underprivileged groups, as they do not identify with these social categories and often perceive cycling as a practice 'which is not meant for us'. These findings underscore the importance of accounting for social identity in cycling research and policymaking, especially in low-cycling contexts. Furthermore, these findings imply that building a proper infrastructure alone is insufficient to encourage underprivileged social groups to cycle, at least in the short- to mid-term. To make cycling a more inclusive mode of transport policymakers must also act to normalize cycling as a 'socially-neutral' practice that (almost) 'everybody does'.

Keywords: cycling, under-representation, transport equity, social identity, social exclusion

1. Introduction

1.1. Under-representation of disadvantaged social groups among cyclists

Cycling offers a healthy, environmentally friendly, cost-effective, equitable way to improve the urban transportation system and can assist in creating more livable cities (Pucher & Buehler, 2012). Cycling infrastructure costs are relatively modest and the cost of a bicycle is relatively low so that a large portion of the population can afford a bike. In many cities, cycling is as fast as motorized transport, and many trips made in urban areas would take half an hour or less. Yet, in most cities cycling remains a small portion of overall trips, its growth is deterred by heavy traffic, lack of safe routes and bike parking, and rider fear of collisions (Deakin et al., 2018).

Cycling is considered a transport mode that may improve transportation and accessibility for disadvantaged population groups that are most likely to experience transport problems, such as low-income, ethnic minorities, and carless households. In the Netherlands, which is known for its high-quality cycling infrastructure and high-cycling mode share, most of these disadvantaged groups, with the exception of ethnic minorities, cycle even more than others (Martens, 2013). However, within countries with low-quality cycling infrastructure and low-cycling mode share, cycling is demographically unequal, especially by gender, age, and income (Pucher & Buehler, 2008; Pucher & Renne, 2003). For instance, in countries with relatively limited and poorly integrated cycling facilities, such as the US, Canada, the UK, and Australia, women account for only 20%-25% of cyclists, while in countries with extensive cycling facilities, such as the Netherlands, Denmark, and Germany, the share of women cyclists is roughly the same as men, and sometimes even higher. Similarly, in countries with extensive cycling facilities, cycling is more or less evenly distributed among all age groups, while in countries without them, cycling is mostly used by young adults (Pucher & Buehler, 2008). This is also the case in Tel Aviv-Jaffa, Israel, where, for example, in 2018 men accounted for 70% of cyclists, while women accounted for only 30% of cyclists. In addition, in 2018 cycling in a frequency of at least once, a week was more than four times lower among residences older than 60 years old (10%), comparing to this of 20-39 years old (42%) (Tel Aviv-Jaffa Municipality, 2019).

Understanding the needs of these underrepresented groups is crucial to formulate planning which considers their needs. Planning which addresses more demanding needs, such as higher levels of separated cycling paths, found to be more crucial for underrepresented social groups such as older adults and women (Aldred et al., 2017; Aldred et al., 2016; Bernhoft &

Carstensen, 2008; Zander et al., 2013), is most likely to be also suitable to 'less sensitive' social groups (such as young men). Furthermore, extensive financial investment in cycling facilities and promotion can be more easily justified when the planning is intended to enable (almost) all social groups to enjoy the benefits cycling has to offer. Therefore, to promote cycling trips for (almost) all population groups, policymakers need to obtain a better understanding of all major factors influencing bicycle use of groups considered as less likely to cycle, including social factors, and to execute policy actions based on these understandings.

1.2. Research aims and question

This study aims to contribute to a better understanding of the views of underrepresented groups on cycling as a mode of transport. In particular, it may help to develop an evidence base for policymaking and may thus assist in achieving policy goals like increasing diversity among cyclists, increasing bicycle mode share, reducing car use, and enhancing accessibility for population groups who do not have access to a car.

Many studies in the field of cycling as a mode of transport adopt an approach that focuses on the benefits, personal attitudes, and infrastructure preferences of the individual as the core units of research. While social influences are often acknowledged as playing some role in cycling, a relatively small number of studies were conducted focusing on the socio-cultural aspects of cycling. In particular, hardly any studies were conducted on the role of social identity in understanding cycling behavior. This is surprising, as studies from other fields, like environmental behavior (Fielding et al., 2008; Rabinovich et al., 2012) and health behavior (Terry & Hogg, 1996), have shown that social identity aspects can be important determinants of behavior. This thesis responds to this research gap by exploring the impact of social identity on cycling in a low-cycling context, such as Tel-Aviv-Jaffa. Through this exploration, I seek to establish that social identity matters in shaping the perception of cycling as a socially suitable (or unsuitable) mode of transport.

Accordingly, my research question is:

How does a person's social identity shape their perception of cycling as a suitable or unsuitable mode of transport and how those perceptions affect cycling uptake?

To answer this question, it is required first to develop the concept of identity, which enables us to think about the relationship between the individual and their social context. The concept of identity can assist us in shifting from a 'rational choice' model of transport behavior to an approach that focuses on the differences between social groups as they emerge from cultural

variations between them. This should assist not only in explaining bicycle uptake among different groups but also in designing policies that enable a broader range of groups to reap the benefits of cycling, thus assisting to promote transport justice (Martens, 2016)

One might think that a general increase in cycling level will also lead to an increase in the representation of groups that are currently underrepresented. For example, some studies suggest that gender differences in cycling may diminish as cycling becomes highly popular (Green et al., 2010; Pucher & Buehler, 2008). However, differences between social groups may translate into differences in their response to various policies to promote cycling for transport purposes. Therefore, implementation of policies that lead to a general increase in cycling level may not necessarily lead to an increase in the representation of groups that are currently underrepresented among cyclists (Aldred et al., 2016) and which may benefit most from cycling uptake. For example, there is less evidence that ethnic minorities will 'automatically' achieve the same level of bicycle ridership as the overall population, even in countries where cycling is highly popular, such as the Netherlands (Green et al., 2010; Martens, 2013).

It should be noted that this study considers "bicycles" or "cycling" in its broad sense which essentially includes the use of all personal transport vehicles, motorized or not, that can be used on bicycle paths according to municipal and national regulations (such as e-bikes and e-scooters).

1.3. Overview of the thesis

This study is divided into several chapters:

– Chapter 2 provides a review of the literature on the benefits to individuals from cycling, the lack of diversification in cycling in many developed countries, and the effect of electric bicycles (e-bikes) on the representation of different social groups among cyclists. In addition, this chapter provides an overview of studies that gave a greater emphasis on the socio-cultural aspects of cycling and how it influences the representation of various social groups among cyclists. Finally, it provides a review of individual-level and social-level behavioral theories commonly used in literature to explain behavior in general and travel behavior in particular. The chapter ends with a conceptual model that has guided the empirical research presented in this thesis.

– Chapter 3 presents the methodology of the study, starting with a further specification of the aims and objectives of the study and the research question, followed by a

detailed description of the research stages and how the research data was collected and analyzed.

- Chapter 4 present an overview of the study area, the city of Tel Aviv-Jaffa, and provides an analysis of secondary data to determine which social groups are currently underrepresented within cyclists among Tel Aviv-Jaffa residents.
- Section 5 is the core section of this research in which I draw on the social meanings of cycling by focusing on the images and the shared group norms. Through comparison of the social meanings of cycling between the various groups in study, I strive to draw on the relationship between social identity and the tendency of women from various social groups to see cycling as a suitable (or unsuitable) mode of transport.
- Section 6 presents the research conclusion, discussion, and policy recommendations concerning cycling, identity, and under-representation of women among cyclists.

2. Literature Review

This chapter aims to provide the context for the empirical research and to develop the conceptual model that will guide the empirical research.

The chapter is divided into several sections. Section 2.1 presents an overview of studies that have studied the benefits bicycle riders may derive from cycling as a mode of transport. Section 2.2 seeks to create a general understanding if, and under what circumstances, even-representation of various social groups in cycling as a transport mode is achievable. Section 3 aims to cover the effect of electric bicycles on cycling as a mode of transport in general and on the participation of different social groups in cycling in particular. Section 2.4 provides an overview of studies that gave a greater emphasis on the socio-cultural aspects of cycling and how it influences the participation of various social groups in cycling. Section 2.5 reviews individual-level and social-level behavioral theories commonly used in literature to explain behavior in general and travel behavior in particular.

2.1. What benefits can individuals derive from cycling?

Cycling can have multiple benefits for a person. First, cycling may provide better door to door efficiency than possible alternatives, especially for relatively short distances (faster and less demanding than walking; no schedule restrictions as in public transport; none or little congestion or parking problems as when using a car) (Fernández-Heredia, Jara-Díaz & Monzón, 2016). Cycling may also improve people's ability to access places, in terms of time (cycling is faster than walking and often competitive with the car and public transport in urban contexts), monetary costs (cycling is cheap), or convenience and comfort. It can even guarantee accessibility to destinations that individuals could only reach with great difficulty by other modes of transport available to them. As an active mode of transport, under most circumstances, cycling is considered to improve the health conditions of cyclists, especially at older ages (Tainio et al., 2016; Woodcock et al., 2014), thereby reducing health care costs and, for people in the workforce, increasing employee productivity as it reduces the number of sick days (Handy, van Wee & Kroesen, 2014). Moreover, beyond the benefits from increased physical activity, cycling is considered to have the potential to increase cyclers' general well-being (Rasciute & Downward, 2010) and create a positive self-image of being environment-friendly (non-pollutant and nearly noiseless) (Fernández-Heredia, Jara-Díaz & Monzón, 2016). From a social point of view, in comparison to motorized transport modes, cycling promotes social interactions between individuals (cyclists and pedestrians) and thus has a social benefit to individuals (Aldred, 2010). Finally, from a financial point of view, cycling reduces an

individual's expenditures on transport, as it is cheaper than motorized forms of transport, private or public (Heinen, van Wee & Maat, 2010).

2.2. Diversification in cycling: can cycling be (almost) for 'everyone'?

Previous research suggested that people from population groups underrepresented among everyday cyclists show greater concern toward sharing roads or routes with motor traffic than do people who are overrepresented, notably younger people and men. This holds in particular for people whose mental or physical conditions limit their (perceived) ability to negotiate heavy traffic safely or easily, such as young children or the elderly. As a consequence, it has been claimed that separate cycling facilities are the main factor to enable a wide spectrum of the population to cycle, particularly women, children, and seniors, as they reduce the inherent danger in comparison to cycling in mixed traffic with motor vehicles (Chataway, Kaplan, Nielsen & Prato, 2014; Pucher & Buehler, 2009). However, the decision to cycle is not dependent only on perceived or actual barriers and facilitators, but also on the meanings of cycling and its association with social identities (such as class and gender). In different social contexts, cycling is not even considered as an option and is not a matter of 'rational' choice, even in areas in which some level of cycling infrastructure exists (Aldred & Jungnickel, 2014; Martens, 2013).

In the following sub-sections, I will present a review of literature focusing on various population groups that are (considered) underrepresented among cyclists in many developed countries – the elderly, women, low-income households, ethnic minorities, and immigrants. However, it should be noted the despite similarities between many developed countries in terms of the groups which are underrepresented among cyclists, there are a few exceptions. For example, immigrants in the US are more likely to cycle compared to non-immigrants. However, their level of participation in cycling decays over time; the more the immigrants assimilate and their access to sources of financing is improving, so does their level of participation in cycling declines (Smart, 2010)

2.2.1. Cycling, Gender, and Age

Gender

Despite that policy interest in promoting cycling as a mode of transport has increased substantially, it often does not seem to result in greater representation of the various social groups, such as women. For instance, higher levels of cycling in the UK were not related to an increase in the representation of women (Aldred et al., 2016; Green et al., 2010). This finding

suggests that different types of people react differently to different types of infrastructure and conditions. As a consequence, policy actions to promote cycling may have differential effects on various groups (Bergström & Magnusson, 2003), particularly on women.

Many studies found that women appear to perceive traffic risks as greater than men, implying that the lack of high-quality bicycle infrastructure poses a barrier to cycling for everyone, but a greater barrier for women (Emond, Tang & Handy, 2009; Heesch, Sahlqvist & Garrard, 2012). Other studies conclude that greater levels of segregation in bicycle infrastructure are preferred by all cyclists, but particularly by women (Aldred et al., 2017).

A research from San Francisco found that white men are disproportionately represented among cyclists, that women bike less and are more likely to bike for non-work purposes than men, and that fear of injuries and bike theft are major deterrents to cycling for women. It was also found that the under-representation of Asian and Hispanic women is in part a result of cultural and social factors and not just a matter of travel conditions. They concluded that overcoming gender and ethnic/racial biases will require investment in the following measures to complement investments in protected bike lanes and secure parking: (1) partnerships with the communities of concern; (2) bicycle education to target and provide more support for women and people of color; (3) change the public narrative from "cyclists are mostly young, fit, white men" to "biking is for everyone"; (4) educate drivers about rules for sharing the road safely (Deakin et al., 2018).

Previous studies also found that as cycling declines, it becomes less gender-equal, suggesting that low investment in cycling infrastructure and promotion reinforces gender inequity (Aldred, Woodcock & Goodman, 2016; Garrard, Handy & Dill, 2012). However, other studies showed that where cycling has grown, there was not necessarily an improvement in the representation level of women. A possible explanation for this finding is that *"as cycling increases, cultural norms may take time to change and hold back changes in gender equity"* (Aldred et al., 2016 p. 40).

Studies also found that issues such as childcare responsibilities and shopping are likely to pose barriers for women's participation in cycling as they increase the complexity of their trips (Bonham & Wilson, 2012; Dickinson et al., 2003). Women were also found to hold more negative perceptions of barriers such as bad weather, hilliness, distance to work, carrying belongings, wearing casual clothing (van Bekkum, Williams & Morris, 2011), and concerns of appearance after cycling, particularly at work (Garrard, Handy & Dill, 2012). Other research found that women were less likely to cycle to work than men, but more likely to cycle for other

utilitarian trips, pointing at the presence of specific barriers to commuting for women (Damant-Sirois & El-Geneidy, 2015). These barriers are perhaps in part explained by gender norms, concerning women's perceived roles in the household, as well as norms involved in women's dress at work.

Grudgings et al. (2018) found that over distances appropriate for cycling, women had a much lower probability to cycle to work in areas that have a low attractiveness for cycling. This suggests that the combined effect of various determinants on cycling has a greater effect on women. Such determinants include the built environment (traffic density which is associated with greater risk and a low population density which relates to greater distances), the natural environment (rain found to have a greater concern to women than to men), socio-economic factors (household responsibilities reduce women's propensity to cycle to work) and psychological and utility factors (women commuters rank lower the importance of commute cycling efficiency).

Analysis of data from the EU Travel Survey shows that in high-cycling countries and cities, which are also generally agreed to have relatively high-quality cycling infrastructure and supportive cultural environment for cycling, women cycle as frequently as men (Heinen & Handy, 2012; Pucher & Buehler, 2008). Figure 1 supports these previous findings and shows that in the bottom five cycling countries women's participation is 26% or less, as opposed to 49% or more in the top-five cycling countries.

Figure 1: Cycling mode share and representation of women in EU countries, 2014
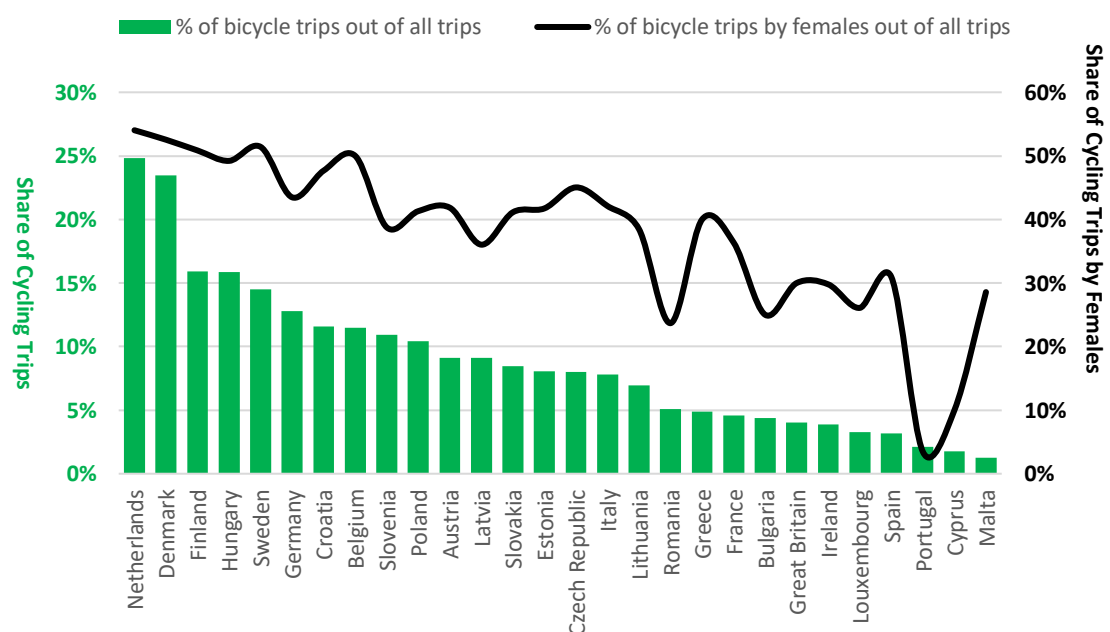
Source: own-analysis of data from EU Travel Survey on demand for innovative transport systems

Age

For older adults, cycling can have a positive influence on the quality of life, especially by providing a sense of empowerment and pride, broadening social networks, and increased pleasure (Zander et al., 2013). Cycling may also benefit older people in providing them opportunities for recreation and socializing and presenting them with an affordable and healthy form of transport (Rissel et al., 2013).

As many elderlies are likely to suffer from slowed reflexes, frailty, and deteriorating eyesight and hearing, they are considered to be especially vulnerable for cycling in unattractive environments for cycling (Pucher & Buehler, 2009). Studies that examined cycling preferences by age indicate that older adults may have stronger preferences for segregation from motorized traffic (Aldred et al., 2016). A study in Sydney found that the primary barrier to cycling among older people was fear of cars and riding on streets (Zander et al., 2013). A Danish survey found that older people saw cycle paths as more important than did younger groups (Bernhoft & Carstensen, 2008). From a behavioral point of view, an age-related factor that may lead to relatively slower uptake of cycling among older adults is the lower tendency of older people to be 'early-adopters' of new behaviors and/or technologies in comparison to younger adults (Aldred et al., 2016).

Cycling was found to be evenly distributed among all age groups in countries with extensive cycling facilities, while in countries without them cycling is mostly for young adults (Pucher & Buehler, 2008). In summary, in many Western countries and cities, high differences in participation of gender and age groups in cycling can be found, while in high-cycling countries minor differences exist and, in some countries, women and older adults are even overrepresented. Tel Aviv-Jaffa, however, is similar to low-cycling cities in having relatively high levels of gender and age inequality in cycling as a mode of transport, with women and older people disproportionately underrepresented In summary, in many Western countries and cities, high differences in participation of gender and age groups in cycling can be found, while in high-cycling countries minor differences exist and, in some countries, women and older adults are even overrepresented. Tel Aviv-Jaffa, however, is similar to low-cycling cities in having relatively high levels of gender and age inequality in cycling as a mode of transport, with women and older people disproportionately underrepresented (Tel Aviv-Jaffa Municipality, 2016).

Figure 2 below shows that in the bottom five cycling countries the representation ratio of adults older than 50 years old is 0.2 or below (i.e. 50+ people are severely underrepresented), as opposed to 0.68 to 1.35 in the top-five cycling countries (i.e. adults older than 50 years old are relatively less underrepresented in Finland and Sweden, evenly-represented in Denmark and overrepresented in Hungary and the Netherlands).[1]

In summary, in many Western countries and cities, high differences in participation of gender and age groups in cycling can be found, while in high-cycling countries minor differences exist and, in some countries, women and older adults are even overrepresented. Tel Aviv-Jaffa, however, is similar to low-cycling cities in having relatively high levels of gender and age inequality in cycling as a mode of transport, with women and older people disproportionately underrepresented (Tel Aviv-Jaffa Municipality, 2016).

Figure 2: Cycling mode share and representation of adults over 50 in EU countries, 2014
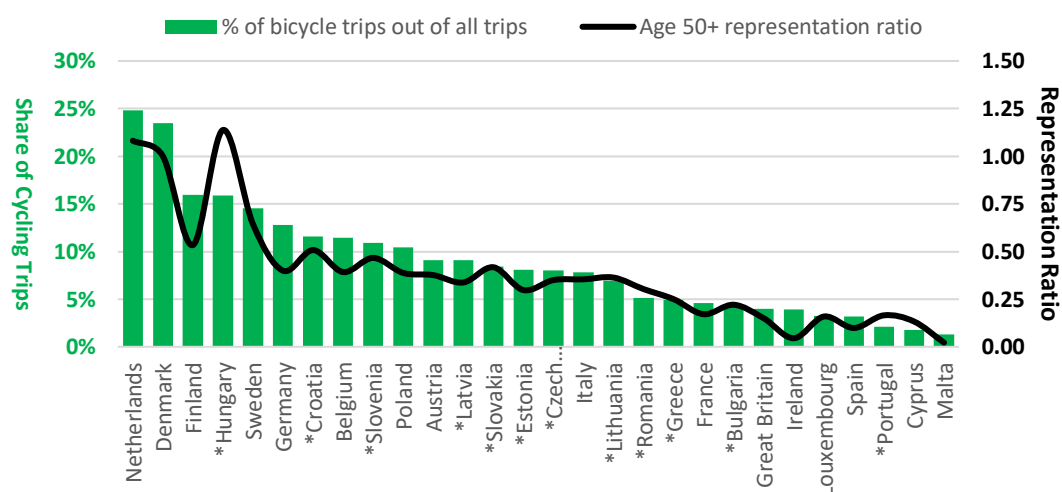
Source: own-analysis of data from EU Travel Survey on demand for innovative transport systems
* The data collected concerning these countries lack observations of adults over 60 years old.

Income, Ethnicity, Migration Status and Cycling

Relationships between income, ethnicity, migration status, and cycling have generally received less attention in cycling research than cycling across gender and age, with the result that the evidence is yet inconclusive. While some studies have found that white and higher-income households bicycle more frequently than their counterparts (Parkin, Wardman &

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[1] Ideally, I would prefer to examine the level of representation of adults applying a higher age cut (adults over 60 years old). However, due to the lack of adult observations in some countries of adults over 60 years old (indicated in the graph by *), I had to determine a lower age cut.

Page, 2008; Pucher & Renne, 2003), other studies conducted in other areas and contexts, found the opposite (Pucher & Buehler, 2006; Smart, 2010).

A study conducted in the San Francisco Bay Area found that low-income immigrants make less use of sustainable modes, such as cycling when they had access to private cars. However, concerning the level of bicycle use (regardless of access to private cars), the scholars did not find significant differences between low-income immigrants on the one hand, and US-born and higher-income groups on the other, despite lower access of low-income immigrants to bicycles (Barajas, Chatman & Agrawal, 2016).

These findings were somewhat consistent with those of Smart (2010). The author analyzed the US 2001 National Household Travel Survey data and found that Immigrants in the US are more likely to use sustainable transportation modes (public transport, bicycle, walk) compared to non-immigrants, but that this tendency decays over time. Suggested possible reasons for this finding were the strong effect of financial and legal barriers for private car usage and their moderation over time. Immigrants' poor access to sources of financing makes them more dependent on their current income (rather on credit) than native-born Americans and as a result, limits their access to private cars. Furthermore, lack of legal status limits immigrants' willingness to use private cars as it increases the likelihood of encountering the police. Finally, new immigrants' tendency to live in neighborhoods more amenable to the usage of sustainable transportation (in terms of their urban form), makes them more likely to use it (Smart, 2010).

In contrast, in London, White men were most likely to cycle, while Black and Asian people in general and Black and Asian women in particular, were least likely to cycle. Analysis of London travel survey data revealed that between 2001 and 2005-7 surveys the distribution of cycling across gender and ethnic groups did not change although cycling trips were doubled. Women and those from Black and Asian minority ethnic groups remained underrepresented. Furthermore, it has been found that both male and female cyclists were more likely to come from higher-income households (Green et al., 2010).

Even in the Netherlands, with its relatively low differences in cycling share between various social groups, bicycle use is relatively low among non-Western immigrants, particularly among women (Martens, 2013). Compared to native Dutch, bicycle ownership is relatively low within the main ethnic minority groups. This gap can be partly explained by the lack of knowledge of how to ride a bicycle in traffic conditions, both among the first- and second-generation immigrants (van der Kloof, Bastiaanssen & Martens, 2014).

Figure 3 shows that, with the exception of the Netherlands and Denmark which show a relatively low rate of under-representation of low-income groups, in all other countries low-income groups are severely underrepresented within cyclists with the representation ratio ranging between 0.04 in Portugal and 0.5 in Sweden.

Figure 3: Cycling mode share and representation of mid-low income and below in EU countries, 2014
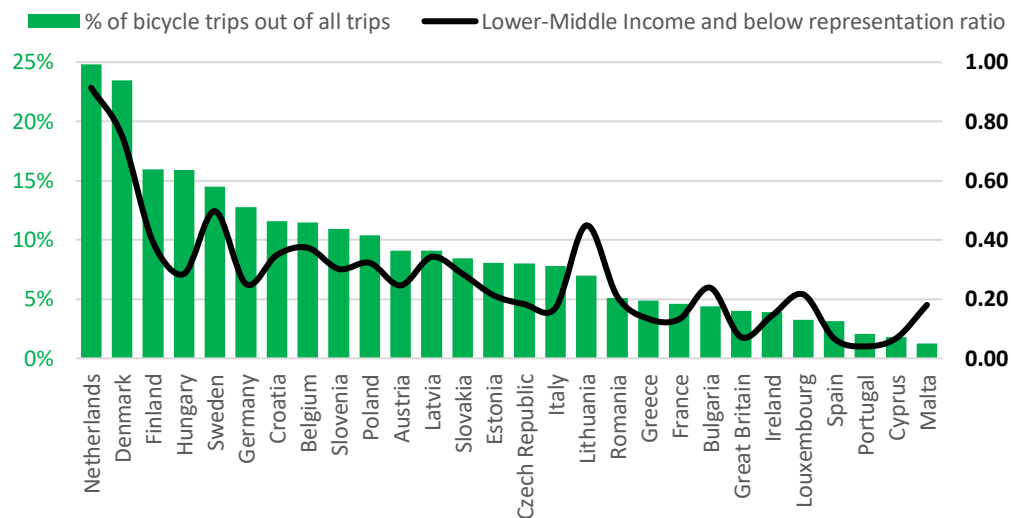
Source: self-analysis of data from EU Travel Survey on demand for innovative transport systems

Studies on attitudes to cycling identified several culturally related attitudes and factors that might explain the ethnicity and income differences described above. Davies, et al. (1997) suggested that cycling is being viewed as a 'low-status activity' by ethnic minority groups. Other studies suggested that cycling was considered to be inappropriate within some ethnic minority communities, or simply not perceived as an adult transport mode (Steinbach et al., 2011). Other research suggested that among low-income people in the US the aspiration for owning a private car plays a significant role as a high-status symbol, while bicycles are perceived as a low-status symbol (Jadhav & Bratman, 2014).

Steinbach et al. (2011) suggested that because those who identify themselves as White are not threatened by the possibility of poverty being perceived as the reason for cycling, they can more easily benefit from what cycling can offer (sense of autonomy, efficiency, for women - a signal of empowered, etc.). They can even enjoy bourgeois distinction for their urban 'sustainable' or 'alternative' identity, while for low-income and ethnic minorities, cycling can threaten their identity as it can be perceived by the social environment as a sign of poverty and failure.

In some ways, electric bicycles (e-bikes) show a mirror image of the perceptions of these two opposing population groups. While e-bikes can be perceived negatively as "cheating" among Whites (Jones, Harms & Heinen, 2016), among ethnic minorities e-bikes may be perceived as a relatively 'high-status activity' and therefore may encourage participation in cycling among these groups (Fish, 2019).

2.3. Micro-Mobility and Participation in Cycling

Micro-mobility, also commonly called Personal Transportation Devices (PTD), refers to *"different types of a growing set of devices that provide low-speed, flexible mobility for individual travelers"* (Fang, Agrawal, and Hooper 2018), such as electric kick-scooters, electric skateboards, hoverboards, and more. However, hereafter I refer to PTDs as those types of vehicles that are regulated somewhat in the same way as bicycles in some developed countries, such as in some states in the US and Israel (Fang et al., 2018).

Over the last decade, the use of PTDs has been increasing in many developed countries (Fyhri et al., 2017). PTDs represent one of the fastest-growing segments of the transport market and as such cannot be ignored, even though its share is still very low (Fishman & Cherry, 2016). The most common type of PTD is the electric-assisted bicycle (e-bike), also called Pedelecs (Pedal Electric Assisted Cycles) (Haubold, 2016). Another common mode is the electric standing/self-balancing scooter (e-scooter), which its uptake rose significantly in the last three years with the introduction in 2017-2018 of e-scooter sharing services in many major cities in the US (Clewlow, 2019), as well as in other cities such as Tel Aviv-Jaffa (Ziv, 2019).

As PTDs could reduce some barrier effects on cycling use, it is considered as an important tool for mode share transitions from private motorized mode, especially in countries with low bicycle mode share (Fishman & Cherry, 2016; Fyhri et al., 2017; Haubold, 2016). Various studies claim that PTDs offer many benefits to their users, such as longer distances to be traveled with less effort in comparison to conventional bikes (Cairns et al., 2017). A study conducted by the German Federal Environmental Agency (2014) showed that in urban areas with high an available quality infrastructure, conventional bikes are often faster than private cars for distances of up to 5 km, while e-bikes are often faster than private cars for distances of up to 10 km (Federal Environmental Agency of Germany, 2014).

As they increase the distance covered compared to conventional bicycles with less or even any effort that needs to be invested, PTDs are considered to increase accessibility for people unable or reluctant to use conventional bicycles, such as those with physical limitations and

older people (Haubold, 2016; Louis et al., 2012). While e-bikes require less physical exercise than regular bikes, they often still imply some physical activity associated with the required pedaling, suggesting that e-bike use is likely to bring health benefits to its user, especially considering that most users would probably otherwise use motorized transport modes (Haubold, 2016). Furthermore, as e-bikes are less affected by natural obstacles, they make it easier to transport heavier goods and may thus enable cycling for groups that have not cycled previously. For all of these reasons, PTDs are considered to have the potential to replace car trips and to increase cycling as transport among a wider range of social groups as compared to regular bicycles (Haubold, 2016; Louis et al., 2012)

However, PTDs carry some barriers in comparison to conventional bicycles. PTDs' purchase price is much higher than that of a conventional bicycle, battery performance and travel range are rather limited and decreasing over time, and the charging time of the battery is quite long. Furthermore, PTDs are considered less convenient for spontaneous use than conventional bicycles since users need to take charging into consideration. In addition, as PTDs are relatively expensive, they constitute a larger target for thefts. As a consequence, users may need to make sure having secured parking at home or the destination. In addition, since users require often lifting or moving their e-bikes when parking, their heavyweight may be a major challenge for some users (Haubold, 2016; Louis et al., 2012). On top of it, the safety issue is one of the major issues involved with PTDs, especially as other road users do not anticipate their high speed (Jones et al., 2016).

From a social perspective, in some social groups using e-bikes is perceived negatively as "cheating" and is sometimes not supported by peers (Jones et al., 2016). However, in other social groups, such as ethnic minorities and low-income groups, conventional cycling is sometimes viewed as a 'low-status activity', while e-bikes may be perceived as a relatively 'high-status activity' and therefore can encourage participation in cycling among these traditionally underrepresented groups (Davies et al., 1997). This study thus suggests that PTDs may increase participation in cycling of some social groups. However, it remains unclear which of the groups' participation will be increased, as e-bikes may improve the participation of low-income men, but not necessarily the participation of low-income women.

One concern is that PTDs could lead to a shift away from conventional bicycles. Summary of studies from different urban contexts suggests that the effects of e-bikes on other transport modes differ based on the local context, so that in car-centric cities (such as Australian,

Canadian, and US cities), e-bikes mainly replace vehicle trips, while in cities with high bike use, they replace the regular bike and car trips (Kroesen, 2017).

When addressing PTDs and their impact on cycling and on participation in cycling, new light electric mobility services, such as dockless e-scooters sharing services cannot be ignored. The service-based versions of these e-scooters started popping up on some US cities' streets in 2017 and are owned by private companies offering the scooters for short-term rental. They are called "dockless" as riders may leave the device at any location, rather than requiring that the scooters to be returned to a docking station. As this phenomenon is relatively new, the literature on this topic is rather limited. However, early studies concerning the adoption, use, and early perceptions of these new mobility services, can shed some light on this issue.

The public reaction to the popping phenomenon of the shared e-scooters is considered quick, strong, and ambivalent. On the one hand, e-scooters are perceived positively by many in major metropolitan areas with shared e-scooters, with slightly greater support among women and low-income populations. According to findings of a survey that included eleven major US cities, shared e-scooters were perceived to expand transportation options, enable a car-free lifestyle, serve as a convenient replacement for short trips in a personal vehicle, and as a complement to public transport. In terms of equity, compared with station-based, non-electric bikeshare services, shared e-scooters currently achieved greater equity across gender and socio-economic position in terms of usage ratio (Clewlow, 2019). However, one must remember that these findings are rather early and still need to be verified in wider research. In addition, many other aspects need to be addressed to understand the way that these new mobility services affect transport equities.

2.4. Cycling, Identity, and Culture

Scholars and policymakers tend to look at the 'best practices' of countries with a high-cycling mode share, such as the Netherlands and Denmark, as the well-developed infrastructure of these countries is being perceived as the main factor for their high-cycling mode share. However, bicycle use cannot be explained by the physical environment alone; cycling level in cities and countries can only be understood when taking both physical environment and socio-cultural factors into account (Aldred & Jungnickel, 2014; Pelzer, 2010; Willis, Manaugh & El-Geneidy, 2015).

On the same ground, the main approach within scholars of cycling behavior is to see cycling as an individual mode choice. However, transport decisions are not merely individual choices,

but are mediated by shared cultural and social perceptions and norms, and are linked to people's sense of 'who they are' or 'who they wish to be' in relation to others (Skinner & Rosen, 2016). While social aspects are often acknowledged as playing some role in cycling, relatively few studies highlighted the role of identity in understanding cycling behavior.

'Identity' is conceptualized both as people's sense of 'who they are' and the meanings they attach to different views of themselves (personal identity), as well as 'who are they similar to and different from' and their identification with various groups or social categories (social identity) (Skinner & Rosen, 2016).

Studies explored cycling and identity have found that the bicycle contains a different symbolic meaning to different social groups, which act as a key determinant for cycling especially in low-cycling contexts (Aldred & Jungnickel, 2014; Pelzer, 2010). For example, it has been found that the bicycle was often perceived as a threat to low-income and ethnic minorities identity as it can be seen by others as a sign of poverty and failure or as a mode meant for children (Steinbach et al., 2011). On the contrary, for higher-income groups, cycling often supports their sense of who they wish to be, as it can provide them with the means to express their urban 'sustainable' or 'alternative' identity and lifestyle (Anantharaman, 2017; Steinbach et al., 2011).

Other studies found that in low-cycling mode share countries, and particularly in the Anglo-Saxon context, cycling is perceived as a symbol of resistance against the dominant car culture and is being used in favor of the construction of a 'green' lifestyle which provides its users with a distinctive form to their everyday lives (Furness, 2005; Horton, 2006; Pelzer, 2010; Aldred, 2013). Some of these studies concluded that promoting cycling through distinctions is ethically problematic as it may depend on the othering of the disadvantaged social groups (Anantharaman, 2017; Law & Karnilowicz, 2015).

Some studies explored the relationship between cycling, identity, and culture by examining the experience of immigrants with cycling in the adopted country in comparison to their experience with cycling in the country of origin. A study from Australia found that for migrants and refugees the choice of cycling is affected by a sense of place, one's identity and is associated with the experience of displacement. Migrants and refugees found not to share the view of cycling as an environmentally friendly, healthy, and functional mode of transport and identified cycling behavior differently in comparison with cycling in their countries of origin. While in their country-of-origin migrants and refugees perceived cycling as a functional practice, in Australia they perceive it as a practice that is associated with a group they do not

relate to – elitist white Australians. Therefore, homogenizing cyclists by linking their image with attributes of a responsible, moral, and good citizen, is ethically problematic (Law & Karnilowicz, 2015). Kaplan et al. (2018) explored the cycling habits of female immigrants from driving-oriented to cycling-oriented countries concerning the fulfillment of their needs and their immersion in their new culture. They found that cycling in the adopted country relates more to a need for a sense of belonging and less to functional needs, while that sense of belonging seems to have a negative effect on the intention to cycle upon return to the country of origin in the future, most likely because of the negative stigma from which the bicycle suffers in the country of origin. Furthermore, the authors found that moving for a longer time to a more established cycling culture (such as the Netherlands or Denmark) increases the probability of female immigrants getting around by bicycling in the adopted country. These findings confirm that transport mode choice is also a matter of culture and suggest that stronger cycling cultures are more successful in convincing female immigrants to cycle for transport purposes. The authors concluded that to promote cycling policymakers should not only focus on satisfying functional needs (such as the construction of cycling infrastructure and facilities), but also on initiatives that increase the feeling of a sense of belonging (Kaplan, Wrzesinska & Prato., 2018).

Comparative studies on cycling and identity, aimed to understand the differences of the role of identity in different places, found that socio-cultural aspects are more powerful determinants for cycling in low-cycling mode share countries. In contrast, in high-cycling mode share countries, cycling is almost culturally 'invisible' and material aspects, such as availability and quality of bike lanes and parking, play a more significant role (Aldred & Jungnickel, 2014; Pelzer, 2010). They concluded that when a practice becomes widely spread, such as cycling in the Netherlands and driving in virtually all rich countries, it becomes culturally 'invisible'. Furthermore, they found that in low-cycling countries people living in cycle-rich towns or cities construct specific local cultures to normalize cycling by emphasizing the perceived difference of their local norm from the national norm, as well as by comparing themselves to high-cycling European countries and cities (Aldred & Jungnickel, 2014).

A study conducted in Portland examined the barriers to routine cycling for women and minorities who already own a bike. The authors found that complex social barriers linked to experiences of harassment and discrimination, gendered division of labor, a lack of diverse bike community, and the perception of cycling as a practice that young white men do, limit motivations for cycling amongst women and minorities. They concluded that routine cycling is linked to overlapping racial, gender, and class identities, so that efforts to increase routine

cycling must acknowledge the unique challenges each social group faces (Lubitow & Tompkins, 2016).

While studies from other fields, like environmental behavior (Fielding et al., 2008; Rabinovich et al., 2012) and health behavior (Terry & Hogg, 1996), have shown that social identity aspects can be important determinants of behavior, in cycling research the social identity approach was rarely used to explore cycling behavior. I found only one study which used the social identity approach to explore cycling behavior. In this study, Lois et al. (2015) incorporated social identity as an additional predictor variable to improve the explanatory capability of the theory of planned behavior (Ajzen, 1991). The authors concluded that incorporating social identity into the theory of planned behavior assists in capturing motivational factors relevant to cycle commuting (Lois et al., 2015).

2.5. Behavioral Theories Review

Individual-level behavioral theories have been mainly developed to explain what moves individuals to make choices, how these choices are made, and when changes occur. Some of these theories see behavior as a function of common internal factors of individuals, such as values, attitudes, personal norms, and beliefs. Others see behavior as an outcome of external factors such as incentives, social norms, regulatory constraints, etc. (Jackson, 2005). A further theoretical perspective argues that behavior is a function of both internal (the individual) and external (the environment) factors so that to get a better understanding of the complexities of human behavior, one needs to acknowledge the influence of both the individual and the environment (Stern, 2000).

This section reviews behavioral theories of two different types – individual-level behavioral theories and social-level behavioral theories – commonly used in literature to explain behavior in general and travel behavior in particular.

2.5.1. Individual-Level Theories

Utility Theory

Utility Theory, also called Rational Choice Theory, assumes that individuals make a rational choice between alternatives to maximize their utility. According to Utility Theory, the individual is aware of the alternatives and their implications and rationally chooses the alternative with the highest utility. As Utility Theory is considered to be individualistic, the choices made by individuals are considered not to be affected by the choices of others (Adjei & Behrens, 2012).

This theory is considered more suitable for analyzing cycling for utilitarian purposes, such as commuting, as the preference for commuting by bicycle is considered to be driven by rational considerations, such as the desire to reach a destination quickly, save travel time, and as such increase the productivity of the individual (Aldred, 2015).

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is one of the most widely cited and applied theories of human behavior. It is considered as part of a family of theories that focus on individuals' attitudes and beliefs (Ajzen, 1985, 1987, 1991). The theory evolved from the Theory of Reasoned Action (Fishbein & Ajzen, 1975), which posited intention to act as the best predictor of behavior.

According to TPB, the likelihood of an individual to perform a certain behavior is related to the strength of the individual's intention to perform it. The behavioral intention of individuals, which represents their commitment to perform a certain behavior, is itself the outcome of a combination of several factors: attitudes (favorable or not) toward the behavior; perception of subjective norms concerning the behavior (how likely it is that important others will approve/disapprove a given behavior); and the perceived behavioral control of the individual concerning the behavior (the confidence in performing the behavior and the certainty it will produce the desired outcomes). The stronger the intention of the individual to engage in a behavior, the higher the probability that the individual will perform it (Ajzen, 1991). The key components of the theory are illustrated in Figure 4 below.

Figure 4: Scheme of the Theory of Planned Behavior (Ajzen, 1991)
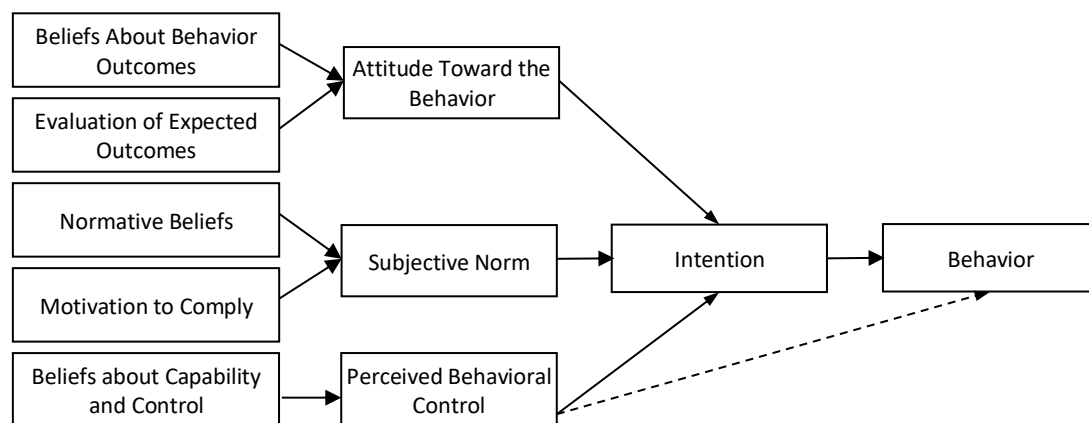
The first component of the model, Attitude Toward the Behavior, represents the individual's beliefs toward the consequences of performing the behavior as well as the importance of these beliefs and their consequences to the individual (Fishbein & Ajzen, 1975).

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The second component of the model, Subjective Norms, represents the perceived social pressure from important others to perform (or not perform) the behavior. While the Attitude component represents the sources of influence on behavior at the individual level, Subjective Norms represent the social influence on behavior. The Subjective Norms component can be measured using a probability scale meant to capture the individual's perception concerning the expectations of others to perform (or not) a certain behavior (Fishbein & Ajzen, 1975).

The Subjective Norms component is deriving from two sub-factors – *Normative Beliefs* and *Motivation to Comply*. *Normative Beliefs* represent the perception of the individual regarding how other related groups of people (e.g. family, friends, co-workers) think the individual should act (Fishbein & Ajzen, 1975). For example, if someone believes that her co-workers view coming sweaty to work from cycling as not appropriate or they view cycling to work as a stylish, hip, and environment-friendly act. *Motivation to Comply* represent the individual's willingness to follow the normative beliefs of her reference groups or to deviate from them.

The third component of the model, Perceived Behavioral Control (PBC), is defined as the individuals' perception of their capability to execute a certain behavior. Researchers applying the TPB to cycling behavior (e.g. Heinen, Maat & Wee, 2011) usually ask subjects to rate how likely they think it would be for them to cycle for transportation, how capable they feel of cycling for transportation or how easy they think it would be to cycle to for transportation.

The last component of the model, the Behavioral Intention, which derives from the three components above (attitudes, subjective norms, and PBC), is the objective of the TPB model. The Behavioral Intention factor is meant to predict the subjective probability of the individual to engage in some action (Fishbein & Ajzen, 1975). Thus, the intention is assumed to be associated with the probability that an individual will perform a given behavior (Ajzen, 1987).

Theory of Routine Mode Choice Decisions

The Theory of Routine Mode Choice Decisions has been developed to understand the choice process of sustainable modes of transport, the barriers experienced by different kind of people to choose sustainable modes of transport, and to identify actions that may have the most potential to increase walking and cycling in different social and geographic contexts.

This theory suggests that there are five steps in the mode choice decision process (*Figure 5*): (1) *Awareness and availability* - determines which modes are perceived as viable choices for routine travel; (2) *Basic safety and security* - represent people's need of using a mode which they perceive to provide a basic level of safety from traffic collisions and security from crime;

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(3) *Convenience and cost* - represent people's seek to use a mode that requires less time, effort, and money. Modes that require less cognitive effort and include having adequate personal space and personal control over travel movements tend to be more attractive for users; (4) *Enjoyment* - represent individuals' tendency to use a mode that provides physical, mental, emotional, or social benefits. Individual benefits may include personal health or a sense of empowerment, while social benefits may include social status or positive self-perception of benefitting society or the environment. However, enjoyment of walking or cycling does not guarantee more use of these modes for routine travel. People may walk and bicycle for recreation but may not do it as a mode of transport; and (5) *Habit* - people who choose a mode regularly are more likely to use the same mode in the future. As people develop routine choices, they may not openly consider other possible modes. For instance, as habitual drivers may perceive walking to require greater effort than less-frequent drivers, they are more likely to drive on shorter-distance trips (Schneider, 2013). Finally, on top of all these categories, there are the socio-economic characteristics that explain differences in how individuals perceive each segment of the process (Schneider, 2013).

Figure 5: Scheme of the Theory of Routine Mode Choice Decisions (Schneider, 2013)
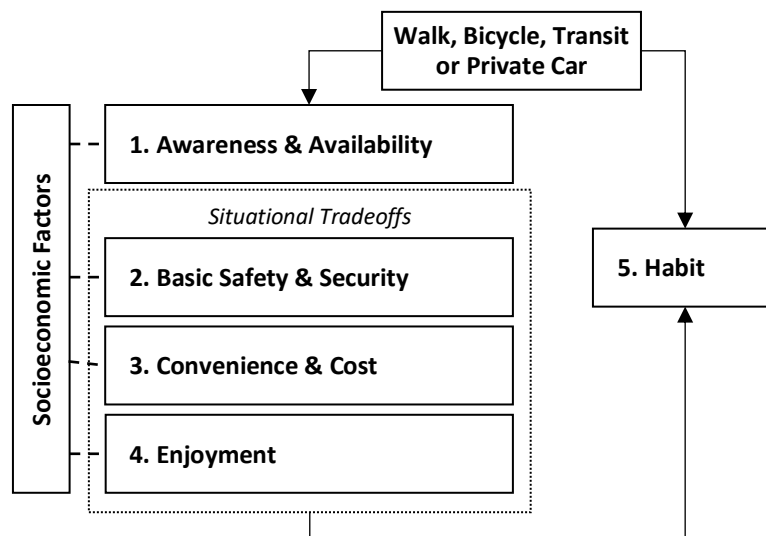
2.5.2. Social-Level Theories

Most research on cycling behavior focuses on the individual level. However, behavior in general and cycling behavior, in particular, can be also understood by focusing on social group processes and the social meaning of the practice in focus. To explore the social aspects of behavior, two social-level approaches are reviewed below – Social Practice Theory and the Social Identity Approach (which incorporates Social Identity Theory and Self-Categorization Theory).

Social Practice Theory

Theories of social practice have emerged from different intellectual traditions and vary with authors. Social Practice Theory (SPT) seeks to understand the links between daily practices, such as cycling, and the social institutions and materials that produce and sustain them. The practice itself, not the structured social environment or the individuals performing it, becomes the core unit of analysis (Shove, Mika & Watson, 2012; Warde, 2005). In this view, the practice is not seen as a result of attitudes, values, and beliefs of individuals, but as embedded within actual events people see as 'normal'. According to SPT, individuals come to understand the world around them and develop a coherent sense of self through these engagements with practices (Warde, 2005).

Shove et al. (2012) have defined the three main elements of practice brought together each time practice is performed: *materials* (things, technologies), *competences* (skills, technique, forms of understanding), and *meanings (*symbolic meanings, aspirations, ideas). For instance, in the case of driving, the practice would involve the car, roads and parking places (materials), the knowledge of how to drive and navigate a car (competences), and the association of the car for its user, such as sense of independence or masculinity (meanings). Integration of the three elements altogether makes the practice exist. As a result, practices are transformed when new combinations of elements occur or vanish when links between elements breaks. Therefore, the core subjects of analysis are the elements of which practice is composed and the processes of connection and disconnection between them.

Figure 6: Social Practice Theory (Shove et al. 2012. p. 14)
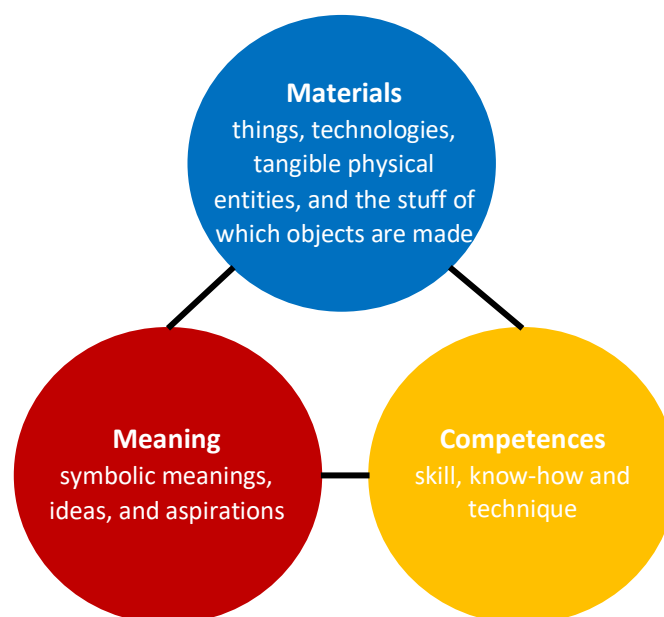
The Social Identity Approach

The Social Identity Approach incorporates Social Identity Theory (SIT) (Tajfel, 1974) and the Self-Categorization Theory (SCT) (Turner et al., 1987). This approach seeks to explain how individuals' attitudes, beliefs, emotions, and behaviors are influenced by their group(s) memberships (Fielding & Hornsey, 2016). Despite that both theories focus on different aspects – SIT focuses on intergroup relations while SCT on intergroup processes – they share the same assumptions and derive from the same theoretical position. As a result, it has become common to refer to the two theories together as the Social Identity Approach (Fielding & Hornsey, 2016).

SIT (Tajfel, 1974) tends to assist in understanding how group identities affect individual beliefs and behaviors. The theory claims that when people are categorized by themselves and by others as group members, they internalize that membership as a part of their self-concept, thereby also contributing to the shared group identity. To strengthen one's self-image and obtain positive distinctiveness, individuals enhance the status of the group to which they belong and categorize other people into in-group ("us") and out-group ("them") (Turner, 1991).

SIT claims that groups tend to compete with one another, seeking to outdo each other. When finding themselves faced with a lower-status group, group members often engage in social creativity by comparing themselves to a more flattering status or against an even lower-performing out-group. An out-group becomes particularly relevant for comparison processes if its members share similarities with the in-group members (Hinkle & Brown, 1990). For instance, members of an amateur sports team usually do not compare themselves with a professional one. Rather, another nearby amateur team located in the next town is much more relevant for comparison, as they share similarities which make the two teams relevant for comparison (level of skills, time invested, etc.).

According to SIT, social influence occurs when people identify with certain social groups, rather than by perceiving general pressure from others irrespective of their possible group association (Turner, 1991). The stronger the individual's identification with the social group, the stronger the potential influence of the group on the individual's behavior (Turner et al., 1987), and the stronger the ability of the theory to explain the behavior.

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A social group can be large-scale social categories (e.g. gender, ethnicity, age group), smaller groups of choice such as professional groups (e.g. urban planners), or interest groups (e.g. pro-cycling movements). People categorize themselves and others as part of certain social groups such as an age group (e.g., child vs. adult vs. senior), social class (elite, working-class, 'white trash', etc.), ethnic groups, and so on. People may have several identities that correspond with several group memberships (Trepte & Loy, 2017). These identities are part of the larger sense of linking the self to the cultural and social structure (Stryker & Burke, 2000). Examples of social identity are being a mother, being a student, being an artist, etc. These social groups can have various degrees of dominance, and as result can have a different potential effect on behavior, depending on the context (Trepte & Loy, 2017). For instance, an age group may be dominant when it comes to the choice of whether to watch a cartoon or not. However, it may not be dominant at all while watching a comedy considered suitable to the whole family. As Stryker & Serpe (1982) put it: "This hierarchical organization of identities is defined by the probabilities of each of the various identities being brought into play in a given situation." (p. 206). So that the hierarchical organization of identities is changing depending on the activity someone is conducting or intends to conduct.

When a sense of belonging to the group is dominant in the self-definition of the group members, they tend to think and act less as autonomous individuals and to be more influenced by group norms. Thus, a strong sense of common identity leads to coordinated collective behavior, and group behavior attributes are usually adopted by the individual as their attributes (Turner, 1991).

SIT is considered not only to assist in gaining a better understanding of a given behavior but also of the process of behavior change. The (perceived) similarity of the in-group creates an expectation that "we", the group members, need to have similar reactions, judgments, attitudes, and behavior (Reynolds et al., 2015; Turner, 1991). Such 'agreement' enables mutual influence between group members, so that when the group's meaning of what 'we' value and believe in is redefined, what is expected and considered as normative behavior changes as well. In addition, changes in belonging to a social group can influence others and may lead to changes in behavior (Reynolds et al., 2015). Furthermore, the leaders of the group, who are considered by peers to best represent the group's beliefs and interests, have the most power in building consensus around definitions of who 'we' are, and as a consequence have the most potential in influencing its norms and behavior (Reynolds et al., 2015; Subašić, Reynolds & Turner, 2008).

So, the social identity approach is not only important in understanding individuals' behavior in certain contexts, but also in shaping it. If behaviors, such as environmental behavior and travel behavior, are linked to social identity, it will be the group norms that will guide the group members which behavioral choices, such as transport mode choices, are considered normative and accepted.

SIT may explain how social groups interact with one another; however, it does not explain how individuals come to identify with particular social groups. Self-Categorization Theory (SCT) was formulated to fill this theoretical gap (Turner et al., 1987).

Social categorization implies that people are understood not only as individuals but also as belonging to certain social categories (age categories, economic status categories, cultural categories, etc.).

People socially interact based on their experiences with others who belong to different social categories. During these interactions, people constantly refine their social categories and get to understand their group membership, which in turn influences their behavior (Turner et al., 1987). One of the reasons people socially categorize their environment is to optimize their use of cognitive capacities and to invest less effort in information processing (Trepte & Loy, 2017). To highlight social categories, members of a certain group emphasize the similarities of others belonging to their in-group and the differences of people belonging to out-groups (Hogg & Abrams, 1988).

Self-categorization, defined as "an active, interpretative, judgmental process, reflecting a complex and creative interaction between motives, expectations, knowledge, and reality" (Turner, 1999, p. 31), is a particular kind of social categorization in which individuals define to themself which social groups they belong to and identify with. Self-categorization becomes relevant for social identity if the individuals internalized their belongingness and identification with the group as a relevant aspect of their self-concept (Turner et al., 1987).

According to SCT, our self-concept is a movable point always located temporarily on a scale ranging from our persona-identity to our social identity, with its 'exact' position depending on the context. When the self-concept-point moves closer to personal identity, people act more in line with their self-concept. In contrast, as the self-concept-point moves closer to social identity, people see themselves more as a group member rather than as individuals and think and act more like a typical group member. As depersonalization continues and intensifies, group members see both in-group ("us") and out-group ("them") individuals as more

homogenous, and the group norms get to be more influential in shaping people's believes, opinions, and actions (Hogg & Turner, 1987; Simon et al., 1991). As an individual's behavior is driven either by social or personal identity processes, depending on the relative dominance or importance of a certain situation for social or personal identity, SCT differentiates between social and personal identity. However, both identities can be salient at the same time, so that both—social and personal identity processes—may be influential on one's behavior simultaneously (Trepte & Loy, 2017).

According to SCT, personal and social identities can stay similar over time but may also vary, depending on a situation and its meaning. The social category individuals feel they belong to can change its relevance very quickly. For instance, while watching a movie, self-categorization as a woman (vs. the category of men) may be relevant at first, but the next second self-categorization as a good person (vs. the category of evil person), which includes both genders, maybe even more relevant. This may eliminate the first categorization perceived as a woman in terms of saliency, or the two categories can work in parallel to determine how the viewer attaches meaning to the film (Trepte & Loy, 2017).

To summarize, while SCT provides a theoretical framework for how individuals come to see themselves as group members, SIT provides a theoretical framework for how social groups interact with each other and how the value attributed to certain groups is reflected in the person's self-concept. Together, these theories allow a better understanding of how individuals come to identify with social groups, how different groups perceive each other and how groups guide individuals' values and behaviors.

2.6. Conclusion

Substantial research has been conducted to understand cycling as a mode of transport. The most common theoretical frameworks of cycling research focus on individual benefits, personal attitudes, and habits. While these studies have contributed to the understanding of cycling behavior, many of these studies have overlooked the social meaning and social group processes that influence cycling. These processes may be particularly of importance in understanding the patterns of cycling in a low-cycling context and in explaining the differences between groups in cycling patterns.

So far, the social identity approach has been used mainly to study stereotyping, discrimination, politics, organizational psychology, and other domains, providing practical applications to real-world behavioral dilemmas (Reynolds et al., 2015), while it has been rarely

used for cycling research. Previous studies from other fields which have used the social identity approach, like environmental behavior (Fielding et al., 2008; Rabinovich et al., 2012) and health behavior (Terry & Hogg, 1996), have shown that social identity aspects can be strong determinants of behavior (Reynolds et al., 2015). However, while social influences are often acknowledged as playing some role in cycling, they are rarely studied empirically as the main theoretical framework through which cycling is observed.

To develop the needed behavior-change interventions, in addition to understanding the impact of individual-level determinants on cycling, policymakers may need to gain a better understanding of the impact of social identity on cycling. Without a clear understanding of the concept of social identity and a consideration of the underlying mechanisms that explain how individuals come to be influenced by social group norms, it will be challenging to develop effective and efficient interventions directed at behavioral change, especially among groups with a lower propensity to cycle.

Therefore, to provide a complementary perspective to research and for policymaking, and to create an understanding of the role of social identity in cycling behavior, this study will use the social identity approach to explore *how does social identity shape the perception towards cycling as a suitable (or unsuitable) mode of transport?*

3. Methodology

3.1. Aims and Objectives

The overall aim of this research is to explore why some population groups are less likely to cycle than others. More particularly, the research seeks to understand *how does social identity shapes the perception towards cycling as a suitable or unsuitable mode of transport?*

3.2. Research Strategy

To answer this research question, I draw on interviews to analyze the social identity processes by which the perception towards cycling for transport purposes is being shaped among women from different income levels.

The study applies a comparative approach of multiple case studies of interviewees with different income levels, both cyclists and non-cyclists. Due to the known association between income and education levels, to make sure that about half of the participants are indeed lower-income (and are not, for example, temporarily earn less), I also take into account their educational level in determining an interviewee's income affiliation.

A total of 25 women were interviewed, 12 lower-income women with no academic degree and 13 higher-income women with an academic degree, 12 cyclists and 13 non-cyclists, all residents of the city of Tel-Aviv-Jaffa and aged 25 to 50 years old. The reason I chose the 25-50 age group is to focus on aspects related to social identity and cycling, without having to deal with aspects related to age and cycling (both 'objective' aspects such as slower reflexes and social identity aspects such as the impact of age group identity on lifestyle).

Furthermore, I chose to adopt a comparative approach, i.e. to study both higher-income and lower-income, as well as cyclists and non-cyclists, for three reasons.

First, the social identity approach highlights how intergroup relations shape the shared meaning of each social group (who 'we' are and who are 'them') and as a consequence each shared group behavior (what 'we' do and what 'they' do). Therefore, focusing on the perceptions of each group on the other (concerning cycling) may assist in gaining a better understanding of how those perceptions support (or limit) the tendency of women from the various groups to see cycling as a suitable (or unsuitable) mode of transport. Belonging to social groups is of course much more complex than income groups (lower-income vs. higher income) and mobility groups (cyclists vs. non-cyclists). Therefore, the study treats this basic distinction only as a starting point for the identification of interviewees and the interviews

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themselves. The selection was based on the statistics for Tel Aviv-Yafo, which show the underrepresentation of women and low-income groups among cyclists.

Second, the background of this study is the underrepresentation of selected population groups among cyclists. Therefore, a comparison between groups with a higher representation level (higher income; women with academic degree) to groups with a lower representation level (lower income; women without an academic degree) may assist to put some light on the differences and similarities in the shared groups meaning(s) of cycling and their effect on the shared group perception of cycling as a suitable (or unsuitable) mode of transport.

Finally, a comparison between the 'unique' (those who cycle despite many that avoid it) and the 'normal' (those who do not cycle as many others) may assist in creating a better understanding of the social group enablers and barriers to see cycling as a suitable (or unsuitable) mode of transport. Such comparison may assist in understanding what kind of inner- and inter-social group processes allow those who nevertheless make such 'unique' behavioral choices as cycling. Thus, it may assist in understanding which policy measures may allow more women in general, and low-income women in particular, to see cycling as a suitable mode of transport to consider.

The research is conducted in the city of Tel Aviv-Jaffa. Although in the current state the cycling infrastructure in Tel Aviv-Jaffa needs much improvement (in terms of scope, continuity, visibility in intersections, etc.), compared to other cities in Israel, Tel Aviv-Jaffa is the only city with some noticeable cycling network, and accordingly with a noticeable presence of cyclists for mobility purposes. Therefore, Tel Aviv-Jaffa is one of the very few (if not the only) cities in Israel with a slowly emerging cycling culture, so that people may have formed an opinion about cycling and cyclists.

3.3. Research Stages

(1) Preliminary stage: which social groups are underrepresented among cyclists?

The purpose of this preliminary stage of the study is to identify which social groups are underrepresented among cyclists in Tel Aviv-Jaffa. This analysis has value in its own right but it also informs the decision on which of the various social groups in the city to focus on in the core stage of the research. For this purpose, I analyze secondary data collected by Tel Aviv-Jaffa Municipality (2018 commuting modal split and cycling survey) by using descriptive analysis tools.

To identify which population groups are underrepresented among cyclists, I use the Representation Ration Index (RRI). According to the RRI, the level of representation of a social group in a certain mode of transport is determined by the ratio between the *share of a selected social group among all users of the relevant transport mode* (e.g. the share of women among cyclists) <u>and</u> *the share of the same social group in all trips* (e.g. the share of women among users of all modes). Accordingly, a ratio below 1 means under-representation, a ratio of 1 means even representation, and a ratio above 1 means over-representation.

To apply this index, needed are the following steps: (1) map the distribution of Tel Aviv-Jaffa residents' commuting trips <u>by all modes</u> by socioeconomic and demographic characteristics (age, gender, income, education); (2) map the distribution of Tel Aviv-Jaffa residents' <u>cycling</u> commuting trips by the same socio-economic and demographic characteristics; (3) compare the two descriptive analyses and identify the underrepresented groups among cyclists.

For instance, according to Tel Aviv-Jaffa 2018 Cycling and Modal Split Survey, the share of women in all commuting trips in the city is 52%, while women's share within cycling commuting trips is only 30%. Therefore, the representation ratio of women among commuting cyclists in the city is 30/52 = 0.6 (Figure 7), which means that women are severely underrepresented among cyclists for commuting purposes in Tel Aviv-Jaffa.

Figure 7: Women's under-representation among commuting cyclists in Tel Aviv-Jaffa, 2018
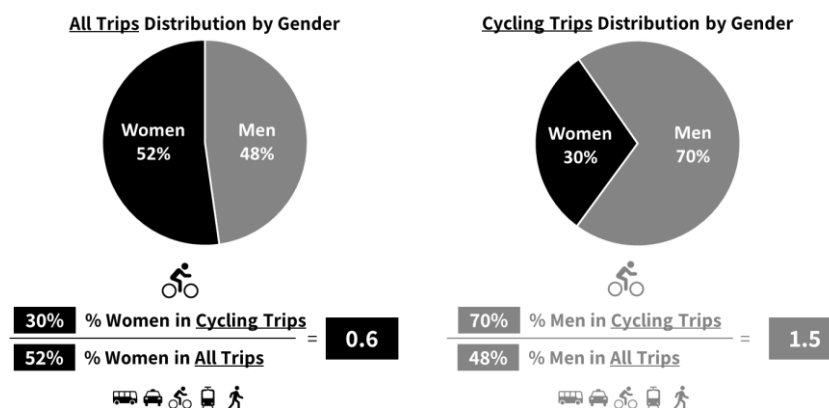
I chose to focus on women in general and low-income women with less education in particular for several reasons. First, women are over half of the population. As a result, transport inequality in relation to such a significant portion of the population has a significant impact. Second, as cycling is considered a highly cost-effective mode, and because low-income women are most likely to be highly sensitive to income, exploring such transport inequality may assist in marginalizing it and in getting more low-income women to enjoy the benefits of cycling.

(2) *Core stage: how does social identity shape the perception towards cycling as a*
suitable (or unsuitable) mode of transport?

The purpose of this core stage of the research is to understand how social identity and social group processes shape the perception of women from various social groups towards cycling as a suitable (or unsuitable) mode of transport.

To answer this question, I chose to use a qualitative research method. I found qualitative research as most suitable to answer the research question of this study for a few reasons.

First, as directly observable elements associated with the lives of individuals are involved (i.e. experiences, motivations, symbols, and their meanings), using a qualitative research method is considered to be more suitable (L BERG, 2001).

Second, as the research question is involved with the identity and culture of individuals and with their perception of their social group membership, focusing on how ideas, images, or experiences are being chosen, combined, and formulated as a narrative by the participants, is necessary to answer such research question (Josselson, 2013). Finally, as hardly any studies deal with cycling in the context of Tel Aviv-Jaffa in general, and with the under-representation of various social groups among cyclists within Tel Aviv-Jaffa's context in particular, exploratory qualitative research can serve as a strong basis for future research on this topic.

In addition, I found semi-structured interviews as the most suitable interview approach for this research for a few reasons.

First, the semi-structured interviews method reflects a balance between unstructured interviews and structured interviews. Such balance is required in this study: on the one hand, the relatively structured approach of semi-structured interviews method allows a systematic comparison required for the comparative approach this study adopts; and on the other hand, the relatively unstructured approach of the semi-structured interviews method allows interviewees to have a sense of an open conversation, which encourages them to express their opinions more freely toward sensitive issues and so to contribute towards more useful information.

Second, a less structured interview approach is considered to be useful when dealing with culturally specific perceptions among social groups to which I do not belong (Berg, 2001).

3.4. Data Collection

Semi-structured in-depth interviews

Like any other practice, cycling contains social meanings. To try revealing these social meanings, I asked the research participants various questions concerning their current mobility behavior; experience with cycling; opinions about cycling and cyclists; barriers to cycling; perceptions toward "who 'we' are?", "what 'we' do?" and "how do 'we' go around in space?" (see interview guide in Appendix A).

To obtain information on identity aspects related to cycling, I asked the participants to imagine themselves as screenwriters who need to write a movie script. However, in this movie script, the main character is a woman who lives in Tel-Aviv-Jaffa and cycles regularly. In addition, I asked the participants how people get around in their close environment, and if they get around by bicycle, what do they think about it.

Moreover, I asked the participants what they think people in their close environment would think about them if they suddenly decided to get around by a regular bicycle (and the opposite – what they would think about people in their close environment in they suddenly decided to get around by a regular bicycle). On the contrary, those who noted that in their close environment cycling a regular bicycle regularly is an accepted practice were asked what they would think of people in their close environment if they suddenly decided to get around by an e-bike or e-scooter. The participants' answers helped to understand whether cycling the various types of cycling is perceived as a normal and accepted practice (or not) in their close environment and if not, what is their image of the 'other' for whom riding a regular/electric bike is 'natural' or 'normal'.

Finally, I asked the participants to express a position and try to explain why in their opinion women and disadvantaged social group are underrepresented among cyclists. Their answers revealed to some extent their attitudes towards cycling. For example, one participant was very surprised that lower-income individuals are underrepresented among cyclists, saying it is unlikely that people with higher income cycle more than lower-income, as they can afford a private car, so why would they bother to cycle, implying that for her cycling is a matter of necessity, not of free will, and of practicality rather than as a symbol of identity. Through such descriptions, I glean some of the images and the social meanings associated with women cycling on various types of bicycles which are commonly used in Tel-Aviv-Jaffa (conventional, e-bikes, and e-scooters).

The data presented were collected during 9 months of locating and conducting interviews in Tel-Aviv–Jaffa, Israel. In particular, the interviews began in January 2020, before the effects of the Corona crisis were noticeable in Israel and ended in July 2020 when the uptake of cycling due to Coronavirus limitations could be sensed in Tel Aviv-Jaffa, like in many other cities around the world.

The face-to-face interviews were conducted with women residents of Tel Aviv-Jaffa, between 25 to 50 years old. All interviews took place on a one-on-one basis either in the homes of respondents or in public settings like parks, coffee shops, or community centers. The participants can be divided according to two dimensions (Figure 8):

(1) Income and education level.

      a.   Women with income <u>lower</u> than average and <u>with no</u> academic degree; or

      b.   Women with income <u>higher</u> than average and <u>with</u> an academic degree.

(2) Cycling mode choice.

      a.   Women for whom cycling is their main mode of transport; or

      b.   Women who do not cycle at all/cycle very rarely.

Figure 8: Social groups in focus in this research
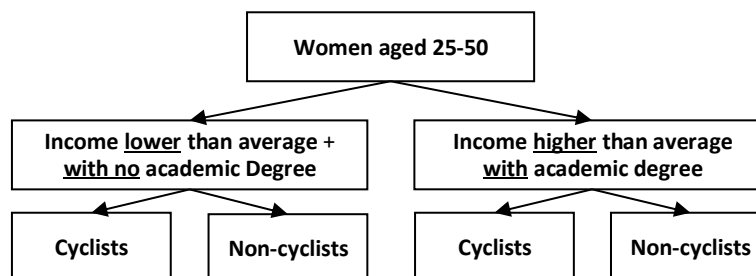
Accordingly, about half of the participants in the research are women with income lower than average and with no academic degree and about half of the participants are non-cyclists.

Figure 9: Distribution of Interviewees by income and education
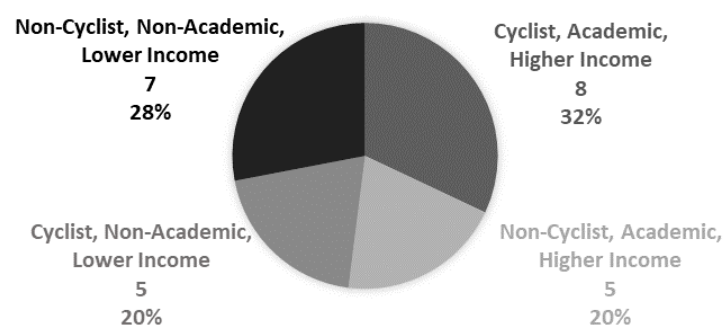
The steps undertaken to identify and reach such individuals were:

(1) Distribution of a "word of mouth" request to participate in the research among various social circles of myself and of my close environment (university, work, and personal life) – 9 out 25 interviewees, all mid and mid-high income, were identified in this way;

(2) Contacting the 13 community centers located in lower-income neighborhoods in south and southeast Tel Aviv-Jaffa, asking to assist in locating lower-income and less-educated interviewees based on their familiarity with the community – 8 out 25 interviewees, mainly low to mid-low income, were identified in this way;

(3) Publication of a request to participate in the research in eight Facebook groups of neighborhoods in south and southeast Tel Aviv-Jaffa. The request contained a link with a few demographic questions to allow classification to different social groups, as well as a question concerning mode choice – from among a larger set of responses 5 out 25 interviewees were identified in this way, limiting the larger number of responses to include only low- and mid-low- income potential participants;

(4) Distribution of about 50 hard-copy flyers around the city asking participants to take part in the research – from among a larger set of responses 3 out 25 interviewees, again limiting the larger number of responses to include only low- and mid-low-income potential participants.

Data Organization and Analysis

All interviews were recorded, transcribed and the data was analyzed qualitatively. The interviews were conducted in Hebrew so that all quotations included in the text have been translated by the author. As part of the analysis process, the data collected was organized and displayed using the qualitative analysis software MAXQDA. Using this software, the interviews were coded according to the leading ideas found in relation to identity (e.g., place identity; lifestyle identity), gender differences (e.g., in the context of appearance, household responsibilities, childcare, etc.), images, and stereotypes of various road users (image of private car drivers and regular cyclists, e-bikes users and e-scooter users), and more.

4. Cyclists in Tel Aviv-Jaffa: who is underrepresented?

4.1. The case of Tel Aviv-Jaffa

Before going forward to the core stages of the study, it is important to understand the environment, and particularly the cycling environment, of the field of research – Tel Aviv-Jaffa. To do this, I present an overview of the demographic characteristics of the population in Tel Aviv-Jaffa, the trends in cycling as a mode of transport in the city, as well as its natural and planned environment related to cycling.

The city of Tel Aviv-Jaffa is the core city of the Tel Aviv metropolitan area and the economic center of Israel. The city is located along the Mediterranean coastline, with a size of 52 square kilometers and an average population density of 8.5 persons per square kilometer, as of 2016. The densest districts of the city are located in the city center (districts 3, 4 & 5, see Figure 10 below), with an average density of 14 persons per square kilometer, as for 2016 (Tel Aviv-Jaffa Municipality, 2019).

Figure 10: Population density in Tel Aviv-Jaffa, by sub-district (persons per sq-km), 2016
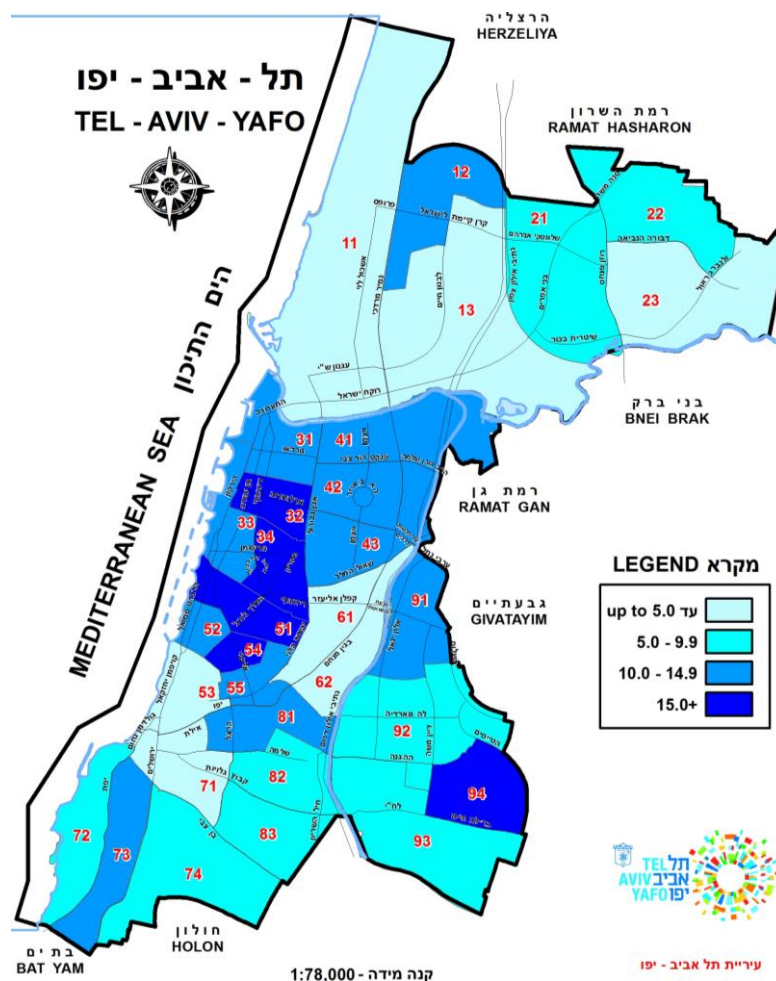
Source: Tel Aviv-Jaffa Statistics

The Central Bureau of Statistics of Israel characterizes the various geographical units in Israel by the population's socio-economic level and rank each unit between 1 to 10 (each rank called a socio-economic cluster). Figure 11 below presents Tel Aviv-Jaffa's districts by a socio-economic ranking as for 2013. While that the northern and central districts are ranked as high socio-economic clusters (6 to 10), the southern and eastern districts of the city are ranked as low socio-economic clusters (2 to 6).

Figure 11: Socio-economic ranking of districts in Tel Aviv-Jaffa
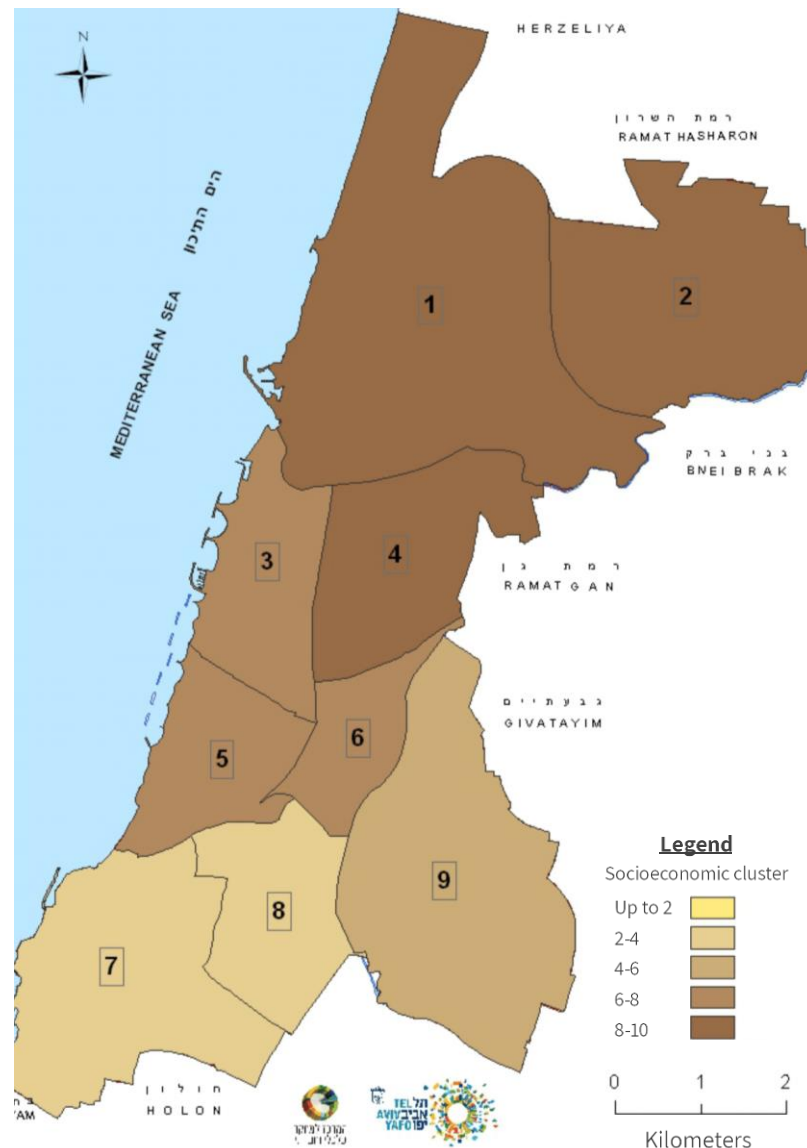
Source: The socio-economic ranking of Tel Aviv-Jaffa, 2013

Tel-Aviv-Jaffa has developed into a World City; where its inhabitants are considered to be concerned with democracy as part of their tendency to modernity, convenience and individualism. Most of the inhabitants of Tel-Aviv-Jaffa are secular people and live in relatively small households, especially in the city center (Alfasi & Fenster, 2005).

Young and middle-aged adults (18-64) constitute the majority (64%) of the city's inhabitants (56% in Israel), while older adults (65+) constitutes 15% (11% in Israel) and young people (0-18) 21% (33% in Israel) (Tel Aviv-Jaffa Municipality, 2019).

The motorization rate (number of passenger cars per 1,000 inhabitants), which is known to be strongly associated with higher income-level (Dargay, Gately & Sommer, 2007), in Tel Aviv-Jaffa is significantly higher than that of Israel (by 61% as for 2017) and is also higher than that of selected European cities (by more than 50% compared to the average of a selection of cities, see Figure 12 below). This, together with the significant number of non-resident commuters entering the city by private cars every day, as well as with the relatively poor public transport service operating in the city, makes mobility in the city rather challenging.[2]

Figure 12: Passenger Cars per 1,000 Inhabitants in Selected Cities, 2017
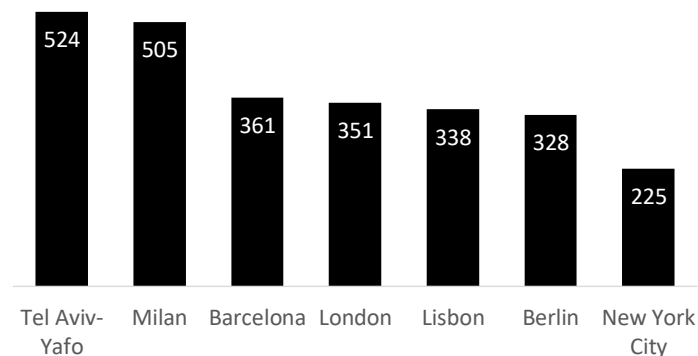
Sources: Tel Aviv-Jaffa Municipality - Statistics; the City of Milan - improvement of air quality and the environment; Facts on Active Mobility Barcelona; Vehicle Licensing Statistics: Annual 2017; European Green Capital Award 2020 (Lisbon Application Form); Mobility in the City Berlin Traffic in Figures 2017; New York City Mobility Report

Commuting in the Tel Aviv metropolitan area is dominated by cars, with 61% of work-related trips being done by private motorized transport mode (car as a driver - 52%; car as a passenger - 5%; motorbike - 4%), and the rest mainly by public transport (26%), especially bus (Figure 13). Walking constitutes 11% of all commuting trips in the Tel-Aviv metropolitan area and cycling only 2% (Bechor et al., 2016). These results are in line with the national average, with the 2016 National Social Survey data showing that car trips were 61% of all commuting trips in Israel, public transport 29% (mainly bus), walking 8%, and cycling only 2% (Sochoy & Sofer, 2019).

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[2] The public transport system is currently largely bus-based, with only few dedicated bus lanes. A mass transit system, consisting of light-rail and metro lines, is currently under construction, with the first line of the future network planned to begin commercial operation in mid-2022 (NTA, 2019).

However, among <u>residents</u> of the city of Tel Aviv-Jaffa, the commuting modal split in 2016 was slightly different compared to the national and metropolitan average. Though Tel Aviv-Jaffa residents' private car ownership rate is significantly higher than the Israeli average (Figure 12), their private car mode share was still significantly lower than the national average. While private car and public transport mode share among Tel Aviv-Jaffa residents accounted for 51% and 25% respectively, the national and metropolitan average was 61% and 28% respectively. Concerning active transport, while walking and cycling accounted for 14% and 10% respectively among Tel Aviv-Jaffa residents, the national-metropolitan average was 9% and 2% respectively (Figure 13). However, a comparison with a selection of cities in the world (based on the available and relatively comparable data), shows that Tel Aviv-Jaffa has a significantly higher car mode share and relatively low cycling mode share (Figure 14). It should be taken into account that there are many differences between the selected cities in the comparison below, in terms of population size, urban form, the efficiency of the public transport, etc., so that one needs to read this comparison while acknowledging that.

Figure 13: Commuting Modal Split in Israel, Tel-Aviv Metropolis and Tel Aviv-Jaffa, 2016
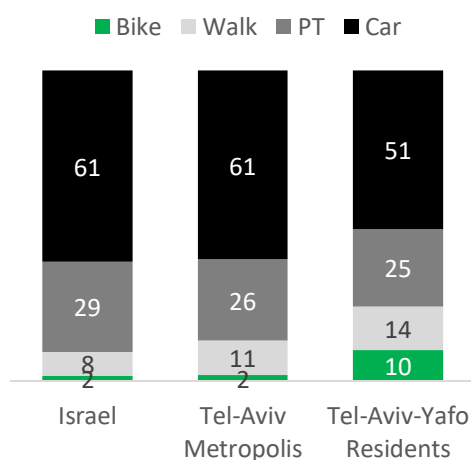
Figure 14: Commuting Modal Split <u>Among City's Residents</u> in Selected Cities
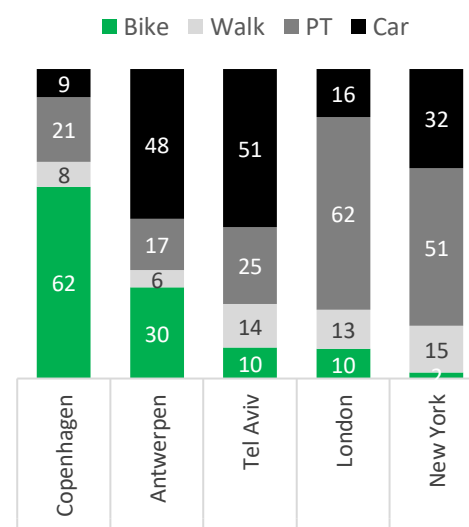
<u>Source</u>: Israel - How do people get to work in Israel? Locality characteristics and individual factors; Tel-Aviv Metropolis - Travel Habits Survey with an Emphasis on Non-Motorized Trips in the Tel Aviv Metropolitan Area - Summary Report; Tel Aviv-Jaffa Residents - Modal Split and Cycling Survey Among Residents of Tel Aviv-Jaffa, December 2016.

<u>Sources</u>: Copenhagen – Bicycle Account 2016; Antwerp - Antwerp Bicycle Policy Plan 2015-2019; Tel Aviv - Modal Split and Cycling Survey Among Residents of Tel Aviv-Jaffa, December 2016; London - How people travel (mode of transport) 2017; New York City - New York City Mobility Report, June 2018.

Nevertheless, the share of cycling for commuting purposes in Tel Aviv-Jaffa (the travel motive for which cycling data are currently available) has changed significantly over the last decade. During 2012-2015, the share of bicycle commuting trips among Tel Aviv-Jaffa residents has increased significantly with an annual increase rate of 20-25% (Figure 15). However, during

2016-18 this increased rate has declined to 4%-10%. Nevertheless, it should be noted that high increase rates in early uptake years and its decline in the following years is rather normal and that 4%-10% is still a significant annual increase. However, this decline in the decrease rate practically "froze" the city residents' cycling mode share on a rate of 10%-11% out of all trips. By means of the ambitious master plan for cycling, 'Tel Aviv – a Cycling City 20%25' the city aims to increase cycling mode share to 20% in 2025 and to 25% in 2030 (Tel-Aviv-Jaffa Municipality, 2020c).

Figure 15: Cycling Mode Share Among Tel Aviv-Jaffa Residents, 2012-18
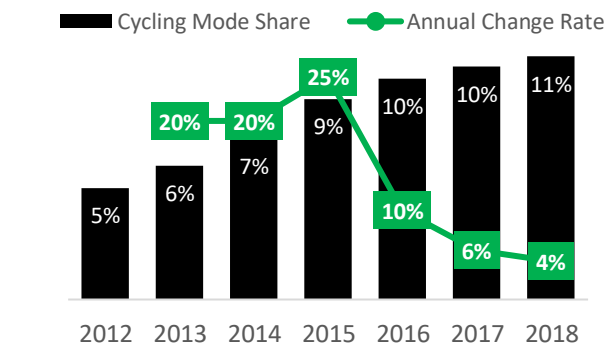
Source: *Tel Aviv-Jaffa Municipality, April 2019*

This high increase in bicycle use in the city in 2012-2015 can be attributed to a range of factors: the introduction of e-bikes that are considered to make cycling more comfortable over larger distances, especially in a hot area such as the city of Tel Aviv-Jaffa; the introduction of bicycle and e-scooters sharing systems; the improvement and expansion of bicycle paths in terms of the level of segregation and length (Figure 16 & Figure 17); the increase in road congestion; the (perceived) shortage of parking for residents; and the fact that cycling has become more 'fashionable' (Levy, Golani & Ben-Elia, 2017).

Figure 16: Length of Bicycle Paths in Tel Aviv-Jaffa (km), 2010-2018
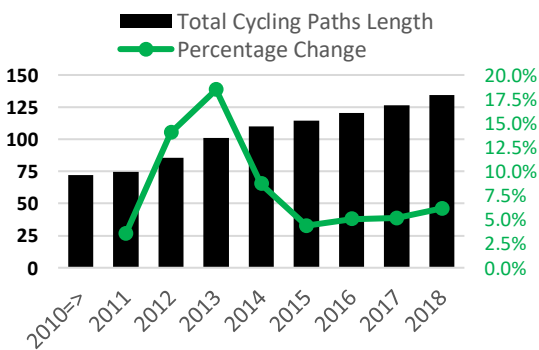
Figure 17: Bicycle Paths in Tel Aviv-Jaffa by Type (km & %), 2018
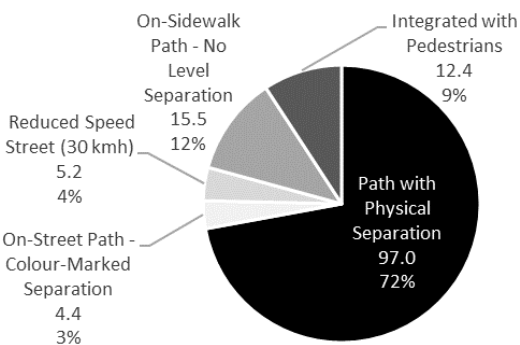
Source: *self-analysis of Tel Aviv-Jaffa Municipality data, February 2019*

However, as mentioned before, despite the stable annual increase in cycling mode share in the city, between 2016-2018 the cycling mode share increase rate fell significantly, so that cycling mode share seems to be stabilizing at 10%-11%. One reason for the slow growth is the low uptake of cycling among population groups that are currently underrepresented among cyclists (women, the elderly, low-income, and less-educated).

4.2. Who is not cycling in Tel Aviv-Jaffa?

In many ways, Tel Aviv-Jaffa can be considered as a city that is highly suitable for cycling. What makes the city cyclable include factors such as the relatively small city size, high levels of population density and mixed land use, relatively flat topography, relatively slow public transport and private car transport due to heavy traffic, etc. However, even when good pre-conditions for cycling exist, the share of cycling within a city cannot be explained without considering the position of cycling in society.

Analysis of Tel Aviv-Jaffa 2018 Cycling and Modal Split Survey (Figure 18) reveals that the underrepresented social groups among cyclists for commuting in the city are (from the more- to the less- severe underrepresentation): adults over 50 years old (representation ratio of 0.3)[3], adults with up to 12 years of education (0.4), women (0.6) and adults with income lower than the average (0.6). Conversely, educated young men with an average or higher income are significantly overrepresented among cyclists for commuting in Tel Aviv-Jaffa.

Figure 18: Representation Ratio of Tel Aviv-Jaffa's Social Groups among Commuting Cyclists, 2018
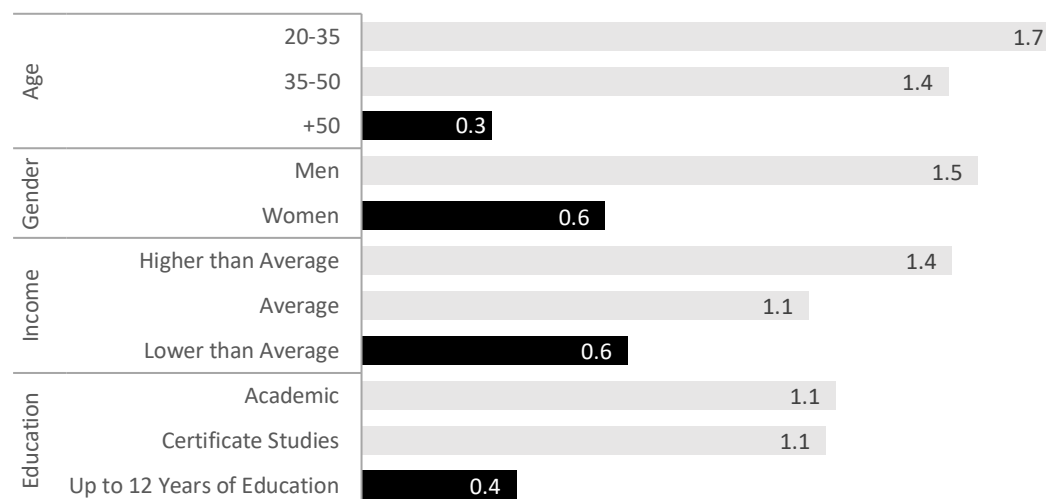
Source: Self-Analysis of Tel Aviv-Jaffa Municipality's *Modal Split & Cycling Survey, 2018*

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[3] As some of this group members are not working (the retirement age in Israel is 62 for women and 67 for men) the Tel Aviv-Jaffa Municipality asked in its survey first on the participant's employment status and if she/he answered they are in pension, they have been asked *"how do you get from one place to the other?"* instead of *"what is your main commuting mode?"* like they asked all the others.

These findings are in line with those presented in the literature review (Chapter 2), as they point at the same type of social groups underrepresented among cyclists (see for instance Aldred et al., 2017, 2016; Eemm et al., 2010).

Figure 19 presents Tel Aviv-Jaffa residents' mode share by gender and income, as for 2018.

Figure 19: Tel Aviv-Jaffa residents' modal split by gender and income, 2018
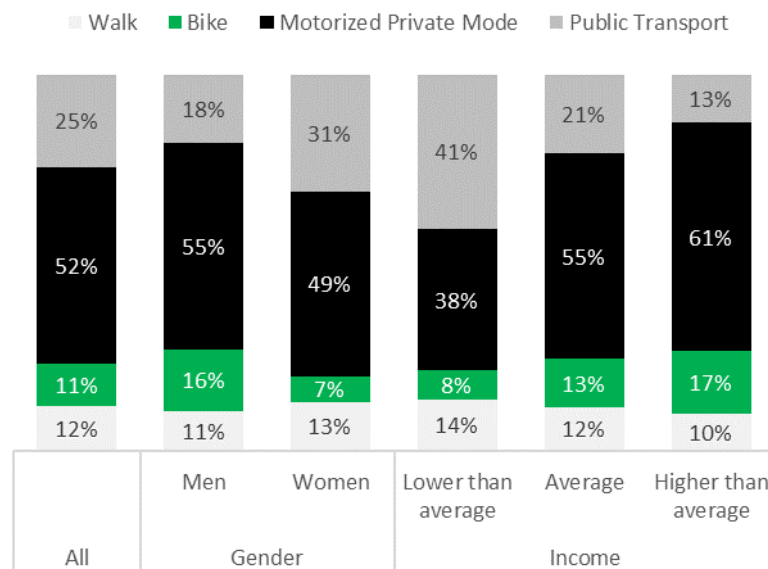
Source: Self-Analysis of Tel Aviv-Jaffa Municipality's *Modal Split & Cycling Survey, 2018*

Gender. Figure 19 shows that the main gaps between the modal split of men and women in public transport and cycling mode shares. While that the differences in a private car and walking mode shares of men and women are relatively modest, men's cycling mode share is more than double that of women and conversely, women's public transport mode share is almost double that of men.

Income. As for 2016, the average monthly income of Tel Aviv-Jaffa residents was nearly 12,700 NIS (before taxes; approx. 3,100 EUR). However, there are significant gaps between women's and men's income. While the income of women is almost 9,800 NIS (approx. 2,400 EUR), the income of men is higher by nearly 60% (nearly 15,500 NIS. approx. 3,800 EUR) (Tel Aviv-Jaffa Municipality, 2019). Concerning cycling and income, Figure 19 above shows that while both public transport and walking's mode shares are declining with income level, cycling, and private car's mode shares are growing with income level. These echoes findings from other locations and contexts reviewed above (see chapter 2.2), according to which higher-income individuals tend to cycle more than lower-income ones in low-cycling contexts (Parkin et al., 2008; Pucher & Renne, 2003).

To summarize, despite the city of Tel Aviv-Jaffa is considered to have relatively good pre-conditions for cycling (such as the relatively small city size, high levels of population density and mixed land use, relatively flat topography, relatively slow public transport, and private car transport due to heavy traffic, etc.), the share of cycling within a city is still relatively modest. That is (partly) related to low participation of women, low-income, older adults, and of the less-educated.

In this research, I focus on women in general, and lower-income women in particular, and explore *how does social identity shape women's perception towards cycling as a suitable or unsuitable mode of transport?*

5. Social identity and women representation among cyclists in Tel Aviv-Jaffa

In this chapter, I present the results of the study. Through comparison of the social meanings of cycling between the various participants, I strive to create a better understanding of *the way that social identity shapes women's perception towards cycling as a suitable or unsuitable mode of transport.*

This chapter is divided into five sections. Section 5.1 introduces the interviewees who took part in this research. Section 5.2 deals with the images associated with women cycling on various types of bicycles (conventional, e-bike, and e-scooter). Section 5.3 discusses the effect of shared group beliefs and attitudes towards urban political issues related to cycling. Section 5.4 focuses on the relationship between gender identity and the willingness of women to cycle for transport under a given cycling environment, such as Tel Aviv-Jaffa. Lastly, Section 5.5 offers an examination of common determinants to women's participation in cycling from the social identity perspective.

5.1. Introducing the Interviewees

In the following section, I provide a general background on the interviewees who took part in the research, which I found to be relevant to the research. To maintain the privacy of the interviewees, their personal information was changed or been generalized. For instance, the interviewees' names have been changed and their area of residence is presented as a general area in the city (such as southeast Tel Aviv-Jaffa) and not in their neighborhood's actual name.

Cyclists, non-academic, low and mid-low income

1. **Flora.** 50 years old. Lives in Jaffa (southwest Tel Aviv-Jaffa) by herself. Flora has no friends or family in her life. She is involved in the field of mystics and has been cycling for transportation purposes in Tel Aviv for many years. About two and a half years ago, she decided to switch from a regular to an e-bike, since she gained a lot of weight, and so it becomes too hard for her to cycle. Because she doesn't have the financial means to purchase and own a private car, the e-bike provided her an affordable transportation solution and a high level of mobility while also meeting her physical needs. Flora says her quality of life has significantly improved thanks to the e-bike so that even after having a relatively severe accident while riding them, she never considered giving it up.

2. **Hava.** 47 years old. Hava was born, raised, and still lives in southeast Tel Aviv. Hava does not own a private car. She usually works in the field of events production but was unemployed at the time of the interview due to the significant impact of the Coronavirus

crisis on her field. Although she has always lived in Tel Aviv, she does not perceive herself as a 'Tel Avivian'. For her, Tel Avivians are privileged individuals from outer Tel Aviv who moved into the city ("those whose father buys them a car so they could drive home on weekends") and not those who were born and raised within the city like her. Hava is an ardent supporter of sustainable modes of transport. However, though Tel Aviv-Jaffa as a city embodies many of Hava's environmental values, especially in comparison to Israel as a whole, she feels that she still doesn't relate with the city, because it represents leftist political values that she perceives as unpatriotic.

3. **Neta.** 48 years old. Lives in central Tel Aviv-Jaffa. Neta works as a secretary in a planning office and has been cycling for transport purposes in Tel Aviv-Jaffa for many years. Neta and her partner share a private car that he mainly uses. She grew up in a city in southwestern Israel and was a very independent girl, even "too independent", she feels. Almost none of her family or her close friends cycle for transport. Also, at work, it seems strange to people that she cycles to the office and is willing to the hustle of a "sink shower" (in the absence of a shower at her workplace). Within the city, she prefers cycling over all other modes of transport, due to the sense of control over time that cycling offers, the physical activity it provides, and the enjoyment of being outside in the open air. In general, Neta feels very confident when cycling and driving, sometimes "too confident", she feels.

4. **Sivan.** 49 years old. Lives in South Tel Aviv-Jaffa. Chef and confectioner. Sivan was born in Tel Aviv to an underprivileged traditional family. After finishing elementary school, she was sent to a boarding school, where she says she learned how to be strong and independent. As an adult, she used to live in central Tel Aviv with her partner and their daughters. However, a few years ago, when their daughters were still in elementary school, Sivan's partner got into financial and health difficulties, and they separated. After separating from her partner, Sivan and her daughters moved to a lower-income neighborhood in South Tel Aviv-Jaffa. Wanting her daughters to continue receiving the better education the city center has to offer, Sivan fought and convinced the authorities to allow her daughters to keep studying in the city center. Cycling then provided her with the transportation solution of getting them there. She taught her daughters to cycle and cycled together with them to school every day until they were old and trained enough to cycle on their own. Sivan relates to a healthy and active lifestyle and gets around within the city almost exclusively by bicycle. Sivan says that the healthy and active lifestyle she lives, as well as her choice to get around by a regular bicycle, make her be perceived as a "weirdo" in the underprivileged neighborhood she lives in.

5. **Yifat.** 43 years old. Lives in South Tel Aviv-Jaffa. Works in a real estate office located in her neighborhood. Yifat does not own a private car. For Yifat, cycling on a regular bicycle is a constraint and not a choice. To her perception, she has no other option, as buses are slow, dirty and trigger feelings of anxiety related to the buses bombing of the 90s and 2000s; a private car or taxis are not affordable; e-bikes and scooters are too dangerous and perceived as masculine; and walking in her neighborhood draws unwanted interactions since her work is tightly connected to the neighborhood and its people, while cycling allows her to quickly wave at people and move on. If she could afford it, Yifat would mainly get around by taxis as her mother used to do before the successful business of Yifat's father collapsed. Yifat was born and raised in Tel Aviv, but she does not consider herself completely Tel Avivian. In her view, Tel Aviv is a symbol of liberalism and though she does relate to liberal values, she says she also has a very conservative side in her, so she feels in between.

Cyclists, academic, mid and mid-high income

1. **Elinor.** 33 years old. Lives in South Tel Aviv-Jaffa and does not own a car. Grew up in a Kibbutz. From a very young age, Elinor got around within the Kibbutz independently by bicycle – which is a traditional mode in Kibbutzs. Since moving to Tel Aviv more than ten years ago, the bicycle is Elinor's main mode of transport for inner-city trips, even on high-speed roads that most people usually avoid. However, about two years ago, after establishing her career, Elinor has significantly reduced cycling for longer distances, as she feels that she cannot afford to get "too sweaty" to places anymore. Also, in recent years Elinor's perception of traffic risks has become more stringent, so her willingness to take the (perceived) risk involved in cycling on high-speed roads is lower than it was.

2. **Goni.** 28 years old. Lives in Jaffa (southwest Tel Aviv-Jaffa) and shares a private car with her partner. Goni grew up in a small town north of Tel Aviv. When she studied for her bachelor's and master's degrees, she lived in another large city in Israel and about one year ago moved to Tel Aviv-Jaffa. Although her previous city of residence is considered not very friendly for cycling (mountainous, hardly any cycling infrastructure, busy roads, etc.), Goni would do many of her trips around that city by bicycle. Even before that, when she lived in a city in the eastern Tel Aviv metropolitan area during military service, Goni used to cycle to Tel Aviv while cycling on relatively high-speed and busy roads.

3. **Na'ama.** 34 years old. Lives in Jaffa (southwest Tel Aviv-Jaffa) and owns a private car. Works in the field of non-formal education. Na'ama grew up in a Moshav (agricultural village) north of Tel Aviv and moved to the city about 10 years ago. According to Na'ama,

after many years of cycling for transport in the Moshav, at first cycling in Tel Aviv seemed threatening. However, after 5 years in which she saw her friends cycling, she decided to try cycling in the city as well and asked her close friends to accompany her in the early stages.

4. **Noy.** 47 years old. Lives in central Tel Aviv-Jaffa and shares a private car with her partner. Works in the field of non-formal education. Noy moved to Tel Aviv-Jaffa with her parents when she was 16 and lives in the city center ever since. Due to one of her parent's military careers, in her early childhood, the family lived on military bases, which she describes as being similar to a Kibbutz, within which everyone cycled, including her family and herself. At some point, the family moved to the city of Yavne, where Noy says there was no cycling culture at all, so the entire family stopped cycling. About 5 years ago Noy decided to try Tel-O-Fun (the municipal bicycle sharing service). From that point on it developed to purchasing her bicycle and cycling became her main mode of transport. In her view, cycling expresses the values of Tel Aviv-Jaffa: freedom, independence, active lifestyle, and sustainable urban way of living.

5. **Ofir.** 33 years old. Lives in central Tel Aviv-Jaffa and shares a private car with her partner. Yoga teacher and former field-cycling guide. Ofir moved to Tel Aviv about ten years ago from a small city in the outer Tel Aviv metropolitan area. She used to cycle to school almost every day despite hardly anyone cycling for transport purposes in her environment. Ever since she moved to Tel Aviv-Jaffa, cycling has become her main mode of transport. Ofir has a high sense of confidence and sees herself as a highly-skilled cyclist due to her high maneuverability and quick reactions.

6. **Riki.** 40 years old. Lives in Jaffa (southwest Tel Aviv-Jaffa). Riki and her partner do not own a private car. About 20 years ago Riki moved to Tel Aviv from another large city in Israel. Since then cycling has become her main mode of transport. As a teenager who grew up in a large city in Israel in the 1990s, a time when bus bombings were frequent in large cities in Israel, she prefers to avoid public transport as much as possible. After moving to Tel Aviv-Jaffa, cycling was an effective alternative for her to get around while supporting values of environmentalism and an active lifestyle which are highly important to her.

7. **Tzlil.** 29 years old. Lives in South Tel Aviv-Jaffa and does not own a car. Tzlil grew up in the city center area until starting high school, when her family moved to a small town north of Tel Aviv. Like her family and friends, Tzlil cycles from a young age. Even after moving to the small town, where cycling is not a common practice, cycling continued to be her main mode of transport. Tzlil lives in a neighborhood that has been going through an intensive

gentrification process over the past decade, which one of its symbols is the cycling path on the neighborhood's main street, as it is identified with the newly arrived residents.

8. **Yael.** 30 years old. Lives in East Tel Aviv-Jaffa and shares a private car with her partner. Yael grew up in a small town north of Tel Aviv-Jaffa. During her undergraduate studies, she lived in a Kibbutz in southern Israel. As such, Yael spent most of her life in rural areas where mobility outside of the village was dependent on the private car. After graduating, Yael and her partner moved to Tel Aviv-Jaffa. This transition made inner-city car-based mobility extremely difficult, that she felt her quality of life was severely harmed. What was most difficult for her was the inability to reasonably estimate how long it would take to reach her desired destination, due to heavy traffic congestion and lack of parking spaces. Therefore, she decided to get an e-scooter. Yael says that the e-scooter significantly improved her mobility. In her view, despite the perception of the e-scooter as a dangerous mode of transport, she trusts herself to avoid risky situations as much as possible. In her view, her mother's example of a strong and independent woman taught her to have a sense of confidence and to trust herself in movement in space.

Non-cyclists, low- and mid-low- income

1. **Galit.** 45 years old. Lives in South Tel Aviv for the past 7 years with her partner and their 6-year-old daughter. Galit and her partner do not own a car. She is a freelancer in the field of typing and transcription. She gets around mainly by public transport and walking. Many people among Galit's close friends and family cycle for transport purposes and even offer Galit their support and mentoring to join cycling, but Galit is too scared to do so. Many of Galit's friends and family, especially those who use e-bikes and e-scooters, have been involved in accidents of varying severity. In recent years, with the increase in e-bike and e-scooter cyclists in Tel Aviv-Jaffa, Galit suffers a lot from the friction between pedestrians and cyclists. Nevertheless, Galit strongly supports the development of cycling infrastructure, mainly for the reduction of the friction between pedestrians and cyclists.

2. **Meirav.** 47 years old. Lives in southeast Tel Aviv-Jaffa. Married with two children, both under the age of 8. Meirav gets around only by a private car and is willing to adjust her daily routine for it (such as adjusting travel times so that she will not have to drive during rush hour). Her experience as a driver in Tel Aviv-Jaffa is involved with often friction with cyclists, which annoys her greatly. Among her friends and family, there are no people who cycle. In her perception, the chances that anyone in her close environment will start cycling are very low, especially among her lady friends who drive their children a lot from one place to another, so that in her view they have no choice but to get around by a

private car. Meirav perceives herself and her environment as "spoiled people" who have their private car which takes them "where and when we need to go". Meirav believes that if she decides to cycle, which is extremely unlikely, people around her "will raise an eyebrow" that she, "the 'couch potato'", has suddenly decided to start cycling. According to Meirav, as she works in the city center area and sees a lot of cyclists, cycling does not seem unusual for her in general, but still, she perceived it as a practice that is "not for (her) to do". Meirav opposes any urban policy which would harm the convenience of using a private car in favor of public transport users, pedestrians, and cyclists and sees such policies as blatant interference in her personal choice to get around by a private car.

3. **Meital.** 39 years old. Lives in southeast Tel Aviv-Jaffa. Married with three children. Meital commutes to work, located in the city center, by carpool or bus, and sometimes by the private car, she shares with her partner. In the past, Meital used to ride a heavy motorcycle, but as her husband did not approve of it, she quit when she got pregnant. As a result, Meital has experienced a significant decline in her quality of life. To this day, she wishes to return to ride a motorcycle but avoids it in order not to get into conflict with her husband. In her view, cycling cannot be a substitute for a motorcycle (not even a partial substitute) as, in her view, drivers have no respect for two-wheelers, but with a motorcycle at least she can maneuver and react to threats much quicker. Meital often walks with her children to visit relatives and receives judicial responses about it ("why do you need this?! just take the car!"), but Meital sees it as healthy quality time with her children and ignores those responses. Meital says that she cannot think of any adult in her environment that cycles, only of children and teenagers. Meital claims that if she had cycled, then she would have cycled a regular bicycle "as it is both safer and healthier". However, when she imagines herself doing it, she feels that it involves too much effort and that it will be very difficult to cycle and watch her three young children at the same time.

4. **Miriam.** 40 years old. Miriam grew up in a country in South America and immigrated to Israel about 10 years ago. Ever since she lives in South Tel Aviv-Jaffa and works in private house cleaning. Miriam does not own a car and travels within the city mainly by bus. Among her close friends and family, there are hardly any cyclists except her good friend who uses an e-bike and recently had an accident. Miriam supports measures to improve sustainable transportation at the expense of private cars, mainly from the understanding that relying on private cars is not viable over time.

5. **Moran.** 35 years old. Lives in southeast Tel Aviv-Jaffa. Married with two daughters under 8 years old. Born, raised, and still lives in southeast Tel Aviv. Among her close friends and family, there are no people who cycle apart from her brother who was denied a driver's license for an extended period, so he cycles e-bikes instead. Until Moran became pregnant, she was mostly traveling by motorcycle. Moran describes the transition from a motorcycle to a private car as a significant reduction in her quality of life. Moreover, Moran says that this transition involved a lot of stress and nerves, so she had to adjust and learn how to control them. Even though she used to ride a motorcycle, a vehicle perceived by many as dangerous, she still perceives cycling as highly dangerous. However, Moran says that above all, appearance is what bothers her the most in cycling: that she cannot wear what she wants; that she would arrive sweaty to places, and "that regular bicycles are for nerds" who wear "childish" cycling helmets, which are different than the "cool and stylish" motorcycle helmets, in her view.

6. **Moriah.** 31 years old. Lives in southeast Tel Aviv-Jaffa. Moriah has lived in Tel Aviv-Jaffa for the past 6 years and works as a telephone customer service representative. She does not own a car and mostly uses public transport and walking to get around the city. Moriah says that she does not trust herself to cycle. In her view, cycling in Tel Aviv requires maneuverability, alertness, high concentration abilities, and sharpness – abilities that she does not have in her view. Although Moriah does not have the financial ability to purchase and own a car, she strongly opposes the allocation of areas that are currently designated for private cars (such as parking spots, lanes, etc.) in favor of improving infrastructure for public transportation, walking, or cycling. Moriah believes that cycling for transport harms femininity and is not related to the feminine lifestyle. Moriah does not see herself as a Tel Avivian. She says that on the one hand she likes living in Tel Aviv-Jaffa, but on the other hand she is uncomfortable with the city's liberal and permissive values.

7. **Orpaz.** 35 years old. Lives in South Tel Aviv-Jaffa and works as a tour guide. When she was 15, Orpaz and her family immigrated from the former USSR to Israel and lived in a city in southern Israel. After completing her mandatory military service, Orpaz moved to South Tel Aviv, where she lives to this day. Orpaz does not own a car and travels mainly by public transport. Her first association with bicycling is "crashing" as she perceives herself as "really bad at it" and therefore could not trust herself to cycle in an unattractive cycling environment. However, if there were significantly more cyclists in the city, she would feel safer cycling. Although Orpaz does not cycle, she supports encouraging the use of bicycles in Tel Aviv, as well as the use of other sustainable modes of transport.

Non-cyclists, mid-and mid-high- income

1. **Abigail.** 30 years old. Lives in East Tel Aviv-Jaffa and does not own a car. Works in the films and television industry. Abigail has lived in Tel Aviv since she was a little girl and has always got around within the city by walking or by public transport. Abigail believes that cycling is an urban and environmental ideal that should be strived for and therefore strongly supports improving and expanding cycling infrastructure in Tel Aviv. A few years ago, she tried cycling for transport purposes, but it was a tough and difficult experience for her. She described it as an experience that requires a cyclist "to have your fists ready to battle".

2. **Calanit.** 37 years old. Lives in East Tel Aviv-Jaffa. Graphic designer. Married with one child. Calanit used to cycle for transport purposes for many years but decided to stop about three years ago when her son was born. Until then, she used to commute to work by e-bikes from east to south Tel Aviv-Jaffa, where there are no bike paths in a considerable part of the way. Thus, when she finished each ride, she would feel that it took too much luck for her to reach work safely. After her older son was born, she decided that she could no longer accept this situation and certainly could not take him by bicycle in the current state of cycling infrastructure in Tel Aviv and switched to a private car and walking. She experienced this transition as a severe reduction in her mobility efficiency and therefore as severe harm in her quality of life, but Calanit feels she had no other choice.

3. **Orit.** 31 years old. Lives in central Jaffa (southwest Tel Aviv-Jaffa). Teacher and educational consultant. Orit grew up in a small town in northern Israel. She moved to Tel Aviv about 6 years ago and got around the city mostly by bus and private car. When asked about her associations with cycling, her first was "I really want to be one of those women who cycle, but I'm too scared to do it", as Orit feels she cannot trust her maneuvering and concentration abilities, and therefore she is too scared of cycling in most areas of the city.

4. **Ravit.** 30 years old. Lives in central Tel Aviv-Jaffa. Engaged in the field of economy and public policy. Ravit does not own a car and gets around within the city by walking and by public transport. In her view, bicycles are too inconvenient to use for transport purposes, as it is cumbersome and requires investing too much of an effort. Many of Ravit's friends, as well as her partner, use e-scooters to get around within Tel Aviv. Ravit says she would like to get around by e-scooter as well, but she does not do so as it is prohibited to use on sidewalks and too dangerous in her perception to use alongside motorized vehicles.

5. **Ronit.** 31 years old. Lives in South Tel Aviv-Jaffa and gets around by public transport, walking, or by the municipal car-sharing system (AutoTel). She works in the field of education and technology and does not own a car. Ronit was born and raised in North Tel

Aviv. Among her close friends and family, people use a wide variety of transportation modes; her family and friends from North Tel Aviv get around mostly by private cars and others mostly walk or cycle. When Ronit has been on vacation in Copenhagen she actually cycled. Even in New York City, a city which is considered as much less cycling-friendly, she cycled. Ronit explained that on holiday cycling is part of the experience, while on a daily basis when she has to carry stuff and get to work in an appropriate appearance, it's less suitable in her view. Ronit also says she is too embarrassed to cycle in Tel Aviv as she feels like everyone is examining her when she does it, whilst in other places she does not care about it as she does not know anyone.

Table 1: Characteristics of the Research Participants

Group	Name	Age	# of Children Under 8	# of Cars	Socio-Economic Status (estimated[4])	Main Mode	Occupation
Cyclists; No academic degree; Low- and mid-low- income	Flora	50	Non	-	Low	E-Bike	Unemployed
	Hava	47	Non	-	Low	Regular Bicycle	Unemployed
	Neta	48	Non	1	Mid-Low	Regular Bicycle	Secretary
	Sivan	49	Non	1	Mid-Low	Regular Bicycle	Chef
	Yifat	43	Non	-	Low	Regular Bicycle	Real estate broker
Cyclists; Academic Degree; Mid- and mid-high- income	Elinor	33	Non	-	Mid-High	Regular Bicycle	Public Policy
	Goni	29	Non	1	Mid-High	Regular Bicycle	Urban Planner
	Na'ama	34	Non	1	Mid-High	Regular Bicycle	Non-Formal Education
	Noy	47	3	1	Mid	Regular Bicycle	Non-Formal Education
	Ofir	31	Non	1	Mid-High	Regular Bicycle	Yoga Teacher
	Riki	40	2	-	Mid-High	Regular Bicycle	Yoga Teacher
	Tzlil	28	Non	-	Mid-High	Regular Bicycle	Interior Designer
	Yael	30	Non	1	Mid-High	E-Scooter	Public Policy
Non-cyclists; No Academic Degree; Low- and mid-low- income	Galit	45	2	1	Low	Walk	Typing & Transcription
	Meirav	47	3	2	Mid-Low	Private Car	Secretary
	Meital	39	2	1	Mid-Low	Private Car	Secretary
	Miriam	40	2	-	Low	Public Transport	Cleaning
	Moriah	31	Non	-	Low	Walk	Customer Service
	Moran	35	2	2	Mid-Low	Private Car	Secretary
	Orpaz	35	Non	-	Mid-Low	Public Transport	Tour Guide
Non-cyclists; Academic Degree Mid- and mid-high- income	Abigail	30	Non	-	Mid-High	Walk	Films Production
	Calanit	37	2	2	Mid-High	Private Car	Graphic Designer
	Orit	31	Non	2	Mid	Public Transport	Teacher
	Ravit	30	Non	-	Mid-High	Walk	Economist
	Ronit	31	Non	-	Mid	Public Transport	School Teacher

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[4] As socio-economic status does not only depend on current household income, but also on other characteristics such as inheritance, education and future earning potential, etc., I decided to present estimated socioeconomic characterization based on related stories which came up in the interviews.

5.2. Image of cyclists: Who can see herself as a cyclist and of which kind?

Like other practices, transport mode choice contains social meanings (Heinen, 2016). To try to reveal the social meaning(s) associated with cycling for transport proposes in Tel Aviv-Jaffa, in this chapter, I focus on the perceptions towards the image of the woman who lives in Tel Aviv-Jaffa and cycles for transport purposes regularly.

Images, also referred to as socio-cognitive representations, are considered as a tool for the establishment of social identities (Koller, 2008; Torkington, 2012). However, when a practice becomes widely spread, such as cycling in the Netherlands and driving in many countries around the world, it becomes culturally "invisible" (Aldred & Jungnickel, 2014) and consequently, it is not associated with any social group in particular.

This may be the case with driving a private car also in Israel. According to Neta (48) and Orpaz (35), there is no certain identifiable image of the woman who drives a private car regularly, as "she can be anyone":

> *"Q: How would you describe the image of the woman who drives a private car regularly? A: It can be anyone... but if I still try to draw a certain image, then maybe a career woman who is a mother, so she needs to get to the office and drop off children on the way and such." (Neta, 48, cyclist, mid-low income)*

> *"Q: How would you describe the character of the woman who drives a private car regularly? A: There is no certain age... she is usually 30 years old or older; with no upper limit. She can be a spoiled kind of person or a mother with a baby, but the truth is that I do not have any special way to describe someone who regularly drives a car... she can be anyone... chubby or skinny... groomed or someone who wears very casual clothing... but if I see a mother with a baby and stroller, I will probably guess that she is driving a private car." (Orpaz, 35, non-cyclist, mid-low income)*

Through the interviewees' descriptions of the image of the 'woman cyclist', I have strived to glean (some of) the images associated with women who cycle the various types of bicycles commonly used in Tel Aviv-Jaffa (regular bicycle, e-bike, and e-scooter). By this means, I tend to gain a better understanding of how women from various social groups perceive the image of the various types of cyclists and how those perceptions relate to their tendency to see cycling as a suitable (or unsuitable) mode of transport.

5.2.1. Image of the woman on a regular bicycle

The vast majority of the interviewed women associated regular bicycling, and particularly the image of the Woman-on-a-Regular-Bicycle (WRB), in Tel-Aviv-Jaffa with the social category of 'being a Tel-Avivian':

*"People think that when you move to Tel Aviv [from other places in Israel; AP] you have to come with a certain agenda and a bicycle. **Q: What do you mean by "a certain agenda"?** A: An agenda of being more open-minded... of leaving the perceptions of the periphery behind. It's like that what you didn't do in the periphery you do here in Tel Aviv – becoming open-minded and cycle because that's what people do in Tel Aviv... As I rent apartments in my neighborhood to people [who move to Tel Aviv; AP] from all over the country, I get to see many people who move to Tel Aviv from the peripheries and their first question is "where can I get a bicycle?". It seems to them as the 'cool' thing to do […] It's part of an 'absorption basket' of becoming a Tel Avivian [laughs]..." (Yifat, 43, cyclist, low income)*

Ofir (31), a mid-high-income cyclist, describes the mechanism of social group influence and its relation to cycling mode choice:

*"**Q: Where would you place yourself on a scale which ranges between Israeli and Tel Avivian in terms of your connection to the values that each side of the scale represents to you?** A: I totally tend to the Tel Avivian side [of the scale; AP], because I think that there are a lot of differences between people who live in Tel Aviv and people who live outside the city. [...] Whenever you meet people from outside Tel Aviv, you feel there is a difference in the culture, in the people... not everyone, but there is something different here... some kind of bubble which contains people I feel I can more identify with. It can sound arrogant but that's how it is for me. [...] There is something about the things around you; the people, the culture... that shape you as a human being. They feedback to you and you feedback to them and it shapes you on the psychological level. With all of your DNA and the background you came with, in the end, there is your environment and it guides you on how to dress up, how to behave, where and what to eat, where to hang out, and also whether to cycle or not." (Ofir, 31, cyclist, mid-high income)*

Noy also describes the symbolic association between the representation of Tel Aviv-Jaffa and the practice of cycling:

*"Tel Aviv is secular, LGBT friendly, and significantly more liberal and enlightened than any other city in Israel. [...] It promotes a culture of being outside in the streets. If you sit on a bench in Ra'anana [a city in Israel; AP] you will die of boredom, while in Tel Aviv there is always something happening on the streets. Tel Aviv is also promoting community so that without you noticing, your neighborhood is becoming to be your community […] and in my view, cycling is an expression of all these values... it is an expression of freedom. Freedom in a broader sense but also in the sense of easily getting around from one place to the other... If you cycle in the monster that west Rishon LeZion is [an area in the city of Rishon LeZion known for its car-oriented development; AP], it will take ages to get to your destination and you will die from boredom on the way there... **Q: Some people can perceive what you just said as arrogant...** A: Look, I'm very much in the [Tel Avivian] bubble. Not a bubble in the sense of being disconnected, but in the sense that I really like what the 'bubble' of Tel Aviv stands for and I don't think we should apologize for that. On the contrary, I think we should strive to expand it." (Noy, 47, cyclist, mid-income)*

Yifat, Ofir, and Noy's stories are reflecting the dialectical relationship between people's identities and places. On the one hand, places have and are given multiple meanings and identities by people, and on the other, places may also shape people's identities (Torkington, 2012). So that the way we imagine places and the collective meaning we attach to them has a significant role in our perception of 'who we are'.

Yifat, Ofir, and Noy were not the only ones to associate cycling with the social category of 'being a Tel Avivian'. A sizeable majority of the interviewees, regardless of their income level and cycling habits, linked the image of the WRB to the social category of 'Tel Avivian' or to someone who lives in the city center area – which is identified the most with Tel Avivians:

> *"[A cyclist on a regular bicycle is] a bourgeois woman, Ashkenazi [of European descent; can be understood as White in Israeli context; AP], a classic Tel-Avivian. Hipster in her late 20s or early 30s, sometimes with a baby chair attached to her bicycle and sometimes without."*

> *"She is young, fit, beautiful... someone who enjoys the activity [involved with cycling; AP]. […] Here in the neighborhood [in south Jaffa; AP] women don't cycle because cycling is not considered as a 'show', it's not 'in' in their view. Most Mizrahi [social category which describes Jews immigrated from Arab countries and their descendants; AP] women do not cycle. It's like cycling isn't considered high status in their view. Only these modest, cute, I would even call them 'aristocratic' Tel Avivian women, cycle. Those who are too intelligent to care that someone else thinks it is not 'in' to cycle." (Flora, 50, e-cyclist, low income)*

Flora (50), a lower-income e-cyclist, described the WRB as a Tel-Avivian with an active lifestyle, while using highly-positive terms ("young", "fit", "beautiful", "modest", "cute"). Against this positive image, Flora describes how the social representation of cycling as "not 'in'" among the Mizrahi women in her neighborhood constitutes a barrier for them to even consider cycling.

A final example to express this point is another quote from Yifat in which she describes how a day of the WRB's life looks like:

> *"[The image of the woman who cycles regular bicycle] is a vegan type of person. You know?! Of a typical Tel Avivian. She studied something related to high-tech, so she earns well. She gets up early in the morning to have a quick workout session before she goes to work. She is from those women who do not wear makeup. She showers fast in the morning and cycles to work. On the way back home, she stops for a Vibram Yoga class, something which you get out from totally sweaty (laughs) as she is one of those women who don't mind sweating... and then she cycles for a drink in Dizengoff [hip street in the city center area; AP]. […] She is a woman who functions. I'm not like that. I sleep a lot. And when I wake up it takes me quite a while to get*

moving, but they are not like that. They are full of energy. I am exceptional in the landscape of cyclists" (Yifat, 43, cyclist, low income)

Yifat is describing the WRB as an educated and successful "typical Tel Avivian" woman, who lives an active lifestyle. Against this flattering image, Yifat is stating that she perceives herself as "exceptional in the landscape of cyclists", implying that despite that she is cycling on a regular bicycle like the "typical Tel Avivian", she does not perceive herself as fitting to such an image.

As I briefly implied above, the social category of 'being a Tel Avivian', which most of the interviewees used to describe the WRB, does not describe someone who was simply born and raised or currently lives in Tel-Aviv-Jaffa. Being (or becoming) a Tel-Avivian contains, on the one hand, a symbol of success which one may desire to be a part of (like those who seek to move to Tel Aviv that Yifat described above), and on the other hand is perceived by many as threatening, unreachable, as a symbol of arrogance and of disconnection from the Israeli mainstream.

Prof. Maoz Azaryahu, Professor of Cultural Geography at the University of Haifa, described in a newspaper interview the ambivalence towards the social category of 'being a Tel Avivian':

> *"'Being a Tel-Avivian' is both a word of praise and notoriety. Tel-Aviv is a success story, and this success inspires both things – hostility towards it and a sense of condescension from the Tel-Avivians – mostly those who emigrated from the periphery. After all, Tel-Aviv needs the periphery to know it's the center." (Nechoshtai, 2011)*

Flora's perception of the social category of 'being a Tel-Avivian' is somewhat in line with this perspective of Prof. Azaryahu:

> *"[For me, Tel Avivians are] Ashkenazi [of European descent; can be understood as 'White' in Israeli context; AP]. Intellectual. Successful. The new generation that wants to get everywhere very fast. Those who want to achieve everything and want it now." (Flora, 50, e-cyclist, low income)*

Another example of the perception of 'Tel Avivians' is Hava's statement, who was born and raised in Tel Aviv-Jaffa:

> *"Although I was born and raised in Tel Aviv and still live here, I am not a 'Tel Avivian'. The people who are called 'Tel Avivians' were not born in Tel Aviv. They moved here from other cities to become Tel Avivians. My generation that was born and still lives in Tel Aviv is rare. I see Tel Avivians cycling in the city center a lot, but they still have the private car Daddy bought them so they can come to visit on weekends [in Israel public transport does not operate on weekends for religious reasons; AP]. [...]* **Q: Where would you place yourself on the scale between Israeli and Tel Avivian in**

terms of your connection to the values that each side of the scale represents to you? A: I am totally Israeli. Because I'm patriotic. I really love my country, its religion, its people... everything about it! You know?! And being a "Tel Avivian" it's... it's a costume... those who called "Tel Avivian" have changed everything here in Tel Aviv... I will not open it ... it is irrelevant... but if we get into politics a bit... then Tel Avivians are very much against everything that happens in Israel... even if some of them understand that this is not the right way, they all act like a herd that goes blindly after its shepherds... so sure – I'm totally on the Israeli side of the scale! Q: But why did you choose the edge of the scale? Why not somewhere more to the middle? After all, you were born and raised in Tel Aviv, you support its direction towards the development of sustainable transportation which is pretty rare in Israel... A: Because my identity as an Israeli is much more powerful, whilst the whole matter of transportation is important to me and should happen in all the cities in Israel in my opinion, I don't define myself by it." (Hava, 47, cyclist, low income)

When asked where she would place herself on a scale that ranges between the social categories of being an 'Israeli' and a 'Tel Avivian' (in terms of her connection to the values that each side of the scale represents to her), Hava located herself in the far-right side of the scale ("I am totally an Israeli"). She explained that for her 'Tel Avivians' are unpatriotic people who "are very much against everything that happens in Israel" who "act like a herd that goes blindly after its shepherds" without any independent thinking.

As in earlier stages of the interview Hava noted how satisfied she was with steps being taken by the Tel Aviv Municipality to reduce the use of private cars and promote walking and cycling, I asked her why she chose the far-right side of the scale, rather than a bit towards the middle. Hava explained that although issues of transportation are important to her, she does not "define (her)self through (them)" and therefore it did not influence her choice.

The interviewees' stories reflect the way that people use identification with or against certain places (or places' identities) to position themselves and others in society (Torkington, 2012) and how the meaning associated between people and places determines the 'place identity' (Law & Karnilowicz, 2015).

Identifying cycling for transportation purposes in Tel Aviv with the social category of 'Tel Avivians', may create a soft form of exclusion of some population groups that are not identified with this social category. Of course, there are women, like Hava for example, who cycle despite not relating with this social category. In the case of Hava, for example, it seems that what enables her to see cycling as suitable, despite the identification of cycling with a social category she cannot relate to, are other social identity elements she relates to, such as sustainable and active lifestyle, alongside an economic necessity.

A sizeable majority of the interviewees associated the concept of 'lifestyle' with cycling for transport in Tel-Aviv-Jaffa:

> "The regular bicycle cyclist will be someone who is a sporty-woman, someone who relates to fitness and movement" (Galit, 45, non-cyclist, low income)

> "Young. An athlete with a beautiful figure. Someone who cycles not only because she wants to get from one place to the other, but also because she enjoys the activity involved. She lives further north than here [southwest Tel Aviv; AP], in the city center area, as over there you have to have a bicycle to get around. It is impossible to get around by car in the city center, as the distances are often too close for a car and too far to walk." (Flora, 50, e-cyclist, low income)

> "There are people in my office, especially managers, who choose to cycle to work even though they can easily get a parking spot from their workplace if they wanted to. They are people with a healthy lifestyle [...] It seems very natural to me that they do it, but as I said, I am spoiled. It's not for me." (Meirav, 45, non-cyclist, mid-low income)

> "She is relatively young. Lives in the city center heading south. Around 30 years old more or less... with a rather fit body [...]. An easy-going woman... in her appearance, but also in the way she walks... in her vibes... someone who wears 'cool' clothes, which are also comfortable... she has a 'cool' and stylish backpack, a wide-brimmed hat and big stylish sunglasses.". (Orpaz, 35, non-cyclist, mid-low income)

> "The girls who cycle regular bicycle are women that you can see that they own it [slang which means to be in control of what you are doing; AP]! It looks good when they cycle. Women who live a healthy kind of life. For a friend of mine who cycles on a regular bicycle, cycling as a mode of transport is practically her daily workout." (Yael, 30, e-cyclist, mid-high income)

> **Q: If you suddenly decided not to cycle a regular bicycle anymore and switch to an e-bike, what do you think your close friends would think of that?** A: I think my friends would be like "what happened to you?!" "who are you?!". It is like I will come to meet my friends wearing a costume; it is like I will vote for Bibi (controversial right-wing prime minister of Israel). It is like I will suddenly begin driving an extremely polluting SUV. They would think I was crazy. This is totally not in my set of values. My values are for movement, for merging with space, for activity, for sports, for non-laziness, for saving money, for reducing fuel and air pollution... and for me, switching from a regular bicycle to an e-bike, totally contradicts those values." (Noy, 47, cyclist, mid-income)

Noy's description of 'who she is' and 'who she is not' can be understood as a lifestyle social grouping that is meant for self-expression in accordance with the social identity theory and for maintaining one's identity (Cătălin & Andreea, 2014; Machin & van Leeuwen, 2005).

Almost all the educated-higher-income interviewees, associated the WRB's image also with lifestyle-based discourses of "cool", "hip" and "stylish":

"Look, all the cool girls cycle [...] For me, the Tel Avivian girls who cycle [regular bicycles] are everything I want to be and cannot. They are usually beautiful, young, sometimes young mothers, well dressed, hipster, or somewhere between light-hipster and artistic kind of style. […] Those that put their pants inside their socks, so they don't get caught in the chain, but somehow for them, it comes out full of style and fashion." (Orit, 31, non-cyclist, mid-income)

"She is a relatively young Tel Avivian – around 20-40 years old. A hipster who prefers analogical stuff and not something which is too innovative such as an e-scooter." (Ofir, 31, cyclist, mid-high income)

"Single. Lives in the city center. Her distance from work is no more than two kilometers. She has a vintage city bike. Such a 'cool' woman." (Calanit, 37, non-cyclist, mid-high income)

"First of all, I love her (laughs) [...] she is hipster, young – about 25-30 years old. She looks Tel Avivian – originally or fitted in nicely in the city (laughs). Her life is in a relatively small radius." (Abigail, 30, non-cyclist, mid-high income)

Lifestyle is also considered to reflect the individual's values, life-vision, and aesthetic style and as having a great impact on consumer behavior which is in line with their self-image and self-identity. When part of a social group with a certain lifestyle, the individual's consumption choices tend to reflect their social identity (Kim & Drolet, 2003).

The story of Sivan (49), a mid-low-income cyclist, illustrates the relationship between the concepts of 'place' and 'lifestyle', and the role of cycling in the signaling of the 'right' kind of lifestyle:

"I have two daughters aged 19 and 17. [...] We live in South Tel Aviv, but the center of our lives is in the heart of Tel Aviv. Their schools, their friends, their youth movement, their activities... my stuff is as well; my workplace and all of my points of interest in daily life, are all in the city center- Habima Square, Shenkin, the beach [iconic locations in the center of Tel Aviv; AP]... One of my successful battles with the Tel Aviv Municipality was that my daughters wouldn't be educated in south Tel Aviv [...] So I taught them to cycle from a very young age. Until I could afford to own a car to drive them to school, I would cycle with them every day. **Q: Why was it so important to you that your daughters study in the city center and not in south Tel Aviv?** *A: I insisted that their social environment will remain that of the center of Tel Aviv. We had to move from the city center to south Tel Aviv at a significant age in my daughters' life – in the transition from kindergarten to elementary school. At that time, my family went through a shake-up. We crashed financially, my partner was not at his best in terms of health and mentality and at work, I went through all kinds of problems... so that was the only thing I could keep for my daughters as permanent, safe, and familiar was their social environment."*

However, preserving her daughters' social environment to be that of the center of Tel-Aviv does not only mean to get them to go to school in the city center but also preserving the lifestyle, which is associated with the city center, to signal 'who they are':

> ***Q: What do you think people in your neighborhood think about you cycling a regular bicycle to get around?*** *A: Look, the show "The Biggest Loser" [an American reality TV show that features overweight contestants competing to lose weight; AP] should be brought to my neighborhood [a lower-income neighborhood in South Tel Aviv; AP], unfortunately. In my neighborhood, a lot of people are really fat. So, my daughters and I are a bit weird in the neighborhood and I say this with a very heavy heart and not arrogantly. We are different in our appearance... in the way, we see the world... the environment... I have a balcony in which I grow cherry tomatoes... I'm weird! You know what I mean?! It doesn't belong to this neighborhood. And this is how it is with cycling... I'm weird in doing it. So, to your question, in the eyes of the people in my neighborhood, I look like someone fit, who is easy going... as someone who they see as "not like us"... as someone different." (Sivan, 49, cyclist, mid-low income)*

The quest for the 'right' kind of lifestyle, which is meant to make a statement about 'who one is' or 'wants to be', is argued to be an integral part of the late-modern social world, at least for its more privileged citizens (Torkington, 2012). For Sivan, cycling has provided not only a cheap and accessible mode of transport to arrive in the city center, but also, alongside other lifestyle practices, it served to signal to themselves and to their various social environments 'who they are' and to what social group they belong to, regardless their actual place of residence.

Summary. Sense of 'place', identity, and 'place identity' were previously found to impact the participation of various social groups in cycling, especially in low-cycling contexts in which people may address specific local identities to construct cycling as a normal practice (Aldred & Jungnickel, 2014; Law & Karnilowicz, 2015). As in other low cycling contexts, this social process of normalizing cycling around local identity took part also in Tel Aviv-Jaffa, so that alongside the significant increase in the number of cyclists in the city (Tel Aviv-Jaffa Municipality, 2019), also the association of 'being a Tel Avivian' with cycling was constructed.

However, the excerpts from the interviews give rise to a clear conclusion that this normalization of cycling around the social category of 'being a Tel Avivian', is perceived as threatening, unrelatable, or undesirable by some social groups, and therefore make them view cycling as a practice which they cannot identify with. Thus, this identification of cycling

with the social category of 'being a Tel Avivian' may limit the ability of other social groups to perceive cycling as a suitable mode of transport.[5]

Another concept that was found to be associated with the image of the WRB is the concept of 'lifestyle'. Lifestyle practices and discourses are considered as a new kind of social grouping to create and express social identity (Machin & van Leeuwen, 2005) and as key tools for middle-class distinction, identity, and power (Fernandes & Heller, 2006). Interviewees from all income groups, both cyclists and non-cyclists, associated the image of the WRB with healthy and active lifestyle-based discourses of "fitness", "movement", "health", etc. However, almost all the educated-higher-income interviewees also associated the WRB's Image with lifestyle-based discourses of "cool", "hip" and "stylish". Such use of lifestyle-based discourses by the higher income group is demonstrating how privileged individuals distinguish themselves and assess cycling practice as part of their own lifestyle.

These findings are in line with previous studies which have shown how in low-cycling contexts construction of a positive distinction to cycling practice is common among middle- and upper-middle-class social groups. Those studies found that this positive distinction is meant to elevate cycling practice through positive lifestyle-based discourses and as result to normalize cycling (Aldred & Jungnickel, 2014; Anantharaman, 2017; Law & Karnilowicz, 2015; Pelzer, 2010; Steinbach et al., 2011). However, leaning on highly distinguished discourses could be exclusive, as it makes it difficult for other social groups to see cycling as a mode of transport they can relate to (Anantharaman, 2017; Law & Karnilowicz, 2015). The two concepts of 'place' and 'lifestyle' are not separate from each other. As the choice of place of residence enables one to construct a coherent narrative and present the 'right' sort of public presentation of the self, it is attributed as a kind of lifestyle choice (Torkington, 2012).

5.2.2. Image of the (wo)man e-bike cyclist

As e-bikes allow greater cycling distance with less or hardly any physical effort invested, they are considered to have the potential to increase accessibility for people who are unable or reluctant to use regular bicycles, such as older people or people who are not willing to sweat (Haubold, 2016; Louis et al., 2012). However, for one to even consider using an e-bike for transport purposes and enjoy its benefits, first one should perceive e-bikes as a mode of

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[5] It should be emphasized that this social process does not necessarily guide the individual whether to actually cycle or not, but whether to see cycling as a transportation alternative that is considered as normative and acceptable in your social environment.

transport they can identify with, i.e., as a mode of transport that one perceives as 'meant for people like me' to use.

This section focuses on the interviewees' perceptions of the image of the Woman-on-an-E-Bike (WEB) and how those perceptions affect the tendency of women to see (or not to see) e-bikes as a suitable mode of transport form themselves.

One of the most salient elements that emerged when discussing the image of the WEB with the interviewees was that the e-bike is not associate with women at all:

> *"I think that the image of the e-bike cyclist must be someone with high self-confidence. But I think it would usually be a man. Relatively young; about 25 years old. Someone tough. A badass kind of guy." (Ravit, 30, non-cyclist, mid-high income)*

> *"The stereotype of the e-bike user is not of a woman, but of a man. I see very few women on e-bikes [...] he is an inconsiderate ars [Hebrew slang for a rude and violent young person whose origins is from Arab countries; AP] who neither understands the rules of the road nor the dynamic of respect between people in the public space. I don't know if it comes from immaturity, bad education or whatever…" (Noy, 45, cyclist, mid-income)*

The negative social category of *'ars'* used by Noy to describe men on e-bikes, means a rude, impolite, inconsiderate, and aggressive young man. However, this social category also has ethnic connotations, as it is often used particularly to describe a rude and violent young (Jewish) man whose origin is from Arab countries (in contrast to the supposedly polite, considerate, and well-educated Jews whose origins are from European countries).

Flora, who lives in a lower-income neighborhood in Jaffa, also associated this image with ethnical connotations:

> *"A young man. Usually an Arab I would say. Rude. Aggressive. With an aggressive presence. Someone who wants everyone to constantly notice his presence. Someone who doesn't give a damn about his surroundings. E-bike cyclists in Jaffa [i.e., South Tel Aviv – AP] specifically are very violent. It's different from those in North Tel Aviv. In North Tel Aviv, too, many people use e-bikes, but there they are more polite, gentler... Here in Jaffa, they are really scary." (Flora, 50, e-cyclist, low income)*

Through this comparison, Flora expresses the spatial-ethnic-class context of the negative perception of the MEB's image.

Since riding on e-bikes is perceived as masculine, some women might avoid it at all. However, when some women, nevertheless, choose to use e-bikes, they are often identified as *'arsiot'* (the feminine-plural pronunciation of *ars*)[6]:

> *"Once, someone I know needed money fast, so I bought his e-bike from him at a very good price, but eventually I decided to sell it [...]* **Q: Why did you decide to sell it? Why didn't you use it?** *A: Because it's a men's... to cycle an e-bike seems to me as a masculine thing to do. It's not feminine. E-bikes are tough! You only see arsiot (the feminine pronunciation of the social category of ars explained above) on e-bikes – only Arsiot! Those who cannot get a driver's license [...] or money to buy a car, so they take one child in the front and one in the back of their e-bike." (Yifat, 43, cyclist, low income)*

In addition to the identification of women who cycles an e-bike with the negative social category of *ars*, other interviewees associated this image with women who work as a delivery person which is considered to be a masculine (and low-income) occupation:

> *"I don't often see women cycling e-bikes so much. If I do see one, I assume that she works as a delivery person at Wolt [an online food-delivery platform operates in Tel Aviv; AP]." (Orpaz, 35, non-cyclist, mid-low income)*

> *"E-bikers are such arsim. Young guys who don't have the financial means to buy a car and want to get around quickly. Who don't follow the rules [...] and don't give a damn on everything that happens around them... [...] I really don't get to see women on e-bikes... apart from the women who work at Wolt [an online food-delivery platform operates in Tel Aviv; AP], I hardly see women cycle e-bikes." (Neta, 48, cyclist, mid-low income)*

Because cycling an e-bike is so distinctly identified as a "tough" and "violent" practice, potential beneficiaries such as parents, the physically disabled, older adults, people who are reluctant to get sweaty, etc., may avoid using e-bikes despite the functional advantage this mode could offer them. Particularly for women, since cycling e-bikes is perceived as a "masculine", "tough" and "violent" practice, women might avoid using them at all.

In other cases, women who choose to ride an e-bike feel they need to apologize for this choice:

> *"**Q: What would you think of a friend of yours if she decided to ride an e-bike?** A: It's funny, but today I met a friend of mine who told me she is riding on an e-bike and she really apologized for it. **Q: Why do you think she felt the need to apologize for it?** A: I think she felt a need to apologize because, for some people, using e-bikes is considered illegitimate... as a sign of laziness. So maybe people who do not*

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[6] It should be noted that since the word *Ars* is associated only with men, the inclination of this word to feminine pronunciation to describe a woman, entails a perception of that woman as masculine. Therefore, even if the interviewee would not explicitly describe her as masculine, it could be deduced from her description as *Arsit*.

> *want to be perceived that way, feel they need to apologize." (Goni, 28, cyclist, mid-*
> *high income)*

Goni's story illustrates how social norms shape the tendency of others within the social group to see the e-bike as an unsuitable mode of transport that group members need to avoid or to apologize for, if they, nevertheless, chose to use it.

However, as reflected by Goni's story, some people decide to use this socially "illegitimate" mode despite their awareness of its negative image. They may do it either due to a low degree of social group identification (and as a result lower level of social pressure), for other reasons such as high-level of (perceived) functionality, high-degree of cost-benefit (in terms of mobility and accessibility compared to its relatively low cost) which this "illegitimate" mode provides them, a low-degree of accessibility to other modes, etc.

The story of Flora (50), a low-income e-cyclist, is an example of how the practical advantages of an e-bike, like its high level of functionality and relatively low costs, make the e-bike the most suitable option for her needs and circumstances:

> *"I really like the e-bike. It really made my life easier. I go all around the city with it.*
> *Even though I had two accidents and broke both shoulders, I cycled again as soon*
> *as I could without thinking twice. I am aware that a lot of men cycle like crazy and*
> *don't think of it as a mode of transport, but rather as a mode for show-off. But there*
> *are also a lot of people who do it with private cars. I guess that people have gotten*
> *used to it. Look, as I gained a lot of weight, I had to switch to an e-bike. And not just*
> *to a regular e-bike, but to the gangsters' e-bike. Those with the illegal strong engines*
> *and the really thick wheels. And it really doesn't suit my personality. My bicycle used*
> *to be very modest, a bicycle that no one noticed. But when it comes to my comfort,*
> *at the end of the day, I choose what is comfortable and suitable for my needs."*
> *(Flora, 50, e-cyclist, low income)*

Flora's choice to use an e-bike despite her acknowledgment of its negative image may be related to her particular situation:

> *"Q: Are there any friends of yours who cycle? A: In my building, I see people tying*
> *e-bikes in the shelter and I see people in the neighborhood cycling, but the truth is I*
> *don't really have any friends... I don't really connect... Q: And people in your family*
> *cycle? A: Neither... I'm not in contact with them either. I'm a soloistic person. I'm*
> *part of a lot of groups, but I'm not really friends with anyone." (Flora, 50, e-cyclist,*
> *low income)*

The lack of social pressure from close ties and the limited identification with any particular social group may imply that Flora is 'freer' than many others to consider all possible modes of transport primarily based on the match between her various needs and possibilities (physical, economic, etc.) and the characteristics of the transport mode.

Women from all groups used gender-based discourses to describe the e-bike cyclists' image and perceive the typical e-bike user as a man. However, almost only higher-income women, both cyclists and non-cyclists, also used lifestyle-based discourse to describe the image of the typical (and thus male) e-bike user.

As opposed to the positive lifestyle-based discourses used to describe the WRB's image, the image of an e-bike user was associated with negative lifestyle-based discourses of "lazy", *"sachi"* (Hebrew mocking slang for boring mainstream), and *"ars" (explained above)*:

> *"Q: Let's say that starting from tomorrow you decide to cycle an e-bike, what do you think people who are close to you will think about this choice? A: That I became an arsit. That I'm influenced by my arsim pupils (laughs). You know, there's this stereotypical distinction that regular bicycles are for hipster Tel Avivians with round glasses and e-bikes are for arsim or for douchebags [Slang for an arrogant and vulgar man, which arouses in people who watch or listen to him, feelings of rejection and disgust; AP] from North Tel Aviv. These are the versions it comes in (laughs)." (Orit, 31, non-cyclist, mid-income)*

> *"In my view, the mode of transport you choose says something about you [...] and e-bikes cyclists are perceived as sachim [Hebrew slang for boring mainstream; AP], lazy bourgeoisie from North Tel Aviv […] while regular bicycle cyclists are perceived as hipsters." (Tzlil, 29, cyclist, mid-high income)*

> *"He looks like such a sachi [Hebrew mocking slang for boring mainstream; AP]. Someone who is well-groomed and clean. Too clean. Someone who is not willing to sweat at all." (Elinor, 33, cyclist, mid-high income)*

So, while the lower-income mainly referred to e-bikes through gender-related discourses of "masculine" and dangerous mode, the higher-income referred to e-bikes also as a lifestyle choice they cannot relate to. So much that cycling e-bikes are conceived as going against 'who you are' ("wearing a costume") and 'what you believe in' ("total contradiction of my values") (Noy, 45, cyclist, mid-income. See full quote in Section 5.2.1 above).

Riki (40), a mid-high-income cyclist, expresses how the social group affiliation of e-bikes has made her perceive this mode of transport as not suitable to even consider:

> *"Q: What do you think your friends would think of you if all of a sudden you decided to switch from a regular bicycle to an e-bike? A: There was a time that I considered switching to an e-bike. Before the e-bikes became to be what they are today. But today I would be really ashamed to do so... Q: Why? A: Because now it represents a group that I really enjoy distinct myself from. Q: And who are these people? A: People who study in IDC [a private and relatively expensive college associated with wealthy people; AP] and cycle their e-bikes […]. Dressed fancy, perfumed from head to toe, gel in the hair... It's ridiculous! Young and healthy men... what's your problem?! Just cycle. In my first pregnancy, I cycled the ascent of Jaffa*

Road and a young well-dressed man passed across me with their e-bikes and I thought to myself 'you are pathetic!'. If you need to take kids around with the bicycle, then it's tempting. I totally understand it. But all these young men who cycle to the gym on e-bikes... sorry, but that just seems ridiculous to me! " (Riki, 40, cyclist, mid-high income)

Abigail's story is an example of how the negative image of e-bike users is translated into a social pressure to avoid using e-bikes:

"A good friend of mine recently bought an e-bike, so me and our other friends really laughed at him about it, so he sold it very quickly […]. He sent to our friends' WhatsApp group a picture of him with the new e-bike he bought, and we all responded like: 'Why?! What are you doing?! From all the modes possible, why did you choose the one that all the douchebags [see above] use?!'. In the end, he bought a car (laughs)." (Abigail, 30, non-cyclist, mid-high-income)

This story reflects the position of the e-bikes versus that of the private car in the 'social legitimacy hierarchy' among Abigail's social environment. While e-bikes are perceived as socially illegitimate mode choice, the choice in a private car is considered as socially legitimate, as such choice is not resulting in social pressure to avoid conducting it.

To gain a better understanding of what kind of lifestyle statement cycling of the various kinds make for low-income people, I revealed to the interviewees from all income groups that cycling in Tel Aviv-Jaffa is unequal by income level and asked them to explain the phenomenon in their opinion:

*"**Q: In many cities, and also in Tel Aviv, people with lower income are under-represented among cyclists. How do you explain that?** A: Interesting... but I guess the e-bikes reduced this underrepresentation [of low-income people; AP], haven't they?! Because e-bikes have a different prestige. When you are from a low socio-economic background your need to prove that you have economic means increases. That's why many of them wear brands and drive more expensive cars. It might seem more logical for people with higher economic abilities to do this, but the exact opposite happens. Because people who do not have money, have an internal need to constantly prove that they do..." (Orit, 31, non-cyclist, mid-income)*

"That's how it is! Those with no money will do anything to buy the most expensive Mercedes to show that they are wealthier than they actually are. What we call here "shufuni" [slang for 'show off'; AP]. They don't have a penny in their wallet, but they will go around with Marlboro cigarettes in their hands, will have the newest smartphone, and will take a loan of 2,000 NIS (~500 EUR) a month to drive a SUV." (Meital, 39, non-cyclist, mid-low income).

In fact, many interviewees from all income groups provided such an explanation for the status symbol of e-bikes in comparison to regular bicycles. However, a rather unique explanation of

Orpaz (35), a mid-low-income non-cyclist, provides another interesting angle on why lower-income men choose e-bikes and on the social meaning of such choice in her perception:

> *"I think that e-bikes are not a status symbol. From what I see, e-bikes are a sign of necessity... For instance, in my neighborhood [a lower-income neighborhood in South Tel Aviv; AP] many refugees and migrant workers have e-bikes because they cannot get a driver's license, and I think many Israelis also choose e-bikes out of necessity too... because they do not have a driver's license or don't have money for a private car. These are people who would like to get around by motorcycle or private car, but because of some constraint they cannot, so they get around with e-bikes." (Orpaz, 35, non-cyclist, mid-low income)*

E-bikes may be more appealing for lower-income. However, the reason for this is not necessarily related to e-bikes' allegedly higher status in comparison to regular bicycles, but perhaps more so to their greater resemblance to motorized vehicles (at the image and the functional level) and their relatively higher level of affordability in contrast to cars (in terms of costs and the need for a driving license).

Moran's response to the phenomenon of the under-representation of lower-income among cyclists, or more particularly to the phenomenon of the over-representation of higher-income among cyclists, reinforces Orpaz's perception above:

> *"I'm not familiar with such a phenomenon. Even if some surveys indicate it, I don't think it's true. It sounds bizarre that wealthier people would prefer a bicycle when they can drive a private car." (Moran, 35, non-cyclist, mid-low income)*

Moran questioned the phenomenon I presented to her since in her view it is unlikely that people who have the economic means to purchase and own a private car will choose to go around by bicycle. Moran's perception reflects that she views cycling as a practice that is conducted mainly out of financial necessity and not out of a free will.

Later on in the interview, Moran tried to think of people in her life who cycle and was able to think only of her brother who rides an e-bike. However, at some point Moran realized that he was actually riding an e-bike out of lack of choice:

> *"My brother cycles an e-bike, but he's a problematic guy... he's done all sorts of "hacks" to the e-bike, so I don't know if it is still considered an e-bike at all. But actually, his driver's license has been revoked for a very long time, so he doesn't really have a choice." (Moran, 35, non-cyclist, mid-low income)*

E-bikes may have in fact increased the representation of lower-income groups among cyclists as many belief. However, judging by some of the interviews, the reason for this is not necessarily related to e-bikes' allegedly higher status symbol in comparison to regular bicycles,

but perhaps more so to their greater resemblance to motorized vehicles (at the image and the functional level) and their relatively higher availability (in terms of costs and licensing).

Summary. Among a vast majority of the interviewees, regardless of socioeconomic level, the image of the e-bike cyclist is identified with aggressive and violent men. In addition, in contrast to regular bicycle cycling, which has been associated by the higher-income-educated interviewees with discourses of "movement" and "cool", e-bikes have been identified by the same group as a "lazy" practice conducted by boring mainstream *("sachim")* or by aggressive and violent men *("arsim")*. The identification of e-bikes usage as a masculine practice echoes the historical-cultural association of the motorcar with men and masculinity (Bengry-Howell & Griffin, 2007). As e-bikes are associated with this kind of negative gender-related and lifestyle-related discourses, many women (from all income groups) might avoid even considering using them, despite the unique benefits they could offer many users (such as those who are not willing to sweat, those with greater household responsibilities, or those who have to travel over larger distances).

5.2.3. Image of the woman e-scooter cyclist

In the last three years, the number of e-scooter trips in Tel Aviv-Jaffa increased significantly, mainly due to the introduction of e-scooter sharing services in 2018 (Hadar & Stoler, 2018). In 2020 e-scooter's (both shared and privately owned) commuting mode share was 4% out of all residents' trips (for comparison, cycling commuting mode share – both regular bicycles and e-bikes – was 11%), and about 27% out of all residents' cycling commuting trips (both regular bicycles, e-bikes, and e-scooters)[7]. Nearly 2/3 of the e-scooter trips were by shared e-scooters. Thus, the e-scooter has become a significant transportation alternative in Tel Aviv-Jaffa that cannot be ignored.

In the following sub-chapter, I focus on the image of the Woman-on-an-E-Scooter (WES), i.e. the image of the woman who uses an e-scooter regularly for urban mobility, and how it shapes the perception of women from various social groups towards the e-scooter as a suitable (or unsuitable) mode of transport

Compared to the images of the WRB and WEB, for which the vast majority of the interviewees had a clear and distinct description, the WES' image was perceived as relatively broader:

> *"I'm not sure there is such an image, as it is pretty common. I guess that usually, it*
> *will be someone very young who is in a hurry, but too lazy to cycle. But in terms of*

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[7] Based on own-analysis of Tel-Aviv-Yafo Municipality's 2020 modal split and cycling survey.

age, it feels that in regular cycling you see a wider range of ages, even people aged 60-70, while most of the e-scooter cyclists are very young." (Moriah, 31, non-cyclist, low income)

Tzlil (29), a mid-high-income cyclist, has explained this border image of the WES:

"It seems that the shared e-scooters are widely used on a functional basis, that pretty much everyone uses it… I feel that over time more and more people are 'committing sins' by using it, so I don't really have an image of who uses it."

Tzlil's choice of the word "sin" to describe people's choice (most likely she referred to people from her social environment) to use the e-scooter implies her view on the change that the image of the e-scooter has gone through. It can be inferred that in Tzlil's view, the more people perceived this transport service as "functional", the more people choose to "sin" and use it despite its negative image. Hence, with the growing amount of "sinners", its negative and distinct identification (which was rather similar to that of the e-bike) has expanded and blurred.

Na'ama (34), a mid-high-income cyclist, offers another explanation for this change of the WES's image:

"The e-scooters users are younger [than the regular bicycles cyclists; AP] – around 20 years old or so. But in fact, e-scooters are pretty much crossing social sectors. But maybe it's not completely [crossing social sectors], as it is not so economically accessible for poor people [...] But most people don't buy the e-scooter, it doesn't belong to them, they just rent it, so it may be perceived as a transient thing that doesn't affect the sense of 'who you are'."

Na'ama implies that in her view, transport mode choice affects the sense of 'who one is', mainly when people own the mode of transport, while that when they just rent it, "it may be perceived as a transient thing that doesn't affect the sense of 'who you are'".

The interviewees' description of the image of WES highlighted its association with age:

"The e-scooter users seem like such extremists. Those who are not afraid of anything! They are usually very young - around 20 years old... teenagers even. Those who travel without a helmet, with the cell phone in hand, and at the same time give a lift to a friend. Those who enjoy the risk [...] Fearless teens who don't care about the rules [...] it's everyone [using e-scooters; AP] – it's really crossing social classes! Their goal is to reach their destination and that's all that interests them." (Galit, 45, non-cyclist, low income)

"She is young, very young even… no more than 21 years old... she wears a dress and slippers. Someone who cycles with her headphones on and thinks it's cool to risk her life like that. Someone with no feet on the ground; that doesn't look right and left!

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She is only concerned with how she looks like!" (Orpaz, 35, non-cyclist, mid-low income)

Along with the distinct identification of the image of WES as very young, many of the interviewees associated this image with a distinct style:

"Today I came across a few... they are usually well-groomed... even too well-groomed women… someone with Botox, makeup, wearing a miniskirt. She doesn't look like a Tel Avivian, but as someone who came from one of the cities around. Those who cross the intersection at a red light. They look normal, but when they ride the e-scooter, they become arsiot!" (Yifat, 43, cyclist, low income)

"A teenager that is constantly in a hurry but doesn't really need to get anywhere. Someone who is very aware of fashion, style, contemporary music and such." (Sivan, 49, cyclist, mid-low income)

Yifat describes the image of the WES as of a "normal" young woman who is very aware of fashion, style, contemporary music, etc., which is in contrast to the WEB's image of *"arsit"* and "masculine". This, only until they start riding the e-scooter, then they become *"arsiot"*. With this distinction, Yifat expresses the difference in her perception of the two types of electric modes. While the e-bike women users are 'permanently' perceived by Yifat as "masculine" *"arsiot"*, the e-scooter women users are 'temporarily' identified as *"arsiot"* – only when they conduct their "fearless" usage of the e-scooter.

5.2.4. Summary

One of the things which distinguish high-cycling countries and cities from low-cycling ones is that in the former cycling is perceived as 'imageless' and not associated with a distinct social group(s), but rather equally represents most social groups (Aldred & Jungnickel, 2014; Furness, 2005; Horton, 2006; Oosterhuis, 2016; Pelzer, 2010). In fact, within places with a well-developed cycling culture, where cycling has become almost culturally invisible, the functional aspects, such as the available infrastructure, the physical environment, and the regulation towards motorized vehicles, are found to be a powerful determinant of cycling. In contrast, in places with underdeveloped cycling culture, social aspects are found to be more dominant (Aldred & Jungnickel, 2014; Pelzer, 2010).

Table 2: Summary of the various kinds of cyclists' image

	Regular Bicycles	E-Bikes	E-Scooters
Lifestyle	Hipsters; 'Green'; Healthy and active lifestyle	Tough and aggressive *arsim*[8]	Contemporary style; Risk takers
Place	Tel Avivians; Live in the city center	-	-
Age	~25-50	~15-40	~15-25
Gender	-	Men	-

As the cycling culture in Tel Aviv-Jaffa is still underdeveloped, it is not surprising that (the different types of) cycling in the city is identified with particular groups. Particularly concerning the participation of lower-income women in cycling, I argue that the possibility for them to relate to one of the available images of cycling in the context of Tel Aviv-Jaffa is limited to a large extent by lifestyle-, place-, and gender-related images. On the one hand, there are the lifestyle and place related images ("Tel Avivian", "hipster", etc.) that limit them from perceiving regular cycling as a socially suitable mode of transport, and on the other, the gender-related image of the e-bikes cycling ("masculine") limits them from seeing e-bikes as a suitable mode of transport as well. As for the image of the woman e-scooter user, it was found to be perceived as relatively broader, and to be associated mainly with young people (about 16-25 years old) who are "too lazy to cycle". This relatively broader image of the e-scooter was explained by few interviewees as resulting from its main use as a service (rather than ownership) which is strengthening its functional image.

5.3. Urban politics and cycling: shared group beliefs and cycling suitability

To reveal some of the similarities and differences in the participants' urban political attitudes, the participants were asked to express their position(s) towards the desired urban transport development – a development-oriented towards private cars or sustainable modes of transport.

For a sizeable majority of the interviewees, unsurprisingly, attitudes toward the desired urban transport development were consistent with their current mode. However, what stood out in particular, was the sense of threat from the position of the 'other':

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[8]A negative social category used to describe a rude and violent person, which contains ethnical connotations, as it used to categories negatively young man whose origins is from Arab countries.

"Bicycles and public transport are great and all, but not at any cost. You have to recognize that we all live in Tel Aviv – a city with a severe parking shortage and if you take away parking spaces and car lanes to give them to bicycles and public transport, you will only make people more frustrated and anti-cycling. I think that cycling is 'green' and everything, but it cannot come at the expense of people like me that cycling doesn't speak to them." (Moran, 35, non-cyclist, mid-low income)

"[People who say that more space should be allocated for sustainable modes of transport on behalf of private cars for environmental reasons] are 'Yefei-Nefesh' [Hebrew mocking phrase used to delegitimate people with liberals political views; AP]. Whoever feels that the use of the private car is polluting, is more than welcome to constantly go around with a face mask on. [...] Do not interfere with our parking space! Everyone should be allowed to choose their desired mode! [...] It should not be of anyone's interest if I commute by car, bus, or bicycle." (Meirav, 45, non-cyclist, mid-low-income)

From Meirav's quote, it can be inferred that she perceives those who call for a change in transportation priorities in Tel-Aviv-Jaffa as a threat to her way of life. Such voices calling for change have recently received support from the Tel-Aviv-Jaffa Municipality, which has announced a new transport vision for the city that strives to "flip the pyramid" and put a bigger emphasis on sustainable modes of transportation at the expense of private cars (Tel-Aviv-Jaffa Municipality, 2020).

Such differences in political positions were also expressed concerning the debate on a cycling path constructed in an underprivileged neighborhood in South Tel-Aviv-Jaffa going through gentrifying urban renewal processes in the last decade (Amitai, 2019). As Tzlil (29), a mid-high-income cyclist who lives in the neighborhood, described it:

"In my neighborhood, the original residents see cycling as belonging to the gentrifiers – to the artistic-kind-of population that moved into the neighborhood – while they want something different. In their perception, [the bicycle lane] is meant for someone else."

To reveal to some extent the perceptions of "us" and "them", and their saliency among the interviewees, at some point in the interview I asked the interviewees who expressed pro-sustainable transport attitudes to describe the image of the woman who would say things such as: "Even if there was an efficient and convenient public transportation system in Tel Aviv, as well as perfect cycling paths, I would still only get around by my private car!". Respectively, I asked the interviewees who expressed pro-private-car-oriented development attitudes to describe the image of the woman who would say: "we should understand that we cannot rely on private cars forever because if we do, we wouldn't be able to move nor breathe

in this city". In this context, some of the interviewees associated the private car and 'being an Israeli', and cycling and 'being a Tel Avivian':

> *Q: Which person would say a sentence like "Even if there were in Tel Aviv highly efficient public transportation and extensive cycling paths, I would still only get around using my private car!"? A: I think it's a very Israeli sentence to say! To do the right thing, an Israeli needs the city to ban cars from entering it. And it's a shame because bicycles and public transport are much more convenient, much cheaper and much more environmentally friendly. […] It is a pity that there are people who say such things, but this is the essence of being an Israeli. Q: Why would you necessarily call it 'Israeli'? A: Because that's how Israelis are. The average Israeli is more likely to say such a sentence than the average Tel Avivian. It's the Israeli DNA. Israelis will never give up having their car next to them." (Hava, 47, cyclist, low income)*

> *"This is an Israeli perception to have. […] I personally do not understand it. I think that sustainable transport is the right thing economically, and it is certainly right and much fairer socially and environmentally. We cannot rely on a private car forever. Even if everyone had enough money to buy a car, it is clear that the result is a catastrophe because it is impossible to widen roads to infinity - it is not feasible! Q: So how would you describe her image? A: I think a person who says such a sentence is someone with a narrow perception who sees the existing situation as the only possible option without having the ability to imagine other options and their benefits. I don't have an image with clear characterization in mind because it can be anyone. Maybe not people with relatively higher social and environmental awareness. […] To me it has nothing to do with education or status, because on the one hand underprivileged populations tend to see cars as a status symbol and on the other hand people wealthy people take them for granted, so it actually crosses classes and populations in my opinion." (Tzlil, 29, cyclist, mid-high-income)*

Hava and Tzlil's view are examples of the normalization of cycling around the urban-place-identity category of 'being a Tel Avivian' (which I elaborated on in Chapter 5.2.1 above) and for its distinction from the national-place-identity category of 'being an Israeli'.

So, while for some social groups cycling can be understood as a practice that supports a political position and 'green' lifestyle, for others who do not share the same views, cycling may be perceived as a threat to their way of life and current mobility habits or even as a symbol of their being pushed out of their neighborhood.

5.4. Gender education, sense of confidence, and women participation in cycling

When people already perceive cycling as socially suitable in principle, to start cycling, they also need to have the means to bring it into practice. Those means include knowing how to cycle, having the financial (relatively modest) means involved with cycling, having a secure place to park the bicycle, etc., and also having the sense of confidence to cycle for transport in a given environment.

Currently, many women do not feel safe enough to cycle in a (perceived) unattractive environment for cycling such as Tel-Aviv-Jaffa. In fact, one of the things that differed between cyclists and non-cyclists interviewees is their sense of confidence to cycle in a cycling environment such as Tel-Aviv-Jaffa:

> *"Stress. Lots of stress. Insecurity, fear, death, accidents … this's what cycling is about to me." (Miriam, 40, non-cyclist, low income)*

> *"I mostly feel concerned – that the road will be slippery and I will slip; that I will I run into a hole in the road and fall. That I'll get confused and lose the way. That there's a high chance that I'll get hurt." (Ravit, 30, non-cyclist, mid-high income)*

> *"I'm very jealous of those who have the courage to cycle in the city. I personally don't see the bicycle as a suitable mode to get around with regularly. [...] For me, the bus is much more suitable, as I don't have to concentrate on anything. Cycling is not for me. It requires a lot of concentration which I don't have. [...] It's not for me all this maneuvering around people and cars… It requires a high level of alertness and sharpness which I don't possess. I got to cycle in the countryside [...] and that was fine, but in the city, it doesn't suit me. I don't have what it takes to cycle in the city. I'm easily distracted [...] and in Tel Aviv is so busy… bicycles, e-scooters, motorcycles that entering the cycling path all of a sudden... and with the bicycle, you have no protection. If you fall, it's a sure injury. While with the car at least you have some protection…" (Moriah, 31, non-cyclist, low income)*

> *"I don't trust myself with this kind of things. I'm a bit of a dozy person and I feel that cycling in Tel-Aviv requires a high level of sharpness and concentration. Maybe it's an acquired skill – like I was a very bad driver at first […], but the more hours on the road it got better, so now it's easier. But cycling has something that makes you feel very exposed. […] That if you make a mistake, even a small one, you will not hit the car a little – you will totally crash to the ground." (Orit, 31, non-cyclist, mid-income)*

While Moriah and Orit attribute their sense of low confidence to cycle in an urban environment such as of Tel Aviv-Jaffa to their personal traits, Galit associate it with the (perceived) unattractive cycling environment of Tel-Aviv-Jaffa:

> *"With how the cycling infrastructure is today, if I suddenly began cycling, I'll be concerned the entire time with praying I get back home safely – as simple as that! Looking constantly to all directions so that, god forbid, I won't hit anyone; that I won't crush into a stone; that I won't get hit by a car. Constantly checking where cycling is allowed and where it's not; […] that the helmet fits well... constant fear in all directions." (Galit, 45, non-cyclist, low income)*

Unlike the non-cyclists, most of the cyclists expressed a high sense of confidence in conducting the practice of cycling:

> *"I trust myself a lot in cycling! In driving, I also have a very high sense of confidence. Too much even (laughs)." (Neta, 48, cyclist, mid-low income)*

> *"I really like cycling! When I cycle, I feel like a Superwomen. It is really easy for me because I'm really good at maneuvering." (Ofir, 31, cyclist, mid-high-income)*

> *"I am athletic, sharp and know how to maneuver ... and these are qualities that give me a significant advantage for cycling." (Sivan, 49, cyclist, mid-low income)*

Through a story of a scooter riding experience abroad, Orpaz (35), a mid-low-income non-cyclist, illustrates some of the terms that would make her feel safer to cycle in an urban environment:

> ***"Q: Did you get to visit a place in the world where cycling is highly common?*** *A: No, but I have a slightly different example that I think is still relevant to the question. My husband and I traveled to Vietnam and visited Hanoi... and although at first, the roads there seemed like total chaos, somehow, after 5 years of not riding a scooter, it was there that I decided to ride again (laughs). I did it because I felt that the environment is suitable for it. [...] When I saw everyone doing it, it made me feel that the environment is supportive for it. [...] So, if I saw here in Tel Aviv that there are proper cycling infrastructure and that a lot of people use it, then I would do it too."*

Orpaz's story illustrates how the concept of 'safety in numbers' (Smeed, 1949) affects the sense of confidence of an individual.

Orit and Ronit's experiences provide a unique, but rather interesting, point of view on the aspect of a low sense of confidence and cycling.

> *"I think it also related to the visibility experience of cycling. Women are much more concerned with how they are perceived by others, so they try to avoid anything that can be perceived as less elegant or can create an embarrassment such as "I fell down..." or "I got stuck...". And I think that men take more 'ownership' of what they do, even if they don't really do it very well, while women feel they need to prove themselves within their identity experience. I see it even in teaching. Male teachers come to teaching with an attitude of "I deserve it the most! It's mine! I know what I'm doing!". They own it! And women are always like "I'm not good enough…", "maybe teaching is not my thing…", "maybe I should do something else…". Women need to prove themselves all the time, especially to themselves." (Orit, 31, non-cyclist, mid-income)*

> *"I'm embarrassed to cycle in Tel Aviv, while abroad I don't care because I don't know anyone. I can't explain it, but it really embarrasses me. It feels like everyone is examining me when I cycle." (Ronit, 31, non-cyclist, mid-income)*

For Orit and Ronit, the lack of sense of confidence is not expressed merely by the fear of getting hurt or injured as a result of cycling, but also by the fear of being embarrassed and judged by others in case of a misdoing during cycling (such as falling off the bicycle). Through an analogy to gender differences in the field of teaching, Orit expresses her perception of the

reason for the differences between men and women in the relation to cycling. In her view, while men are self-confident and "own what they do" even when 'objectively' they do not necessarily do it as good as they think, women are more likely to doubt themselves and their abilities.

So that one of the things that differ women-cyclists from women-non-cyclist is the tendency of the former to be more self-confident in conducting practices such as cycling. These differences in the sense of confidence between women-cyclists and women-non-cyclist can stem from the acquired experience of cyclists with cycling, or from general life experiences and circumstances of the interviewees (such as, for example, degree of independence in childhood, gender education, or traffic-related experiences such as crashes, etc.).

Elinor and Yael's stories provide a positive example of gender education and norm and their relation to developing a sense of confidence for conducting a practice such as cycling:

> *"Ever since I arrived in the city, I got around by cycling almost exclusively. [..] I would only cycle on the roads. No matter what road, even on really fast and busy roads. [...] I think that [I wasn't scared to do that; AP] thanks to the education I got in the Kibbutz. [...] I think that gender education in the Kibbutz was relatively more advanced in comparison to other places. The level of independence that you are used to as a girl in the Kibbutz is very high from a very young age." (Elinor, 33, cyclist, mid-high income)*

> *"I'm like my mother - we have no fear and our independence is above all! My mom raised me to be an independent woman! To trust myself! I think that in the end, I am who I am, mainly because of my parent's education for independence. I can say that both of my parents come from Mizrahi-traditional households and not from Ashkenazi families who are generally perceived as more liberal. And sure, the status of women in my grandmother's home was different, but from a very young age my mother… maybe she did not speak feminism, but she practiced feminism!" (Yael, 30, e-cyclist, mid-high income)*

Cycling in Tel-Aviv-Jaffa is also found to be perceived as requiring to be willing for a struggle with other road users over space which some women are not willing to take part in:

> *"Cycling in Tel Aviv requires a mindset of owning the space, to have your fists ready for battle, [...] and gender-wise, men are still more ready to do so. [...] It's a constant struggle over space and for me, it's a very difficult experience." (Abigail, 30, non-cyclist, mid-high income)*

> *"I remember from the times I used to cycle [...], that cycling in Tel Aviv is like a jungle! It is a tough masculine experience!" (Calanit, 37, non-cyclist, mid-high income)*

Women's lower sense of confidence to cycle in a given urban environment and lower willingness for a struggle over public space in comparison to men are not created in a vacuum but may relate to broader aspects of gender education and norms:

> *"The world signals to women that they cannot trust themselves; that they're vulnerable and weak; and that may be part of the reason why women cycle less than men." (Na'ama, 34, cyclist, mid-high-income)*

> *"It's about what you teach little girls about confidence in their body, in moving in public space, and so on. It's about gender education, which is much broader than cycling itself." (Riki, 40, cyclist, mid-high-income)*

> *"Women are scared! […] Not every woman is willing to take that risk. Men are also scared, but they need to hide it for their ego. It's not only that a man cannot say that he is scared, but he also has to prove it to himself and his environment. […] It's like the way girls play with a doll and boys play with cars. They've been accustomed to it since they were babies." (Flora, 50, e-cyclist, low-income)*

> *"Men take more 'ownership' of what they do, even if they don't really do it very well, while women feel they need to prove themselves within their identity experience. I see it even in teaching. Male teachers come to teaching with an attitude of "I deserve it the most! It's mine! I know what I'm doing!". They own it! And women are always like "I'm not good enough…", "maybe teaching is not my thing…", "maybe I should do something else…". Women need to prove themselves all the time, especially to themselves." (Orit, 31, non-cyclist, mid-income)*

The interviewees thus underscore that women are not 'naturally' more risk-averse than men but are taught to be risk-averse so much that it has become an internal part of 'being a woman'. Gender-related shared group identity, which is shaped over many years and generations of gender-biased education and socialization, has an impact on women's behavioral choices in general, and on women's choice of whether to cycle (or not) in a given cycling environment in particular.

5.5. Determinants for women cycling from a social identity perspective: concerns of appearance after cycling and household responsibilities

In this section, I will examine well-known determinants for gender gaps in participation in cycling, such as women's stronger concerns over appearance. In the literature, these factors are typically understood as individual-level preferences. In this section, I will explore the relevance of these 'determinants, through the lens of the social identity approach.

Concerns over appearance after cycling and the presumed need to wear rather casual clothing when cycling has been found to pose a greater barrier for women participation in cycling rather than for men (Garrard et al., 2012; van Bekkum et al., 2011), with the exception of high-

cycling contexts such as of the Netherlands and Denmark. However, some of these studies refer to women in general and see these norms as general social norms, rather than as norms that may vary between various social groups. Accordingly, they do not focus on the similarities and differences in the discourses of the various social groups towards women's "appropriate" appearance and how it shapes women's participation in cycling for transport purposes.

To gain a better understanding of how concerns over appearance affect women's participation in cycling, one should focus on the degree of dominance of limiting discourses in each woman's social group (e.g., how salience is the demand of a woman for a well-groomed appearance among her various social groups?), as well as on the degree of the saliency of competing discourses (e.g., how salience is the discourse that strives for gender equality among her various social groups?) that are also part of one's social group identity.

The interviews reveal that the barrier of concerns over appearance is relevant to participants from all social groups. However, a closer look at the participants' statements shows that there are some differences in the degree of the saliency of this social norm between the various groups and accordingly, to what degree concerns over appearance impose a barrier for participation in cycling on women from the various social groups.

> *"Women are required for an elegant appearance and cycling with heels and a skirt or with a scarf and coat is not very comfortable. It feels as if the public space, especially in Tel Aviv, is becoming more feminist in a way, but unfortunately, it still doesn't fully break away from gender perceptions of what women should look like in public space." (Orit, 31, non-cyclist, mid-income)*

> *"Look, the summer season in Tel Aviv is extremely hot, and unfortunately it is still considered less legitimate for a woman to sweat. Even among those who see themselves as progressive and such, I think it is still not perceived as equally legitimate." (Ofir, 31, cyclist, mid-high income)*

> *"A lot of women are expected to get to work 'tip-top' [slang for groomed; AP] and cycling doesn't really allow it because it involves getting sweaty and such. I personally care less about sweating a little, and I'm lucky that in my type of job there are no such expectations, but I know that if my next job will be too far away from home, even I won't feel comfortable getting so sweaty and it would really upset me not to get to work by cycling!" (Hava, 47, cyclist, low-income)*

> *"As a woman, I can tell you that cycling hurts femininity! Women cannot wear a beautiful dress or a business suit and cycle. It's inappropriate." (Moriah, 31, non-cyclist, low-income)*

A comparison of Orit's, Ofir's, and Hava's quotes with Moriah's quote, shed some light on the ways those perceptions affect the tendency of women from various social groups to see cycling as a suitable (or unsuitable) mode of transport.

In their quotes, Orit and Ofir refer to the social demand towards appearance from women as a negative social construct that is under a process of change, even if not sufficiently so. By saying "it still doesn't fully break away from gender perceptions", Orit and Ofir are implying that even though they are aware of the inequality reflected in such norm, they both still feel required to act by it. However, they also imply that they conceive it as a negative norm which may be changing slightly in the positive direction but has not yet changed sufficiently enough "even among those who see themselves as progressive".

As with Orit and Ofir, Hava also acknowledges this norm to be an external social norm ("A lot of women are expected…") and sees it as a negative one, as she feels "lucky that in (her) type of job there are no such expectations". However, Hava also acknowledges that these less-demanding expectations are still limited to her current position and that she "know(s) that if (her) next job will be too far away from home even (she)", who "personally cares less about sweating a little", "won't be able to get to work too sweaty". On the contrary, Moriah sees it as a norm that does not need to be changed, as she views cycling as a practice that "hurts femininity!" and is "inappropriate" to do while wearing a dress or a business suit.

In the following quote, Moran is providing another angle on how issues concerning the social meaning of certain appearance limit her ability to see cycling as a suitable mode of transport:

> *"Q: When I say "cycling", what are the first associations that come to your mind?*
> *A: Helmet. It sucks! Limited clothing. Fear - I do not have the confidence to cycle. But above all is the appearance. It sucks!* ***Q: What sucks so much with appearance and cycling?*** *A: The helmet!* ***Q: But you used to ride a motorcycle...*** *A: But it's different. A bicycle helmet is such a children's helmet. You look like a nerd when you wear it, while a motorcycle helmet is very stylish. And also, a lot of the time I go on heels and it's uncomfortable to cycle like that. I also don't see myself going around with a bag of changeable clothes." (Moran, 35, non-cyclist, mid-low income)*

Referring to the appearance of cyclists who wear a helmet as "nerds", is an expression of othering them; while "they" are style-less nerds who are willing to wear children's helmets, "we" ride a motorcycle and wear a stylish motorcycle helmet. By this Moran expresses the symbolic meaning of the appearance of cycling in her environment.

Nevertheless, social group membership is not a constant state, but rather a dynamic and continuous process. Changes in belonging to a social group may lead to changes in behavior (Reynolds et al., 2015):

> *"These days I am much less willing to arrive sweaty to places than before. I think it's because of the change of status I recently made in my life. Look, I grew up in a Kibbutz and in some ways, the gender education in the Kibbutz is less dichotomic. [...] And I kept it up also in the city for a while – as long as I was a Shlucha [Hebrew slang for a person with messy appearance; AP] student (laughs) – but now I am a career woman and I have to maintain some level of representativeness, so I cycle only for relatively shorter distances, especially when it's hot." (Elinor, 33, cyclist, mid-high income)*

As with the barrier of appearance, the interviews reveal that to some extent the perceived role of women in the household is relevant to participants from all social groups. However, a closer look at the participants' statements reveals some differences in the degree of the saliency of this social norm.

> *"Mobility and flexibility are more important to mothers. We need to be able to respond quickly to the needs of the children, to stop on the way at the supermarket and so on." (Meital, 39, non-cyclist, mid-low income)*

> *"My female friends are the ones who have to take the kids from school and kindergarten. Almost all of them go straight from work to school to pick them up." (Meirav, 45, non-cyclist, mid-low-income)*

> *"Unfortunately, women are still more centered around the children, and bicycles are not very comfortable for that, while men usually remain free, independent and only dependent on themselves" (Orit, 31, non-cyclist, mid-income)*

> *"[Women cycle less than men because], unfortunately, women are still required to take a greater responsibility for the children in comparison to men, in the period directly after giving birth." (Tzlil, 29, cyclist, mid-high-income)*

Some interviewees associated the barrier of women's (perceived) role of childcare and household responsibilities with the (perceived) traffic risks:

> *"Women care more about consequences than men. We take into account that we have children and that we have to get back home to take care of them. That we cannot risk ourselves! Men are more like "it will be all right". They are free. They have no worries." (Miriam, 40, non-cyclist, low-income)*

> *"As a mother, under the current conditions, I will not return to cycling. I just won't! I used to care less, but today I need to be safe at the highest level to cycle. I cannot afford the risk." (Calanit, 37, non-cyclist, mid-high income)*

These findings imply that rather conservative gender norms which impose expectations of women to take a greater role in household and childcare responsibilities are reducing the tendency of women from all income group to see cycling as a suitable mode of transport. However, it can be inferred that such expectations have a greater effect on social groups that hold more conservative gender norms.

6. Conclusion, discussion, and policy recommendations

6.1. Conclusion: social identity, group influence, and cycling among women

This thesis uses the theoretical framework of the social identity approach, a framework that has rarely been used in the field of cycling research so far, to examine the role of social identity in the shaping of women's perception towards cycling as a suitable (or unsuitable) mode of transport. The results show how in low-cycling contexts, such as Tel-Aviv-Jaffa, social identity has a great role in guiding group members whether cycling is considered a socially legitimate mode of transport or not. Along the thesis, I illustrated how cycling is being attributed by distinct social groups which result in the exclusion of other social groups from cycling and how lifestyle-identity and place-identity discourses are being used for the making of such attribution.

Kaplan et al. (2018) concluded that cycling (like other transport mode choices) is also a matter of culture so that to promote cycling, policymakers should not only take into consideration functional needs and preferences but also culture-related emotional needs such as a sense of belonging. In this thesis, I found that in Tel-Aviv-Jaffa the practice of regular cycling is highly associated with a distinct, for some even threatening, social category of 'being a Tel-Avivian', as well as with a healthy and active lifestyle, rather than as a practice that 'everybody does'. Thus, while privileged social groups, who are often able to identify with, or at least do not feel threatened by such social category and lifestyle, can potentially enjoy the benefits that cycling has to offer, underprivileged social groups often perceive cycling as a practice that is 'not meant for us'. These findings reinforce findings from previous studies which found that while in high-cycling contexts cycling is almost culturally 'invisible' and (almost) all social groups are evenly represented, in low-cycling contexts, such as Tel-Aviv-Jaffa, privileged social groups often elevate cycling by creating a positive distinction through lifestyle-based discourses and by normalizing cycling around local place-identity (Aldred & Jungnickel, 2014; Anantharaman, 2017; Law & Karnilowicz, 2015; Pelzer, 2010; Steinbach et al., 2011).

One could have thought that the e-bike – which is not identified with privileged groups and is considered by some as more appealing for lower-income groups – could provide an identifiable alternative for women who do not relate to the image of the regular bicycle rider. However, one of the most noticeable findings in this research regarding the image of e-bike users is that it is not identified with women at all, but mostly with tough and aggressive men. In fact, a sizeable majority of the interviewees perceive the e-bike as a mode that is identified with social groups that they prefer to distance themselves from. As a result, women and

probably other social groups (such as adults, parents, people with physical disabilities, etc.), who could potentially benefit from the advantages e-bikes have to offer, might avoid using them.

In contrast to the distinct image of the regular bicycle cyclist and e-bike user, the image e-scooter user was found to be perceived as relatively broader. This relatively broader image was explained by two interviewees as resulting from its main use as a service (rather than ownership) which is strengthening its functional image and so has less impact on the social image of its user. This finding implies that sharing may be less related to identity (even if sharing itself is perhaps lifestyle-related) and so sharing may be more inclusive in this sense.

Furthermore, as shared group behavior is often related to the group's beliefs and attitudes (Reynolds et al., 2015), shared group perception towards cycling may also relate to shared group political attitudes towards the 'right' direction of the transport development within a certain urban context. In recent years, the position supporting a change in the transportation priorities in Tel-Aviv-Jaffa has gained momentum, and the Tel-Aviv Municipality has recently declared to "flip the mobility pyramid" to give priority to pedestrians, public transport users, and cyclists over cars (Tel-Aviv-Jaffa Municipality, 2020a). While such a 'flip' currently supports the social representation of groups for whom cycling provides a positive distinction of a 'green' and active lifestyle, among other social groups, cycling is often perceived as a threat to their way of life or even as a symbol of their being pushed out of their neighborhood. Thus, without supporting the perception of cycling as a socially 'invisible' mode of transportation, such a change in the transportation priorities, though they might be meant to benefit the entire population, is very likely to raise significant opposition and to mainly benefit privileged social groups (at least in the short- to mid- term).

Previous studies found that a lack of high-quality bicycle infrastructure poses a barrier to cycling for everyone, but a greater barrier for women (e.g. Aldred et al., 2017; Garrard et al., 2012; Grudgings et al., 2018). In this thesis, I examined the effect of unattractive conditions for cycling on women's underrepresentation among cyclists also from the social identity perspective. Even when some women already perceive cycling as a socially legitimate mode of transport, they still need to have the means to conduct such a practice. These means include knowing how to cycle, having the required (relatively low) financial means, and also having a sufficient sense of confidence to cycle; i.e. to see themselves as capable of safely getting around by cycling. I have found that many women do not feel safe enough to cycle in the current (perceived) unattractive cycling environment of Tel-Aviv-Jaffa, which is viewed as

"masculine", "tough" and "dangerous" and as requiring a "constant struggle" over space with other road users. Such associations of cycling seem to lead cycling to obtain a masculine image and therefore make many women perceive cycling as 'not meant for them to use'.

Some women attributed their non-cycling to a personal trait such as their lack of "sharpness". Others attributed it to the (perceived) unattractive cycling environment of Tel-Aviv-Jaffa or a combination of the two. One way or another, one of the things that distinguish women-cyclists from women-non-cyclists is the sense of confidence to cycle in the current cycling environment of Tel-Aviv-Jaffa. However, these gaps in the sense of confidence, which are known to exist also between men and women, are not a result of an 'objective' reality; the interviewed women underscored that they are not 'naturally' more risk-averse than men but are taught to be risk-averse (or men are taught to be non-risk averse) so much that it has become an internal part of 'being a woman'. Gender-related shared group identity, which is shaped over many years and generations of gender-biased education and socialization, has an impact on women's behavioral choices in general, and on women's choice of whether to cycle (or not) in a given cycling environment in particular.

Moreover, I found that possessing rather conservative shared group norms concerning women's 'appropriate' appearance and women's perceived role in the household may shape women's views on cycling. The effect of such gender group norms on the tendency of a particular woman to perceive cycling as a suitable or unsuitable mode of transport is more significant the stronger this norm is ingrained within her social group and the stronger her identification with the social group is. These findings underscore that the uptake of cycling among women is shaped by culture, much like other kinds of behavior that (could) occur in public space (Fenster, 1999). The findings further underscore that both broader cultural norms (such as the presumed 'vulnerability' of women), as more specific group identities, shape women's decision whether to cycle or not. It should be noted that household and childcare responsibilities, in their own right, do not necessarily limit participation in cycling. For instance, women in the Netherlands cycle more, even though they also have more childcare and household responsibilities in comparison to men. This implies that under suitable conditions, in terms of high-quality cycling infrastructure and the degree of development of the cycling culture within a given society, a greater role in childcare and household responsibilities do not necessarily cause underrepresentation among cyclists.

Overall, I found social identity to play a crucial role in shaping the perception of cycling as a suitable (or unsuitable) mode of transportation for women in the low-cycling context of Tel-

Aviv-Jaffa. However, the degree of influence of social identity on behavior depends on the degree of identification the group members feel with their social group. The stronger the identification with the group, the stronger the shared group identity will influence the individual's behavior (Turner et al., 1987). This principle was reflected in Flora's case; the lack of social pressure from close ties that Flora is experiencing may make her 'freer' than others to consider all possible modes of transport primarily based on the match between her needs and the characteristics of the transport mode. Thus, as some people are less sensitive to group norms, in their case shared group identity has a little (if any) influence on their behavior.

Particularly in the fields of cycling behavior, previous studies concluded that when exploring cycling within a specific context, one should focus on both material and cultural aspects, where the causal power of each component is dependent on the place and context (Aldred & Jungnickel, 2014; Pelzer, 2010). In line with these studies, I conclude that in low-cycling contexts, such as Tel-Aviv-Jaffa, social identity serves as a pre-condition that guides group members whether cycling is a socially legitimate mode of transport or not. It is therefore suggested, that to gain a better understanding of the underrepresentation of various social groups among cyclists, future research and policymaking, especially in low-cycling contexts, should also examine social identity aspects and first understand how those who belong to underrepresented social groups relate to cycling and cyclists and if they even perceive cycling at all as an acceptable mode of transport.

6.2. Discussion

Martens (2016) has defined a fair transportation system as "a system that provides a sufficient level of accessibility to all under most circumstances". Many studies (e.g., Aldred & Jungnickel, 2014; Aldred et al., 2016; Bernhoft & Carstensen, 2008; Deakin et al., 2018; Green et al., 2010; Grudgings et al., 2018; Heinen & Handy, 2012; Pucher & Buehler, 2009; Smart, 2010; Rissel et al., 2013; Zander et al., 2013), including this study, have shown significant gaps in representation among cyclists between young-educated-higher-income-men and other social groups (such as women, older adults, migrants, lower-income), particularly in low-cycling places. Currently, the cycling transportation system in most low-cycling places does not contribute to providing a sufficient level of accessibility to all and so can be considered unfair.

To design a fair cycling transportation system, there is no doubt that aspects related to infrastructure and individual preferences should be explored with special emphasis on the perspective of the most sensitive road users, such as women and older adults. However, a broader interpretation of Martens' definition of 'a fair transportation system', would also

require a system that is <u>socially</u> accessible to all. In other words, to be considered 'fair', a transportation system should not be identified with a distinct social group(s), but rather be 'socially neutral' and be perceived as 'meant for everyone to use'.

This thesis investigated the rarely studied effect of social identity on inequalities in cycling transportation. It is the first of its kind to examine qualitatively the under-representation of lower-income women among cyclists from a social identity perspective. Throughout the study, I emphasized the importance of exploring the under-representation among cyclists from a social identity perspective. I have shown that social identity often guides group members whether a behavior is considered legitimate or not and serves as a kind pre-condition to the perception of cycling as suitable (or not), particularly in low-cycling contexts such as of Tel Aviv-Jaffa.

Through the integration of previous research on cycling from a social point of view and relying on a conceptual approach that was rarely used in the context of cycling behavior studies before, my findings highlight the effect of social identity on cycling use as a function of gender and income inequalities.

Limitations and suggestions for future research. This research has several limitations. First, it is based on interviews with a limited number of only women, lacking a comparative analysis with men. With more funding and time, this thesis could have included not only interviews with women, but also with men to incorporate their narratives. Comparing men's cycling experiences would contribute to understanding how inequalities can be perpetuated by the over-represented group. Moreover, as this sample included only 25 participants, the findings cannot be directly generalized to a larger population unlike that of certain quantitative studies. Also, my findings can inform an understanding of settings outside Tel Aviv-Jaffa, but they do not necessarily represent the situation in other contexts. In addition, the disadvantage of having a diverse yet small set of interviewees inevitably limits the demographic representation. For example, the issues found based on the 12 lower-income women in this sample may not represent other lower-income women in Tel Aviv-Jaffa. In light of these limitations, this study could increase its transferability with the help of additional quantitative, or mixed-methods, analysis. Finally, this study suffers from the low representation of relatively younger women among the less-educated-lower-income participants. Despite all efforts to make the two income groups as comparable as possible, the recruitment of relatively younger women among the less-educated-lower-income participants was hard to achieve. Moreover, the recruitment of the participants was not random and therefore there

may be other factors that played a role in their agreement to take part in the study. In addition, the interviews were conducted in Hebrew and translated to English for the purpose of this study, so it is possible that some nuances of expression may have not come through in their full cultural meaning. Finally, both the interviews and the qualitative analysis were conducted by the same person, i.e., the researcher. In future research to reduce possible bias, it would be preferable to include a group of interviewers and to have a team conduct the qualitative analysis.

6.3. Policy recommendations

I found that in low-cycling contexts, such as Tel-Aviv-Jaffa, social identity serves as a pre-condition that guides group members if cycling is a socially legitimate mode for transport purposes or not. Therefore, to gain a better understanding of the underrepresentation of various social groups among cyclists, future policymakers, especially in low-cycling contexts, should also examine social identity aspects and first understand how those who belong to underrepresented social groups relate to cycling and cyclists and if they can perceive cycling as an acceptable mode of transport, to begin with.

Additionally, many of the participants perceive cycling in Tel-Aviv-Jaffa as a "masculine" practice that involves a "constant struggle over space" and requires high levels of "sharpness". Therefore, to increase the representation of women among cyclists, policymakers must take a greater account of women's needs and act to reduce the friction of cyclists with other road users and between themselves, so that cycling will no longer be perceived as involving a "constant struggle over space". That requires investments in a more secure cycling environment, but also in the discourse that surrounds cycling and cyclists' presumed behavior.

Indeed, it should be noted that to increase the representation of lower-income women in particular, and most likely of persons with lower incomes in general, building a proper infrastructure alone is probably insufficient, at least in the short- to mid-term, as cycling is currently often perceived as identified with privileged social groups only and as "not meant" for certain social identities. Therefore, to increase the representation of underprivileged social groups, as a complementary step to infrastructure development, policymakers must act to disassociate the social linkage between cycling (of any kind) and distinct social group(s).

From a policymaking point of view, this is a rather difficult trajectory. As cycling would become culturally 'invisible' if it is common, but for it to become common it requires taking highly visible decisions such as expanding the cycling infrastructure particularly where demand for

cycling already exists. That is why I believe policymakers must invest actively in practices to normalize cycling as a 'socially neutral' practice that 'everybody does' – for instance by using role models and influencers to break stereotypes and by emphasizing stories of cyclists from underrepresented groups. Such efforts may assist underprivileged social groups to accept cycling as a feasible transport mode and thus to enjoy the benefits cycling has to offer. However, such decisions may be perceived as supporting a particular lifestyle to which few can relate. Furthermore, policy measures meant to make cycling a 'neutral' practice, should not be implemented regardless of the status of cycling infrastructure development in lower-income neighborhoods but rather as a complementary step.

Finally, I would like to put an emphasis on e-bikes, that can potentially serve the needs of women (and men) who are reluctant to cycle due to barriers associated with regular cycling (such as concerns of appearance after cycling; more complex trips due to greater role in the household; etc.). To change this, policymakers must act both in relation to social identity, personal preferences, and infrastructure development:

> *Social identity*. Use marketing tools to encourage the use of e-bikes by people with unique needs (such as parents of young children, adults, people with disabilities, people who live farther than regular-bicycle-distance from job opportunities, etc.) or preferences (such as people who are reluctant to sweat) while emphasizing its functional benefits for such people. Such marketing activity could weaken the social linkage of e-bikes with "tough and violent men" and help facilitate and increase its usage by women and others who can benefit greatly from the high levels of mobility and (relatively) low costs afforded by e-bikes.

> *Infrastructure development.* Develop wide and separated cycling paths and encourage the use of cargo bicycles (regular or electric) that can be used to transport children, shopping, and more, thus allowing people to conduct more complex trips which are found to have a greater effect on women's participation in cycling.

In the early stages of formulating the study, I debated over the appropriate research approach – quantitative vs. qualitative – for examining social groups' under-representation among cyclists. In retrospect, I believe that studying under-representation among cyclists through the qualitative approach allowed a rich and complex observation which can serve as a fertile

ground for future research and policymaking to increase participation of under-represented social groups among cyclists, such as this inspiring quote of Sivan:

> *"I keep asking myself if I raised my daughters to do something [i.e. to cycle; AP] that puts them in danger; but when you are a parent you have to accept that you cannot protect your child for the full 100%. What I can give them are tools. To teach them to be responsible, to trust themselves, and to be independent and strong women who stand for themselves." (Sivan, 48, cyclist, mid-low income)*

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8. Appendices

Appendix A – Interview guide

#	Non-cyclists	Cyclists

1.	- Tell me a little about yourself.
	  - How long have you been a city resident?
	  - What is your area of practice?
	- Where did you grow up?
	  - How did you get to go around as a teenager?
	  - Did you have a bicycle as a child?
	  - How often did you cycle and for what purposes?	

2.	- How do you usually move from place to place within the city? Please describe your mobility experience within Tel Aviv. - Could you please give an example of positive and negative experiences around mobility in the city? (an example of a situation where getting around the city is easy and pleasant and a situation where it is difficult and unpleasant)	- Please describe your experience of cycling in the city. - Could you please give an example of positive and negative experiences around cycling? - Tell me when and why did bicycles become the main mode of transportation for you to get around the city? - Try to remember the time when the bicycle-only became your main mode of transportation... How did people **close to you**[9] react to this? Please describe both negative and positive reactions.
3.	- When I say "bicycles" what are the first things that come up to your mind? - What have you heard that people say about cycling/cyclists?	
4.	- Are there people **close to you** who cycle regular bicycles regularly? - (If any) What do you think about that choice of them? - Let's say tomorrow a good friend of yours decides to commute to work by bicycle - what would you think to yourself about that choice of hers? - Let's say that tomorrow you, yourself, suddenly decide to begin getting around the city by regular bicycle, what do you think **people close to you** will think of this choice of yours?	- What do you think people **close to you** think about you getting around the city almost exclusively by a <u>regular/electric</u> bicycle? - And if you were cycling an <u>electric/regular</u> (the opposite of actual practice) - what do you think people close to you would think about it? - Do you know anyone who cycles regular/electric bicycles (the opposite of actual practice)?

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[9] **"Relatives"** - significant people with whom you are in almost daily contact, such as a spouse, close friends, close friends from work.

#	Non-cyclists	Cyclists
	- And if it were e-bikes instead - what do you think people close to you would think?	

5.	- Try to think of a routine day in your life and of the trips you make (work, shopping, etc.). Now try to imagine yourself doing each of these trips by bicycle.
	  - Please describe the feelings that come up when you imagine this.
		- Try to think of a routine day in your life and of the trips you make (work, shopping, etc.).
		  - Can you give an example of where the bicycles were an advantage and of where they were a disadvantage/ burden?
		- Tell me about two cases in which you considered whether to reach a certain destination by bicycle and in the end, you chose another mode of transportation.
		  - What were the considerations in the decision?
		  - What had to change for you to choose a bicycle?

6.	- What do you think about people who choose to cycle to work even though they have a private car and available parking at home and work?	- What do you think about people who are willing to get around the city only by private car? -
7.	- Recently, there have been voices in the city calling for a reduction in the comfort of using a private car within the city... What do you think about that? - Recently, there have also been voices calling for reducing the use of private cars for environmental reasons ... What do you think about that?	

8.	- Imagine you're a screenwriter who needs to write a movie script that its main character is a woman who lives in Tel Aviv and cycles **regular bicycles** regularly to get around in the city.
	- What does this image look like? Please describe this image
	  - Same question about **e-bikes**?
	  - Same question about **e-scooter**?
	  - Same question about **private cars**?	

9.	- How do you feel about people who get around the city mainly by bicycle?
	  - In your perception, what makes them make this choice?
	  - What do you think is positive and what is negative in their choice to cycle to get around the city?
		- How do you feel about people who get around the city mainly by private car?
		  - In your perception, what makes them make this choice?
		  - What do you think is positive and what is negative in their choice to get around by car in the city?

#	Non-cyclists		Cyclists	

10.	- In many cities around the world, as well as in Tel Aviv, there are fewer women cycling than men.
	
	  - What do you think about that?
	
	  - Why do you think this phenomenon occurs?
			- In many cities around the world, as well as in Tel Aviv, there are fewer women cycling than men.
			
			  - What do you think about that?
			
			  - What makes you different in your perception?	

11.	- **Low-income:** in many cities around the world, and also in Tel Aviv, lower-income cycles less than higher income.
	
	  - What do you think about it?
		- **High-income:** in many cities around the world, and also in Tel Aviv, higher-income cycles more than lower income.
		
		  - What do you think about it?
			- **Low-income:** in many cities around the world, and also in Tel Aviv, lower-income cycles less than higher income.
			
			  - What makes you different in your perception?
				- **High-income:** in many cities around the world, and also in Tel Aviv, higher-income cycles more than lower income.
				
				  - What do you think about it?

12.	- Try to rate the main modes of transportation (car, public transport, walking, and cycling) by a sense of confidence? Why did you choose this ranking?			

13.	- Please try to place yourself on the following scale:
	
	  - **Israeli <-> Tel Avivian** (an assisting question for those who need it: Try to think about the values that each of the two places/identities represents for you and to which of them you relatively connect more and why)
	
	    - Why did you choose to place yourself that way?
	
	    - What does "Tel Avivian" mean to you?
	
	    - Do you think others would see you as "a Tel Avivian"?
	
	    - Do you see yourself that way?			

14.	- In what neighborhood of Tel Aviv do you live? - Do you have a car? **Yes / No** - How many cars are available to you and your family? - Do you have children under 8 years old? **Yes / No** - What is the highest certificate or degree you have received? **Master's degree or higher / Bachelor's degree / Matriculation certificate / Graduation certificate 12 years of study** - The average (gross) income per household in Tel Aviv-Jaffa is about 18K NIS. Is your household income: **well above (above 26K NIS) / slightly above (about 18K-26K NIS) / average (about 18K NIS) / below average (about 9K-18K NIS) / Well below average (up to 9K NIS)**			

זהות חברתית ורכיבה של נשים על אופניים: המקרה של תל אביב-יפו

אבי פרשה

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חיבור על מחקר
לשם מילוי חלקי של הדרישות לקבלת התואר מגיסטר למדעים בתכנון
ערים ואזורים

אבי פרשה

הוגש לסנט הטכניון - מכון טכנולוגי לישראל
שבט תשפ"א, חיפה, פברואר 2021

המחקר נעשה בהנחיית פרופ"ח קרל מרטנס בפקולטה לארכיטקטורה ותכנון ערים

תקציר

מחקרים רבים נערכו להבנה של פערי ייצוג בין קבוצות חברתיות בקרב המתניידים באופניים בכלל ולהבנה של פערי מגדר בקרב המתניידים באופניים בפרט. רובם המוחלט של מחקרים אלו התמקדו בהעדפות פרט ובהיבטים הקשורים בתשתית, בעוד שרק מעט יחסית מהם התמקדו בהקשרים חברתיים-זהותיים של ייצוג בקרב הרוכבים ובפרט בהשפעה של זהות חברתית על תת-ייצוג בקרב הרוכבים למטרות תחבורה. דרך נקודת המבט של גישת הזהות החברתית (Tajfel, 1974; Turner at el., 1987; Turner, 1991), מחקר זה בוחן כיצד זהות חברתית משפיעה על תפיסותיהן של נשים מרמות הכנסה שונות כלפי אופניים כאמצעי התניידות. למטרה זו נערכו ראיונות עומק חצי-מובנים עם 25 נשים מרמות הכנסה והשכלה שונות – כמחציתן רוכבות על אופניים למטרות תחבורה וכמחציתן לא – זאת על מנת לייצר הבנה מעמיקה יותר של המשמעויות החברתיות שהן מייחסות להתניידות באופניים והמידה בה משמעות זו משפיעה על נכונותן (או חוסר נכונותן) לעשות שימוש באופניים למטרות התניידות יומיומיות.

בהתבסס על מקרה המבחן של תל-אביב-יפו, מצאתי כי התניידות באופניים רגילים נתפסת כמזוהה עם 'תל-אביביות' (ו'תל אביביים') ועם א.נשים בעלות אורח-חיים (Lifestyle) פעיל ובריא ולא כ'משהו שכולן.ם עושות'. בעוד שקישור שכזה בין התניידות באופניים לבין קטגוריות חברתיות ואורח-חיים מובחנים אינו צפוי להוות חסם עבור המשתייכות לקבוצות חברתיות פריבילגיות יותר – שכן רבות מהן יכולות להזדהות עם קטגוריות חברתיות ואורחות חיים אלו או לפחות לא לחוש מאוימות על ידן – המשתייכות לקבוצות חברתיות מוחלשות, שלרוב אינן מזדהות עם קטגוריות חברתיות ואורחות חיים אלו, נוטות לתפוס התניידות באופניים כפרקטיקה ש'אינה מיועדת לנו'.

אפשר היה לחשוב שאופניים חשמליים – שאינם מזוהים עם קבוצות פריבילגיות ונחשבים כאטרקטיביים יותר בעיני בעלי הכנסה נמוכה – יכולים היו לספק אלטרנטיבה ניתנת לזיהוי עבור נשים שאינן מזדהות עם דמות הרוכבת על אופניים רגילים. יחד עם זאת, אחד הממצאים הבולטים ביותר במחקר זה בנוגע לדמות של הרוכבת על אופניים חשמליים הוא שכלל לא מדובר ברוכבת, אלא ברוכב – בגבר. ולא סתם עם גבר, אלא עם גבר קשוח ותוקפני. למעשה, עבור רובן המוחלט של המרואיינות, התניידות באופניים חשמליים מזוהה עם קבוצה חברתית בעלת דימוי גברי ושלילי שהן מעדיפות להבדיל את עצמן ממנה. כתוצאה מכך, נשים ובכל הנראה גם קבוצות חברתיות אחרות (כגון מבוגרים, הורים, אנשים עם מוגבלות פיזית וכו'), שיכולות היו להפיק תועלת מהיתרונות שיש לאופניים חשמליים להציע, נמנעות משימוש בהם.

בנוסף, במחקר זה בחנתי מנקודת מבט של גישת הזהות החברתית גם את ההשפעה של תנאי סביבה לא אטרקטיביים להתניידות באופניים על תת-ייצוג של נשים בקרב הרוכבים. גם כאשר חלק מהנשים כבר תופסות רכיבה כאמצעי תחבורה לגיטימי מבחינה חברתית-זהותית, הן עדיין צריכות את האמצעים להוציא פרקטיקה זו אל הפועל. אמצעים אלה כוללים ידיעה כיצד לרכוב על אופניים, יכולת כלכלית לרכוש ולהחזיק אופניים וכן תחושת ביטחון מספקת לרכב בסביבה עירונית נתונה; כלומר, לראות את עצמן כמסוגלות להתנייד בעיר בבטחה באמצעות רכיבה על אופניים. מהמחקר עולה כי נשים שנשים רבות אינן חשות בטוחות מספיק לרכוב בסביבת הרכיבה הנוכחית של תל-אביב-יפו, הנתפסת כ"גברית", "קשוחה" ו"מסוכנת" וכמחייבת נכונות לקחת חלק ב"מאבק" על המרחב עם משתמשי דרך אחרים. נראה שאסוציאציות אלו כלפי התניידות באופניים מייצרות להתניידות באופניים דימוי גברי ולכן גורמות לחלק מהנשים לתפוס רכיבה כ"לא מיועדת להן".

מממצאי המחקר עולה כי זהות חברתית עשויה למלא תפקיד משמעותי בעיצוב התפיסה כלפי התניידות באופניים כאמצעי תחבורה לגיטימי או לא-לגיטימי חברתית-זהותית. לכן, על מנת לייצר הבנה מעמיקה יותר של תת-הייצוג של קבוצות חברתיות שונות בקרב המתניידים באופניים, מחקרים וצעדי מדיניות עתידיים, במיוחד במקומות עם שיעורי רכיבה נמוכים ותרבות אופניים פחות מפותחת, צריכים לקחת בחשבון היבטי זהות חברתית ולבחון אם אנשים המשתייכים לקבוצות חברתיות בתת-ייצוג בכלל שוקלים להתנייד באמצעות אופניים. יתר על כן, ממצאי מחקר זה מרמזים כי בניית תשתית ראויה לבדה בכל הנראה אינה מספקת, לפחות בטווח הבינוני-קצר. לכן, על מנת להפוך התניידות באופניים למכלילה יותר, כצעד משלים לפיתוח תשתיות, על קובעי מדיניות לפעול לחיזוק התפיסה כלפי אופניים כפרקטיקה 'ניטרלית-חברתית ש'כולן.ם עושות.ים'.