RIDES OF FREEDOM

Joy, risk, and convenience for cycling youth

Understanding the role of the bicycle on the daily mobilities
of urban youth in cities with an immature cycling culture

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Rides of freedom; joy, risk, and convenience for cycling youth

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With a case study of Cali, Colombia

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Abstract/ Resumen

The growing share of young people living is cities ask for a better understanding of urban youth. Urban youth have a high demand for mobility, which is a resource of particular importance for them to prosper. The bicycle is an affordable and accessible mode of transport that since recently is gaining popularity in many cities worldwide. A knowledge gap exists in these cities on what role the bicycle plays in the lives and mobilities of youth. Therefore the research aims to understand what influence the bicycle has on the urban daily mobilities of youth in immature cycling cultures and how these mobilities are explained. The research is based on three different data sources, two systematic review analysis', an examination of a quantitative data set of Mexico City, and empirical data from Cali (Colombia) drawn from fieldwork and interviews. These data sources give insight in the characteristics, freedoms and constraints of cycling, and what role the bicycle has in forming identities. The bicycle is often used for daily commutes, especially because it is fast and convenient in the city. It provides the rider with joy, flexibility, independent travel, control and freedom. The bicycle is an important identity marker for youth that often influences their lifestyle. However, riders risks accidents, harm or violence while cycling, which profoundly influencing their mobilities. At last, social norms have great influence on attitudes of youth towards cycling. The research argues that the bicycle matches in many ways the demand and desires of youth and their mobilities. However, since the vulnerability and exposure of cycling plays out differently for different personal factors the potential advantages are not felt by all youth. Further research is needed to better understand the relation between personal safety and cycling as mode of transport for youth.

El reciente aumento de jóvenes viviendo en las ciudades, nos piden entender mejor a esta población que está en crecimiento. Esta juventud urbana tiene una alta demanda de movilidad, como un recurso de particular importancia para prosperar, y es aquí donde la bicicleta se convierte en un modo de transporte asequible y accesible, ganando popularidad en muchas ciudades del mundo. Existe una brecha de conocimiento en estas ciudades sobre el papel de la bicicleta en la vida y en la movilidad de los jóvenes. Por lo tanto, el objetivo de esta investigación es entender: ¿Qué influencia tiene la bicicleta en la movilidad diaria de la juventud en la ciudad y en los cultivos de ciclismo incipientes, y cómo se explican estas movilidades? Esta investigación está fundamentada en tres diferentes fuentes de datos; dos análisis de revisión

sistemática; una examinación de una base de datos cualitativos sobre Ciudad de México, y datos empíricos de la ciudad de Cali (Colombia) basados en trabajos de campo y entrevistas. Esas tres fuentes de datos arrojan una idea en las características, libertades y restricciones también del ciclismo, como también nos deja ver el papel de este medio de transporte en la formación de identidades. Esta forma de movilidad se usa a menudo para los desplazamientos diarios, especialmente porque es rápido y conveniente en la ciudad. Le proporciona al conductor alegría, flexibilidad, desplazamiento independiente, control y libertad. Es así como la bicicleta se convierte en un importante marcador de identidad para los jóvenes, ya que puede influir en su estilo de vida. Sin embargo, corren el peligro de sufrir accidentes, daños y violencia mientras andan en sus bicicletas. Esto tiene una profunda influencia en su movilidad. Esta investigación argumenta que la bicicleta coincide de muchas maneras con la demanda y los deseos de la juventud en relación con su movilidad. No obstante, dada la vulnerabilidad y la exposición del ciclismo, puede afectar también a los jóvenes por otros factores personales. Por esta razón, las ventajas potenciales no son vistas de la misma manera por todos los jóvenes. Se necesitan más investigaciones para comprender mejor la relación entre la seguridad personal y el ciclismo como modo de transporte para esta población.

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What a privilege that I can do this without feeling unsafe.

<div align="right">Tessa Laan, Utrecht, August 2020</div>

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List of abbreviations

SRA: Systematic Review Analysis

MIO: Massivo Intergrado de Occidente

TIO: La estrategia de Territories de Inclusion y Oportunidades (Inclusion and opportunities
strategy)

MRT: Mass Rapid Transit

RBT: Rapid Bus Transit

1. Introduction

Never have so many people been restricted in their movements as during several months in 2020 due to the COVID-19 virus. Tourist hotspots left empty, airports deserted, wildlife returned to urban areas and living rooms turned into offices and classrooms. All of a sudden, it became crystal clear how much people normally move around and how important this is for our daily lives (Cresswell, 2010, Sheller & Ully, 2005). While top-down restrictions on movements are of different magnitudes, in 'non-pandemic' circumstances, the ability to move around freely and safely is not a given for everybody. Financial means, laws, and social norms all shape who can and who cannot move around as they please, making that all movements are controlled and political (Sheller, 2018). This power operates on different scales and intensities, from global migration to daily movements in the city.

Over the past decades the world has rapidly urbanized, by 2050 around 68% of the world population will live in a city (UN, 2018), growing from roughly 4 billion in 2020 to about 7 billion in 2050. Multiple cities cannot keep up with this rapid growth, causing infrastructure and urban services to lack behind. Moreover with an increase of automobility, these cities suffer heavy congestion problems and air pollution (Louf & Barthelemy, 2014). Cities are not only getting more populated, the average age of the inhabitants is dropping. In other words; by 2030 almost half of the urban population will be under 35 (UNHabitat, 2012).

Evans (2008), among others (UN-Habitat 2018, Langevang, 2008, Hansen 2008), ask for more attention for the geographies of urban youth. "*Young people (and children) continue to be central to much public policy at local, national and international levels and geographers have a key role to play in critically considering and theorising young people's lives*" (Evans, 2008. p.16). In 2012 the UN published the report Cities of youth, Cities of prosperity. It states that "*Youth are key to the prosperity of cities in the developing world, yet many barriers prevent them from fulfilling this role*" and that "*Youth from 15-24 are societies' most essential and dynamic resource.*" (UNHabitat, 2012, p. 1). Despite the large share of young people, they have very little influence in decision making over their direct environments like the city they live in (UNHabitat, 2012; Moser & Mcllwaine, 2000; Hansen, 2008; Osborne et al., 2017). This asks for a reconsideration in what way we approach the city through both a political and academic perspective, towards a way in which we give young people a more prominent role.

For youth the city and the opportunities it provides are of particular importance. The timeframe of one's youth is when young people are looking for ways to become a respectable adult and shape their own identities. People youth meet, opportunities they get, or constrains that limits their options are of importance in this phase in life and for their futures as adults. One of the factors that determines the opportunities youth have to prosper is access to mobility. Youth often has a high demand for (independent) mobility but face multiple difficulties and barriers accessing the resource, let alone safe and pleasant transport. Besides that youth sometimes is denied access (e.g. minimal age of getting drivers licenses), youth is often more restricted, are less powerful and more vulnerable when they are on the move, than older age groups (UNHabitat, 2011). A couple of years ago the world was shocked to read the news about the 23-year-old Indian women raped and beaten to death in a public bus (BBC, 2020). Another example is that young Afro-American men participating in (active) transport are often subject to ethnic profiling by authorities or racism by their countrymen, which more than once results in police brutality or assaults, in the worst cases with fatal outcomes (Sorin, 2020; Roberts et al., 2019; Day, 2006; Finney & Potter, 2018). Youth who lack the financial means to move through the city and therefore remain stuck in marginalized, by criminal activity dominated, neighbourhoods, face the risk of harm and recruitment by criminal groups on a daily basis (Lucas, 2011; Winton, 2005). Providing equal, accessible, and safe forms of mobility for youth is crucial, so that both youth, and the city can prosper.

This is in line with Sustainable development goal 11; sustainable cities and communities. The second subgoal (11.2) explicitly states that cities should provide safe, affordable, accessible, and sustainable transport systems for all. According to the UN, only half of the urban population has convenient access to public transportation (max. 1000 meters walking distance) in 2019. In 2016, 4.2 million people died of the effects of air pollution in cities (UN SDG, 2019).

It is time to rethink our cities. Sustainable and equal access to mobility should be key components, just as prioritizing the needs and preferences of youth in policy plans and the designs of cities. This will contribute to providing more equal chances for everybody, creating spaces for upward social mobility, fighting inequality and generational poverty which is after all crucial for the development of cities and youth (UNHabitat, 2012).

Recently, the rethinking of our cities got help from an unexpected source. While the COVID-19 pandemic turned the world upside down in many different ways, it also triggered to rethink infrastructure and mobility, especially in cities. The empty streets showed us a glimpse of cities without congestion, with cleaner air and space and a place for everybody (DW, 2020). Some mayors radically picked up on this opportunity and started to create more (temporary) space for cycling in the city (e.g. Bogota, Berlin, Paris).

Until recent, cycling has only be taken serious as mode of transport in a handful of countries (e.g. The Netherlands, Germany, Denmark) (Golub et al., 2016). Since recently, the interest of policy makers and commuters towards the bicycle increased in many different countries and cities (Golub et al., 2016). By now the benefits of cycling, for both the rider and the city, are well studied; the bicycle provides health advantages, and is less harmful for the environment than most other modes of transport (Panter et al., 2018; Laverty et al., 2015; Millet et al., 2013). However, there is a knowledge gap when it comes to the experiences of cycling, especially in countries where cycling is not common (Sagaris et al, 2020) and about the meaning of the bicycle for people's daily mobility (Sagaris et al, 2020; De La Paz Días, 2017). While the knowledge on urban youth is growing, especially because of the interest from organisations like the United Nations (UNhabitat, 2014; Bos & Jaffe, 2015; Skelton, 2012), the knowledge of daily mobility of urban youth is limited. Also, within the research on cycling as mode of transport, age received little attention (Shokoohi & Nikitas, 2017), this complicates the understanding of the dynamics and experiences of cycling urban youth. This research explores the topic of cycling as mode of transport by urban youth, to contribute to filling the different knowledge gaps and focusses on countries where cycling as mode of transport is not common. The research discusses several continents and cities where cycling is not a common mode of transport, but has a focus on Latin America and specifically zooms in on Cali (Colombia) as a case study.

The Latin American context & Cali

Cycling as a mode of transport is on the rise in Latin-America and is gaining momentum, however until now the impact and change is limited (Sagaris et al., 2020). In general, over the two decades Latin-American cities have increasingly become motorized which resulted in severe congestion and air pollution problems. For every child born in 2010 in Latin America,

2,5 new motor vehicles were registered. (Hidalgo & Huizenga, 2013). This threatens the liveability of the Latin American cities and demands for a change of tactics. In 2011, almost all Latin American countries agreed on the Bogota declaration of sustainable transport objectives, stating they will strive towards more sustainable, saver and equal modes of transport in Latin America (Foro de Transporte Sostenible para Latina America, 2011). However, safety and equality are sensitive topics in Latin-America.

Latin America is often addressed as the most unequal continent in the world (Gasparini & Lustig, 2011). This inequality has many aspects but is often clearly exhibited in the cities. Over the last 30 years, the growth, change and development of cities have been dominated by fragmentation, the (social) enclosure of urban landscapes and the decrease in public space. Over time Latin American cities have become more segregated and polarized, widening the gap between the *ciudad rica* and the *ciudad pobre* (the rich and the poor city). (Janoschka, 2002; Bosdorf & Hidalgo, 2010).

Violence and crime are commonplace on the continent, including urban violence, this makes safety delicate. This unsafety creates spatial, economic, and social constraints for the Latin American people (Moser, 2004), and influences mobility of people and the use of public space, especially for the urban poor (Moser et al, 2005). So far, youth is mainly studied as actors of violence, the effects of violence on youth is often less studied (Pain, 2003, Winton, 2005). Since fear influences daily movements and the use of the city by youth this is important to take into account (Winton, (2005) in Guatemala; Bos & Jaffe (2015) in Rio de Janeiro; Saveijne & Van den Borgh, (2015) in El Salvador). Additionally to the fear of harm, youth also have the fear of getting involved in violence or getting recruited by organised crime and therefor avoid certain places (Winton, 2005).

Cali, Colombia, is an interesting case study since a lot these trends are visible in the city: the growing cycling culture, congestion, pollution, inequality, and safety issues. The municipality creates more and more facilities for cyclists, and the share of cyclists in the city has risen (Cali, 2018c). However, the unsafe circumstances and the inequalities impact the daily mobilities, and challenges youth to prosper (Paleáz, 2016).

This research is based on three different data sources, they all operate on different scales and approach the topic from their own perspective. First, two Systematic Review Analysis' (SRA) have been done, providing a literature study on a global scale of cycling as a mode of transport for youth. Second, a secondary data base on a survey held in Mexico City is used. Whereby cycling as mode of transport will be addressed from a qualitative perspective, and the age group of youth is highlighted. At last, the topic will be discussed based on empirical data collected in Cali through fieldwork and interviews. Together these data sources give a holistic view on the practicalities and experiences of cycling by youth in cities where cycling is not the norm and what role the bicycle plays in their daily urban mobilities. The research examines how the bicycle relates to safe, affordable, accessible, and sustainable transport for youth, but also what relation it has to equal and just access to mobility for youth. It will try to answer the following question: **What influence does cycling have on the urban daily mobilities of youth in immature cycling cultures and what explains these mobilities?**

First this research will build a conceptual framework on broad concepts related to the topic of mobility, like urban mobility and mobility of youth. A more specific literature study on cycling will be done in the result chapters. Following from this the sub-questions and aims of this research will be introduced. The methods will be explained in the third chapter, whereby the operationalization, the methods used, and influence of the COVID-19 pandemic on the research are explained. The results are discussed in three chapters, corresponding with the data sources. Each result chapter will discuss all three sub questions. Before the discussion and the conclusion, a synthesis chapter will compare and discuss the result of the three results chapters together. The thesis ends with the discussion, where the results will be positioned in the bigger picture, and at last a conclusion is drawn.

2. Conceptual framework

2.1 Mobility

"[T]here seems little doubt that mobility is one of the major resources of 21st-century life and that it is the differential distribution of this resource that produces some of the starkest differences today." (Cresswell, 2010. p. 22)

Over the last decades people increasingly move around. Unfortunately, the ease to move around is not the same for everybody (Sheller & Ully, 2005). While a Dutch can easily go on holiday to Senegal, for a Senegalese to go to the Netherlands is far more complicated. Also on a smaller scale the difference are stark, like the Saudi Arabian women whom, since recent, are allowed to get a driver licence (Specia, 2019). All these movements, from migrating to driving a car, and many more, shape our everyday lives. The possibility to move around gives us social advantages, like economic opportunities and ways to develop social networks and identities. Mobility is not solely movement from place to place, it is movement with a reason, bringing people to places they want or need to be (Langevang & Gough, 2009). Therefore, mobility is an important resource, lack of access limits people in the choices and in the opportunities they have in life.

Cresswell (2010) sees three aspects that should be taken into consideration to fully understand mobility. First, the actual movement from A to B. Second, the shared meaning of this movement. Last, the experiences of this movement. When somebody makes a trip in a car only knowing where it comes from and where it goes is insufficient to understand the meaning of the movement. What kind of car it is, who drives it (a Saudi Arabian women?), how it is driven are some examples that influence how the trip is perceived and experienced, and shape the meaning of the movement. These three different aspects are all connected and difficult to separate since they shape the outcome of one's mobility. Mobility is therefore closely linked to identity forming and the shaping of social norms. Mobility is used to gain social status, negotiate identities, and form groups. (Cresswell, 2010).

The nature of mobility comes in a variety of forms. Mobility can both be desired or forced. It can be an experience of pride or humiliation. It can feel pleasing or traumatic. Because of this, the same movement can be experienced differently by different people. Deported migrants, businessmen and vacationers that are all on the same plane, making

exactly the same trip, they all experience the movement completely different. Mobility is therefore not only subject to inequality and seen as an important resource for human life, but it is also an expression of power (Sheller & Ully, 2005). For example, parents grounding their children, criminals sentenced to prison or asylum seekers denied asylum. In fact, already the possible thread of being limited in our mobility influences our behaviour.

While being mobile is often seen as something positive and being immobile not, this is not always the case. Mobility is not always voluntary or desired and can have negative impacts. Forced displacements, refugees, human trafficking are only a view examples of involuntary mobility. Additionally, a lot of forms of mobility are based on carbon energy sources, which has a negative effect on our climate and environments (Banister, 2011).

2.1.1 Mobility justice

The paragraph above highlights that mobility should always be seen in a broad context and approached in a holistic way. This is also the case in mobility justice, a growing field of interest (Cook & Butz, 2016; Mullen & Marsden, 2016; Cass & Manderscheid, 2010). Mobility justice combines the field of social justice and that of mobility. Social justice revolves around the fair (or 'just') distribution of wealth, opportunities, and privileges within a society. Sheller describes mobility justices as:

> "[It] is an overarching concept for thinking about how power and inequality inform the governance and control of movement, shaping the patterns of unequal mobility and immobility in the circulation of people, resources and information." (Sheller, 2018b from Cook & Butz 2018 p. 36)

Mobility justice is therefore not only about the ability to be mobile, but also about the control over mobility of others. Unequal access to this resource is not only the result of race, class, gender or other differentiating ideas, mobility is also actively shaping these differences and unequal access. For mobility, the impact of the circulation goods and substances is equally important. (Sheller, 2018). Think of the circulation of air pollution by exhaust gases in a city, which is often disproportionate present in low income neighbourhoods or for minority groups (Rüttenauer, 2018; Charafeddine & Boden, 2008).

Since justice is about fair distribution, this also includes restricting one's mobility in order to increase somebody else's mobility or wealth. Mobility justice is therefore not only

about the question who does and who does not have access to mobility, and if that is distributed equally. It takes more aspects into account, looking at the overall distribution of wealth, opportunities and privileges that are connected to (the consequences of) mobility.

2.2 Urban Daily mobility

Mobility is often categorized in four different forms of mobility: migration, travel, residential mobility, and daily mobility (Langevang, 2008). This research is about the daily movements of cycling youth in an urban setting. Therefore the focus is on (urban) daily mobility.

Just as mobility is not understood by just a movement from A to B, a city cannot be understood by just looking at an ordinary road map. Ordinary (road) maps show us many physical features, but do not show us the social relations that mark the landscape. Among several other factors, social constructs, trends, or culture give a deeper understanding of the city. While the physical representation of a city on a map is the same for everyone, the interpretations vary between different groups and individuals. Daily mobility in a city is therefore both subject to the dynamics of the city and the dynamics of mobility. Both these dynamics are impossible to see apart.

Different factors play a role on how the city is used and perceived. Some of these factors are physical, which will be discussed in more detail in paragraph 2.3.2 while others are more abstract and will be briefly discussed next.

2.2.1 Perception

How a place is perceived will influence how it is used. It determines who frequents a place and why, when or who feels included or excluded. Perceptions have influence on aspects concerning daily life, like work preferences (Brodie et al, 2005), neighbourhoods (Bos & Jaffe, 2015) or risk and fear (Winton, 2005; Mesch, 2010). This perception of a place can be based on actual events and history of a place or on more abstract ideas like reputation. Places can be perceived by people that actually visit the place, or by people that do not frequent the place often or ever. In the first case, the physical environment has predominate influence on one's perception. Pauperized areas give a different perception than magnificent maintained areas. In the second case, features like television reports, reputation and gossip influence one's perception of a place. (Matei, 2001). At last, personal factors like gender, ethnicity and social

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economic class influence the perception an individual has of a place (Mesch, 2010; Winton, 2005; Bos & Jaffe, 2015).

2.2.2 Spatial accessibility

Affordability and accessibility to (public) transport is of great importance concerning somebody's mobility. An extended amount of research has been done on this so-called spatial accessibility, measuring the accessibility (time or distance) of several services, like health care, supermarket, public spaces and in general urban opportunities of an individual (Demelle & Casas, 2012). Again comes forward that gender and socio-economic factors play a role in spatial accessibility, often showing that women and lower income groups have more problems accessing these services (Kwan, 1999; Demelle & Casas, 2012, Parks, 2004). Despite efforts made by (local) governments to create a public transport system that improves spatial equity, this often tends to be challenging (Demelle & Casas, 2012 in Cali, Colombia; Jang *et al*, 2017 in Seoul, South Korea). Spatial accessibility is often studied in the case of public transport, however there are other modes of transport like motorized vehicles, bicycles, or walking. All these modes of transport are subject to different factors that influence the spatial accessibility and mobility of the users.

The focus of this research is on bicycles, however it is impossible to ignore the role of other modes of transport since they all interact, supplement or conflict with each other. In the next paragraph the topic of cycling will be discussed, afterwards the theories of mobility and urban daily mobility will be tailored to the specific age group of youth.

2.4 Mobility and cycling

Cycling is praised as a convenient, accessible, and environmentally friendly mode of transport. Bicycle riders take in less space in traffic, a trip on the bike does not emit greenhouse gases, traveling by bike keeps the rider active and it is a rather cheap mode of transport. Therefore bicycles are deployed to solve all kind of (urban) problems, like congestion (Lindsay et al., 2011), air pollution and climate change (Nieuwenhuijsen,& Khreis, 2016), the growing number of obese people (and related diseases) and the lack of physical activity (Laverty et al, 2015; Millett et al, 2013; Arango et al, 2011). Most recently, cycling is a mode of transport with little proximity to others, and therefore promoted to curb the spread of the COVID-19 virus. Despite

all the advantages, only a limited number of countries or cities have managed to make cycling a 'common' mode of transport. Most cities are car dominated, which leads to power struggles between cyclists and motorized vehicles, since they often share the same lane (Mosquera Becerra, 2016; Sagaris et al., 2020). A great amount of studies have been done in order to find out what kind of infrastructure is most favourable for cyclists, and to promote cycling (Reis et al, 2013b; Kerr et al, 2016; Richmond et al., 2014). While facilitating for cyclists is an important step to increase the use of cycling as mode of transport, getting inhabitants of a city to cycle takes more than that (Putcher et al, 2010). Going back to the three aspects of mobility according to Cresswell (2010), the actual movement, the shared meaning of a movement and the experience during a movement should be taken into account to understand cycling and to successfully promote cycling as mode of transportation. Therefore, topics like identity and experience are important aspects to consider while doing research on cycling.

2.5 Mobilities of youth

Age determines access and experiences of places and spaces. Therefore, people use space and place to create (or resist) a particular age identity (Hopkins & Pain, 2007). This makes mobility different for certain age groups. A movement has a different meaning, is experienced differently, and has different purposes for children than for adults or elderly. In this research youth is defined as the transition phase from being a child to becoming an adult (15-24 yr, see box 1, age range based on definition of UN). During this phase important decisions are made concerning schooling, work, (sexual) relations and independence. How young people navigate through this transition phase has profound influence on their future lives (National Research Council, 2005). This transition also comes with an increase in mobility, which plays an important role in gaining independence, maturity, sustaining social relations with peers and forming identities (Christensen, 2003). However, youth experiences constraints of their parents, peers, society, and institutions. The difference between the desired mobility and the imposed constraints and possibilities youth often causes a (power) struggle and feelings of frustration (Gough, 2008; Langevang & Gough, 2009).

Young people are getting more mobile. The fast development of the internet and smartphones alone makes them more mobile. Other phenomena like unaccompanied minors migrating (Chavez & Menjívar, 2017), young people going backpacking (Richards, 2015) or

youth letting their voices be heard in protests (Honwana, 2015) are other ways in which youth becomes (more) mobile. Just as for adults, physical mobility is linked to the ability to improve ones social-economic status and to gain upward social mobility. Youth often links their daily spatial mobility to their social mobility: *'They [youth] see restrictions on their desired movements as blocking their social becoming'* (Langevang & Gough, 2009, p. 753).

It is important, to recognize that mobility of youth is different from other age groups and therefore should be studied separately. Because mobility is such an important resource for youth, (not having) access to mobility has profound consequences on their daily and future lives.

Box 1. Youth

Defining youth is not very easy or strait forward. Youth and children cannot be put in the same category, nor do youth belong in the category of adults (Evans, 2008), and that is exactly what makes youth different. A common description of youth is the transition phase between being a child and becoming an adult. This transition phase is not a clear marked period. The process changes over time and is different in every culture (Hansen, 2008). Gender, social class and culture all influence the path youth takes in order to become a (respectable) adolescent. These social-cultural factor do not only influence the ways of being young but also when, at what age and to what extent

At what time this transition takes place, changes over time. Changes in society can have an influence on how long young people are perceived to be youth and between what ages. Examples could be the time youth enters the labour market, starts an independent household, gets married or has their first child. In westerns societies, the above-mentioned examples all have shifted to a later age over the past centuries.

In many cases, becoming a respectable adult is not always easy, depending on economic opportunities and stability (Langevang, 2008). Whatever path they take is strongly influenced by social norms of what a desirable and respectable future is, but also by the actual opportunities' youth encounter (Langevang, 2008).

In general, being in one's youth is described as an exciting and often an insecure period. Youth are both associated by freedoms and constraints (Evans, 2008; Hansen, 2008). They receive more and more freedoms, like choices concerning work, independence, love and friends but also the ability to move around freely and being less controlled by parents. At the same time, they are still influenced by their parents and subject to parental control (Hansen, 2008).

Finally, youth is defined as a period of an 'identity crisis' since youth is finding out what kind of adult he or she is going to be (Valentine, 2003). Because of the search for identity, Allat (1997) argues that young people are sensitive to external influences like opinions, trends and peer pressure. This transition phase causes young people to be vulnerable to becoming marginalised (Alatt, 1997).

2.6 Urban daily mobilities of youth

From the early 2000 onwards, scholars have been asking for more attention in academia for urban youth, particularly in the low- and middle-income countries (Evans, 2008; Hansen, 2008). Youth studies and urban studies are often seen as two different disciplines which complicates the understanding of urban youth (Hansen, 2008). The city is often merely seen as a background setting. Several scholars (Hansen, 2008, Matthews, 2003), show that the city is more than a background setting and has an important role in shaping the lives of youth. Space and place are of significant importance in their transition towards adults. On the other hand, youth make an imprint on the city and have an important role in shaping it (UNhabitat, 2012; Hansen, 2008). By now, a small amount of studies are done in order to understand urban youth in low- and middle income countries, at the interface of youth studies and urban studies (Bos & Jaffe, (2015) in Rio de Janeiro; Langevang, (2008) in Accra; Gough & Franch, (2005) in Recife; Winton, (2005) in Guatemala City). These researches seek to understand the relations between being young, becoming an (respectable) adult and the urban environment, the social construction that comes along with the urban environment, and the personal factors like gender, socio-economic class and ethnicity. These different case studies show, again, that age, gender and economic factors lead to multiple layers of inclusion and exclusion on mobility (Langevang, & Gough 2009; Langevang, 2008a; Bos & Jaffe, 2015; Gough & Franch 2005; Gough, 2008; Porter et al., 2010; Lucas 2011).

As highlighted in paragraph 2.5, mobility is an important resource for youth and their futures, this also accounts for daily mobility. Young mobile people can choose to study in a different city, find a job on the other side of town, fall in love with someone living in another city or find friends outside their neighbourhood, which are all important markers in one's becoming (Skelton, 2013). Being limited on daily mobility in this phase of life has profound consequences on the opportunity's youth have and the choices they make that will frame their future (Lucas, 2011). However, youth encounters different barriers that complicate accessing their desired daily mobilities.

Some of the characteristics of cycling as a mode of transport are of particular importance for youth. The bicycle provides them with possibilities of independent transport, widening the range where youth can travel independently. It is a cheap mode of transport, with a low entry threshold. Furthermore, being in your youth often accompanied by forming

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identities (Allat, 1997), whereby mobility and modes of transport play an important role (Cresswell, 2010). However, little research has been done to understand the dynamics of cycling as mode of transport for (urban) youth.

2.7 Towards a research question

Mobility is of great importance for youth, however it seems more difficult for them to get access to this resource, which makes it difficult to meet their desired mobility. The bicycle appears to be a mode of transport that is cheap and accessible for daily mobility. This begs the questions of how the bicycle can play a role in the unequal access of daily mobility for urban youth? Does it give youth more freedom and mobility or is this too easily concluded? What role does the urban environment have on the use of the bicycle? Is this different for different personal factors like gender, social economic class or ethnicity? This research will study these dynamics in order to understand what role the bicycle plays in young people's lives. In order to do so this research will look at urban daily mobilities of cycling youth in a holistic way. Four concepts are central to understand this, characteristics, freedoms, constraints and identity are globally drawn from the three aspects Cresswell (2010) names to understand mobility (paragraph 2.1). The movement from A to B (characteristics), the shared meaning of the movement (identity) and the experience of the movement (freedoms and constraints). Therefore this research first will look at the characteristics of the mobility in bicycle by youth. Second the research aims to understand what constraints and freedoms youth undergo while using the bicycle as mode of transport. Last the topic of identity will be discussed. Both mobility and youth are concepts that are strongly linked to identity (forming), therefore understanding what role the bicycle plays on identity of urban youth will be examined. Al these concepts will be examined in the context of an immature cycling culture, that is to say in cities where cycling as mode of transport is not the norm. The conceptual model (figure 1) shows the difference between the relation assumed from the literature and which relations this research will address. The four concepts in the middle, as described above are translated into three sub questions.
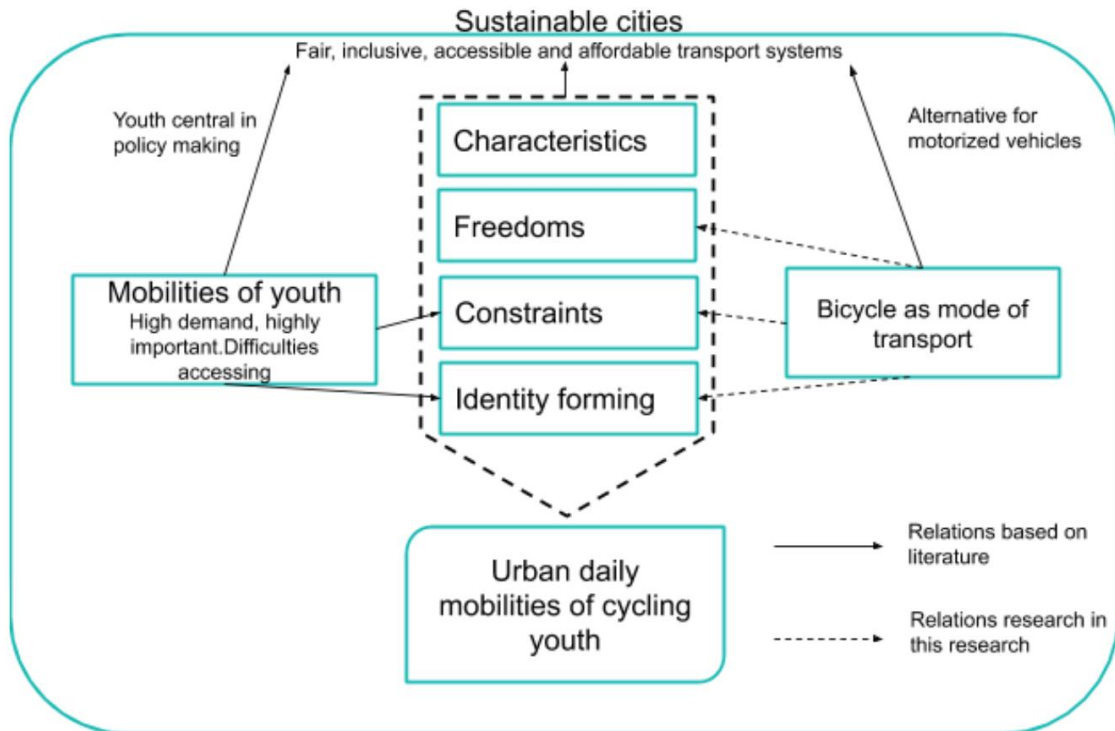
Figure 1 Conceptual model

This has led to the following research question:

What influence does cycling have on the urban daily mobilities of youth in immature cycling cultures and what explains these mobilities?

Three sub-questions will help to answer the main question:

What are the characteristics of urban daily mobilities of cycling youth?

What constraints and freedoms are experienced during urban daily mobilities of cycling youth?

To what extend forms cycling a marker of identity for youth?

3. Methodology

The original design of this research was to do participatory research with cycling youth in Cali during a four month fieldwork period from February until May 2020. The participant would have been asked to keep a 'mobility' diary, writing about their experiences when they move around in the city, followed by interviews and focus group discussions. Unfortunate, this never came to be. After the first participant started his diary, the government announced the first restrictions of movement in order to curb the spread of the COVID-19 virus. Not much later, countries started closing their borders and people worldwide were advised to return home, which marked the end of the fieldwork period; two months early. Because of the abrupt ending of the fieldwork period the research could not continue with the original design. This asked a quick adaptation to the new situation, whereby the research methods have been reviewed and changed and the research questions slightly adjusted. Luckily, in this way, the research can still explore the original topic, unfortunately without the participatory research methods, which indeed gives the research a different 'flavour'. Because of the new situation, this research is based on both secondary and primary data. Limited secondary data was available on Cali, therefore the focus shifted, due to these practicalities, away from Cali. However, Cali remains an important case study. The research now explores the topic on different scales and with different data sources, with a focus on cities where cycling is not the norm, and a bias towards Latin America.

The methodology chapter will start with the operationalisation of the variables. Afterwards the three different research methods will be discussed. The chapter ends with the limitations and risk of the methods and a reflection on the position of the researcher in the field.

3.1 Operationalisation of variables

First two general terms will be operationalized before the separate sub-questions will be discussed.

Youth

The research focusses specifically on youth. Youth is seen as the transitions phase from childhood to adulthood (see box 1, p. 14). This research takes the age range provided by the

UN, which conveniently corresponds with how the Colombian government defines youth, between 15-24 years old. Furthermore, the focus is on cycling youth, therefore youth should uses a bicycle for their daily mobilities. This does not necessarily mean they use it for all trips or every day.

Daily mobility

Daily mobility refers to the movement patterns of people on a daily base. Where do people go? Daily activities in this research include school, work, shopping and leisure activities, like visiting friends or going out.

Characteristics of urban daily mobilities of cycling youth (first sub question).

In this research characteristics of daily mobility concern, destination, frequency, time and distance. Furthermore some characteristics of the cyclist will be included like gender, education, income and the experience of the cyclist.

Constraints and freedoms of cycling in urban context (second sub question).

Freedom and constraints are two concepts that often go hand in hand. One could define freedom as the state of not having external constraints (Oxford word power dictionary, 2016). Whereby constraints are defined as limitations or restrictions. The operationalization of constraints can be rather straightforward, namely all the external factors that limit or restrict the (desired) daily movements of a person. Freedoms on the other hand, in this research are not only seen as the acts of movements without constraints but also as the advantages of cycling in comparison to other modes of transport.

Identity (third sub question).

Identity is described as the fact of being, who, or what a person or thing is. This can refer to one's self-image. People have multiple identities, according to the situation they are in. Every one of these identities is shaped by social and cultural circumstances, objects and possibilities. This makes it difficult to talk about identity without taking the social norms into account. Therefor this sub question will also explore how cyclists relate to social norms and how they see themselves.

3.2 Three data sources

The research exists of three different data sources, with different approaches and scales. Different data sources were used to give a comprehensive insight in the topic, and approach it from different angles. The thesis starts with a large scale global assessment of the topic with the Systematic Review Analysis'. Studying the existing literature gives a first overview of the three sub questions. Then, on a smaller scale, the quantitative data from Mexico gives us insight in the patterns and characteristics of cycling. The quantitative data is mainly included in the research to get an insight of the characteristics of cycling. At last, a case study on Cali will add primary empirical data to complement, ground and at the same time question the secondary data. Some data sources are more suitable for answering certain sub questions than others. Figure 2 visualizes how 'useful' the different data sources are for every sub question. In the remainder of this paragraph the methodology three data sources will be discussed.

	Characteristics	Freedoms and Constraints	Identity
Chapter 1; SRA	+	+ +	+ +
Chapter 2; Data Mexico-city	+ + +	+	
Chapter 3; Case study Cali	+	+ +	+ + +
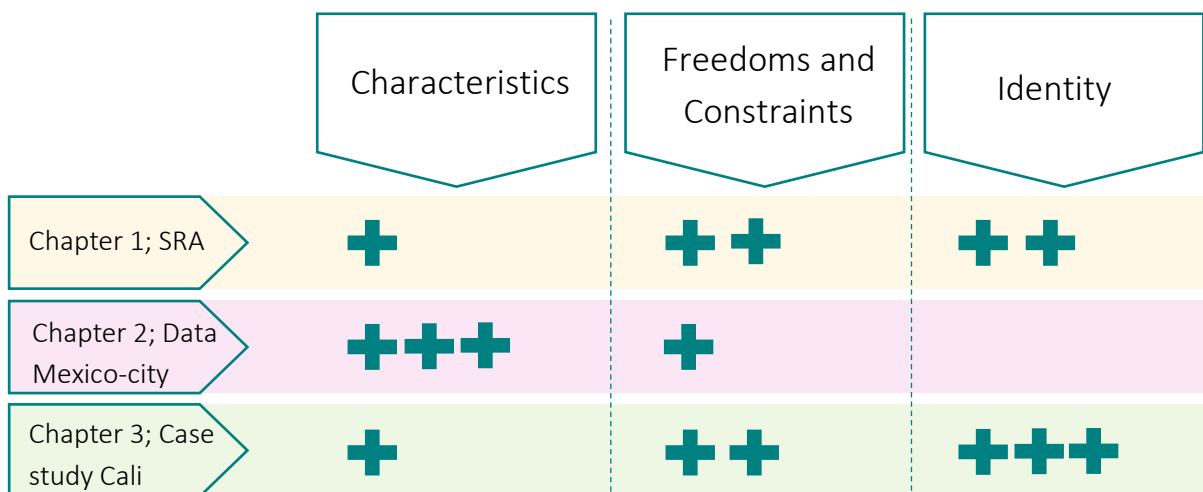
Figure 2 Structure of thesis; division of data used per sub-question

3.2.1 Systematic Review Analysis

The quantitative data on literature comes from two systematic research analyses that have been done on the topic of cycling. A SRA aims to steps beyond analysing and summarizing individual articles. For each articles reviewed, the relation to the topics of this research will be explored and critically analysed. Together the articles will be framed in the bigger picture of the topic. This gives the opportunity to look beyond the individual studies and improve the understanding of the phenomena and point out knowledge gaps. The following questions are addressed to analyse the articles:

What is the relation between the bicycle and daily mobilities?

What is the relation between the bicycle and identity (forming)?

What are the factors influencing bicycle use?

How does the article relate to age concerning the above mentioned questions?

Both SRA's have a slightly different criteria and approach to fully understand the topic of cycling as a mode of transport.

In a SRA, several systematic steps are taken to carefully select the articles that will be examined.

1. First a general search on literature have been done. Different criteria and search terms have been selected, which are shown in table 1. Two electronic search engines were used, Google Scholar and Scopus. Searching in two digital databases enlarges the numbers of articles found. Searching for articles and using different search terms was a reflective circle of trial, reflection and try again. The searching in continued until saturations occurred.

2. After the articles were selected all articles were put in an Excel sheet, listed with title, author, year of publication, search term used, and in which search engine it was found. Additional to that the articles have been labelled according to criteria as shown in table 2

3. From these labels the most important criteria were chosen, the articles that require these criteria were selected. How these articles were selected is described below.

4. The articles selected after this second phase were analysed and examined according to the four questions posed above.

Table 1 Criteria of selection of articles of both SRA's.

First SRA (General SRA)	Second SRA (SRA on Youth)
Cycling as mode of transport	Mobility of youth (biased towards cycling)
Low- and middle-income countries	All regions
Published after 2010	Published after 2000
All ages	Children, adolescents, and Youth

The main reason a second SRA was done, was because it appeared very difficult with the criteria of the first SRA to find enough articles about youth. For that reason, the criteria of the region (before focussing on low- and middle-income countries) was dropped and the theme of

youth (or children) was made one of the primary criteria. Nevertheless, this resulted in limited results. Therefore, the publication range was widened, adding ten years.

Table 2 Labelling categories SRA's.

Label	Categories
Region	Africa, Asia, Europe, North America, Latin- America
Country	E.g. Brasil, UK, The USA
Disciplinairy focus	E.g. Transport and planning, public health, human geography
Urban/Rural	Rural, Urban, Rural/Urban, NA
Type of data	Primary data, secondary data
Age groups	Adult, defined; Adult not defined.; All, defined; All ,not defined; Children defined, NA
Identity	Yes, No
Cycling	Yes, No

Selecting criteria after labelling of the general SRA (step 3):

- Excluded all articles about China: China is considered to have a far extended cycling culture and infrastructure and will therefore be excluded out of the list (Yang et al. 2015).

- Only included articles about urban settings

- Includes only articles that explicitly write about (different) age

Selecting criteria after labelling of the SRA on youth:

- Included all articles the write about identity

- Included all articles that write about cycling as mode of transport

The general SRA selected 59 articles in the first round, after the second selecting round 18 articles were left for examination. The SRA on youth selected 69 articles, and 23 were selected in the second round. Full explanations of the choices made can be found in the appendix, including the search terms and some statistics on the search results.

3.2.2 Survey data Mexico city

The quantitative data is a data set found about Mexico city. In 2017, the Mexico city municipality send a team into the streets and surveyed more than 4000 (n= 4324) cyclist. It is not clear how the survey is distributed, however it appears that the researchers went to different locations at different times and asked all the cyclist that passed by to fill out the

survey. Therefor the survey is not representative for the population of Mexico city, but it gives an insight in the cycling community. The survey exist of 25 questions and several other noted data. The table shows the fourteen questions which were useful for this research. In the appendix all the questions can be found and the selection of the 14 questions as described in the data base.

Table 3 Questions used from survey held in Mexico-city

Number	Question used
1	Sex; Male or female
2	Age; absolute and in groups of 10 years
3	Where did you come from?
4	Where are you going?
5	What is your motivation for this trip?
6	With wat frequency do you realize this trip?
7	How long is this trip in minutes?
8	Distance of the trip
9	What is your main motivation to use the bicycle as mode of transport?
10	How long have you been using the bicycle as mode of transport?
11	What is your highest attended education level?
12	What is the monthly income of your household?
13	How likely are you to have an accident while driving on this road?
14	Place of circulation at the time of the survey.

With the help of Excel the relevant questions have been split out into pivot tables that show the count and percentage of every age group, giving the possibility to filter on gender. In this way the differences between age groups, gender and the total are displayed very clearly.

3.2.3 Primary data

Even though the time in the field was limited, some fieldwork has been done. Not only was this the basis of the ethnographic data, it also created a network, originally to find participants for the participatory research, but afterwards this network has been used to find respondents for the interviews. The fieldwork was conducted between the 4th of February and the 23rd of March. The interviews where held in June 2020 from The Netherlands.

Ethnographic data

As a cycling Dutch researcher, it only seemed natural to buy a bike and cycle in Cali. The bike was used to go about daily life. These ordinary, daily trips gave a good insight in the context of cycling in Cali, giving an emic perspective. It created a common framework and vocabulary which made communicating with other cyclist easier and more fluent. The bicycle also gave access to bicycle related activities. A field journal was used to capture the experiences, however by far not all experiences were tracked, since every movement by bicycle was 'in the field'.

Interviews

The network created in the field was an important source for finding respondents for the interviews. The participants that had already agreed to participate in the original research methods, were asked if they wanted to participate in the (online)interviews now the situation changed. The aim was to find 'information rich' cases (Palinkas *et al,* 2015), therefore the respondents should move around the city often to different places to give a good insight in cycling. However, since the research is about daily activities, the participant should also not deviate too much from their peers and should be a 'typical case' (Palinkas *et al,* 2015). Five respondents participated, all between 21-24 years old, from which three are female and two male. In chapter 6 the participants will be introduced in more detail.

After the two secondary data sources were analysed, the (online) interviews were conducted. A cyclic process occurred based on the analyses on the secondary data, and the data gathered with the interviews. For this reason, the topic list has been adjusted while doing the different interviews, the final version is found in the appendix. Three topics, daily mobility, experiences, and identity were the basis of the topic list. The interview topics list was structured, stating the full questions. This was mainly done to be well prepared in Spanish, since in practice the interviews were semi-structured.

The interviews were held digital, using online meeting software like Microsoft teams, Skype and Zoom, depending on the interviewee preferences. The interviews took between forty minutes and one hour and were recorded. Beforehand the respondents were asked permission to record the audio, and they were informed about confidentiality. They were

explicitly asked if they allowed name, age, and gender to be used in this research. All participants gave permission for all requests.

The interviews were held in Spanish, the native tongue of the interviewees. Right after the interview, the interviews were transcribed, the transcripts were not translated into English. Only the quotes used in the thesis were translated, the original Spanish quotes can be fined in the appendix. After an interview was transcribed, it got coded to prepare for analysis (Baarda et al., 2013). Three (colour) codes where used, that correspond with the three main subjects of the topic list (daily mobility, experiences, identity) additional to that the Microsoft words comment function was used to add additional remarks, the additional codes can also be found in the appendix.

3.3 Limitations and challenges of methods

Different limitation and challenges were encountered during the conduct of this research. First the limits and challenges of the secondary research methods will be discussed. After that the limitations and challenges encountered in the field and during primary data collection will be discussed. The section ends with a brief reflection on the position of the researcher in the field.

SRA

After analysing and reading all the articles it appeared that some articles where considered irrelevant, not meeting the selected criteria. The articles were selected based on the information provided in the abstract, where some bias occurred. Either because of poorly written abstracts or because of mis interpretation of the researcher. This means that better written abstracts, and the interpretations of the researcher are of relevance and makes the selection sometimes biased. In the end, some articles were more relevant for the topic than others. Two articles have been excluded competently after they were selected for analysis after it became clear that they really did not meet the requirements.

Quantitative data Mexico-city

Using a secondary data source has limitations. First off all the data collection is not designed specifically for this research. Therefore it cannot answer all the desired questions. Furthermore, the sampling strategy and non-response rate are not known for this data set. Together with limited local knowledge, this made interpreting the data sometimes challenging.

Primary data collection

Because of the changed situation and abrupt ending of the field work, five interviews have been held, which is a limited amount. Fortunate, the five cases are information rich and the sample is fairly divers, with different gender, cycling habits, experiences, and social economic backgrounds. However, the research misses younger participants (15-19 year) and different ethnical backgrounds.

The interviews were held online, which leads to some limitations. Because of the limited access to (fast) internet of the respondents, most interviews where held without video recording. This takes out the element of body language, which is an important element in communicating and interviewing (Baarda et al., 2013). One respondent woke up at five in the morning so he could participate in the interview because during daytime the internet was insufficient. With online interviews it is not very clear in what situation the interviewee is in at the moment of the interview and if he or she can speak freely. Luckily the subject covered in this research is not very sensitive.

While doing research in social science one should always reflect on the role of the researcher, guarding to not 'go native' or on the other side be too distant and have difficulties integrating. This has been taken into account constantly, more than ever to guard to not becoming too involved.

Cycling on a daily basis, participating in all the cycling activities as a white, European, female influences the data collected and some safety issue4 should be addressed. As will become clear in the rest of this thesis, security in Cali is a pressing issue. Foreigners are often advised to take extra precautions, since they stick out. This makes that the experiences in the field are viewed from this perspective and therefore might not resemble the experiences of the participants.

4. Cycling through words; Systematic literature analysis' on cycling as mode of transport

In this first chapter the topic of cycling as mode of transport in urban settings will be explored, based on the found literature of the SRA's. After a brief insight in the geographical and disciplinary characteristics of the articles, the three sub-questions will be discussed.

4.1 Geographical and disciplinary characteristics of SRA

The grand majority of the articles found, are about North America or Europe. Very little articles are about Africa. Hardly any articles about Africa specifically are about cycling as a mode of transport, since often the topic was broader like mobility in general. There generally tends to be a lack of literature on cycling as mode of transport in low- and middle-income countries, especially on children and youth.

The research methods and focus of the found articles was often quantitative, mostly to understand what effect cycling has on one's health, in what physical environment people mostly cycle or what influence helmet laws have on the likelihood of children to cycle. The two biggest disciplinary foci of both SRA's are Transport and planning and Public health, together accounting for 71 of the 127 articles. This often means we learn little about the experiences of the cyclist, since this falls outside the scope of these research approaches. Notable was that articles on Latin America (in the first SRA) and in general articles about children, more often have qualitative research methods and focus more on understanding what cycling means for the participants and respondents.

The focus of both SRA's was on age and particularly on youth, this appeared to be difficult criteria. Especially in the general SRA, even though they took age into consideration, the topic is hardly explored. But also in the SRA on youth, age is often a given. Only view articles tried to understand what relation age has with cycling and how this changes when people grow older. Shokoohi & Nikitas (2017) observe something similar and state that "*relationships between age and cycling have generally received less attention but are potentially very important*" (p. 623). Articles on youth (as defined in this research) and cycling as mode of transport appeared to be scarce.

Last, in many articles cycling as daily mobility was often generalized as 'active modes of transport', including walking and often studied together. This resulted that some of the evidence in these articles was based on walking rather than cycling.

4.2 Characteristics of cycling as mode of transport

This chapter will discuss what insights the literature from the SRA's can gives us on the first sub question; *What are the characteristics of urban daily mobilities of cycling youth?* Both the characteristics of the trips, and of the people who cycle will be discussed.

4.2.1 Destination & Distance

Cycling is often studied as a 'commuter tool'. For adults, trips to work were often studied, while for children this accounted for trips to school. Other destination are not always studied, what also is observed by Panter *et al,* (2009): "*these important yet informal types of activity have often been overlooked in physical activity research*" (Panter *et al.,* 2008, p.2). Local parks, downtown, shopping centres or other meeting points where young people go or meet friends are other important destinations for youth. Especially when a destination like school is too far, that does not mean children or youth do not cycle. For the participating adolescents in a research in the USA, frequency was associated with the number of purposes and destinations. Participants who cycled more often, stated more reasons and purposes to cycle, like going somewhere or meeting friends (Thigpen & Handy, 2018).

Distance is probably the most mentioned characteristic of cycling mobilities, since it cannot be too far. Gehkiere et al (2014) measured in their research among children and parents in Belgium that children were allowed to cycle on average 3.2 km alone. However, when the destination was very close, parents preferred their child to walk. Other articles did not make specific statements about distance, only that it should not be too far. When children grow older, they are often allowed to travel further distances alone by bike (Thigpen & Handy, 2018). Not only for children distance is important, in the literature on adults distance was of often mentioned. However, again only stating it should not be too far.

4.2.2 Who cycles?

Among children and adults, it appears that males are more likely to cycle than females. Also, young people are more likely to cycle. This accounts for adults (Reis et al., 2013; Verma et al., 2018) and for children (Hidalgo, 2016). Why within the age groups of adults younger adults are more likely to cycle is not explained in the articles that conclude about this phenomena. Possible reasons could have to do with the lack of resources when being young and (upward) social mobility later in life or physical ability.

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Cycling is a physical activity; therefore, some forms of physical fitness is required. Often this implies that cyclists enjoy physical activities in some way. Verma et al. (2018) see that participants who were physically active at work or in leisure time were more likely to use active travel. If these participants already enjoyed physical activity before cycling and therefore cycle, or they became interested in physical activity because they cycle is not clear.

At last lower social economic class or lower education level is positively linked with the likelihood to cycle as a mode of transport. Several articles base these statements on existing literature, and three articles from the SRA's conclude this on their own data (Reis et al., 2013; Duran, 2018; Verma et al., 2018; Shokoohi & Nikitas, 2017; Hino et al., 2013).

4.2.3 To summarize

It appears that cycling is mainly studied on the commute to school or work, but also used for other destinations which are less studied. Distance of these destination should not be too far. Cyclist tends to be more often male, young and of low social economic class.

4.3 Freedoms and constraints

The second sub questions; *What constraints and freedoms does the bicycle bring to the daily urban mobilities of cycling youth?*, will be discussed in the upcoming paragraphs. Several freedoms and constraints became evident from the examined literature. While it seems rather straightforward that some aspects are a freedom and others are a constraints, this appeared not to be so two sided. Therefore, the chapter is not divided in two sections; freedoms and constraints, but per theme.

4.3.1 Independent transport

Ghekiere et al., (2014) states that children from the age of ten start asking for independent mobility. With the bicycle children can reach a wider range than on foot and are not dependent on parents driving. Thigpen & Handy (2018) observe that the reasons and destinations change over time. Children age 9 mainly stated that they cycled for fun, while (the same children) at age 12 and 15 mainly stated to cycle to go to school, shopping centres or to go downtown. The bicycle in the beginning is a 'toy' and becomes a mode of transport when children grow older. Panter et al. (2018) sees that youth who feel and enjoy this independence and freedom from parents are more likely to cycle. In other words, being able to travel independently from parents is a motivation for youth to cycle.

Brickel (2019) shows in his historic analysis (1880-1950) on transport culture in New Zealand that this independent transport has been enjoyed by youth for a long time. While for both boys and girls this freedom was observed, the gain of independence was far bigger for boys than for girls, "*boys explored a much wider territory* [than girls]." (Brickell, 2019, p.6). While this is based on observations from a historical perspective, nowadays similar patterns are observed for adults, youth and children. A common thought is that girls and women are more vulnerable to violence and harm, therefore girls are often more restricted in their mobility.

> "*[G]irls need to be protected from the outside world and boys are expected to explore the same outside environment. When familial practices affirm the ideology of protecting femininity, the independent mobility, AT* [active transport] *and overall physical activity of girls are negatively impacted. This begs the question of what it means to let girls be free.*" (Roberts et al., 2019, p. 13)

These social norms were also observed in other articles, either drawing on their own evidence or based on literature. The case study of three African cities shows that both girls and boys are exposed to harmful environments, but that girls are tended to be more restricted.

> *"Boys are generally allowed more freedom of movement than girls* [...] *but appear to be equally open to both temptation and unprovoked dangers of accident and attack."* (Porter et al., 2010, p.802)

This shows that girls are not only restricted because of additional fear of danger but also because it is a social norm to do so. A big role is reserved for parents in this respect. Lorenc et al., (2008) see that parents "*feel the pressure to be a "good parent" by adopting cultural norms defining safety*" (p. 855), suggesting that these parents put reputation and identity before actual risk assessment. In fact, parents also have several roles in influencing their children's mobility. They can accompany their children cycling (Lorenc et al., 2014; Mitra, 2013), decide on certain routes (Ghekiere et al., 2014) or restrict them on when and where they can go (Porter et al, 2010; Taylor & Hall, 2013; Thigpen & Handy, 2018; Leung & Le, 2019). On the other hand parents have an important role in stimulating their children to cycle, either by being a role model (Leung & Le, 2019) or be stimulating (Mitra, 2013; Roberts et al., 2019).

However, being independent from your parents picking you up and dropping you off by car is only relevant if your parents have a car. Therefore the degree of independence gained varies greatly between different situations. When parents lack a car, especially in a car dominated country as the United States, people are generally more restricted in their mobility.

> *"Youth from low-income families and youth of color (YOC), particularly African Americans and Latinxs, are more likely to bicycle or walk to school compared to their White counterparts or higher income youth"* (Roberts et al., 2019. p. 1).

In this case dependency is expressed through power and inequality. The low costs of (using) the bicycle, is already observed at a young age, as observed in the article of Hoffman et al. (2014) where a 10-year-old states that "*you can budget with your bike*" (p. 307). The cheap nature of the bicycle has therefore different dynamics, being on the one hand an opportunity for many to increase their (independent) mobility, but also shows signs of inequality if people are limited in their mobility and lack alternative modes of transport.

4.3.2 Flexibility

The bicycle is a small device (compared to other modes of transport) which is very convenient for the user, especially in an urban setting. De la Paz Díaz Váquez (2017) observes that the bicycle is useful for women to combine work, taking care of kids and personal activities since they can go to multiple destinations easily and fast in one trip. This makes the bicycle more convenient and provides them with freedom. This efficiency is also observed in the articles of Hidalgo et al. (2016) in Colombia and Bernasconi & Tham (2016) in Chilli, especially to combine taking care of children and other duties of mothers. Children aged 15 from Thigpen & Handy's (2018) research also state they appreciate the bicycle because they can travel quick, independent and are more flexible.

4.3.3 Safety

Safety is a broad topic, and often appeared to be a constraint of cycling in urban settings. Different aspects of safety and unsafety will be discussed.

Road safety

Road safety and the risk of getting an accident are important topics often covered in the literature. Generally, the topic is approached by looking at the physical and infrastructural environment. Ranging from the obvious cycling paths, to (unjust) traffic lights and density of an area. This also includes statements on overall urban design, cities designed for car use or chaotic infrastructure due to rapid urbanization. For example, Ghekiere *et al,* (2014) mentions a view, "*cycling on busy roads, having to cross many roads, high traffic density, [..] having no safe place to cross are negatively related to cycling for transport in children.*" (p. 2)
In general, parents were concerned with road safety (Lorenc et al, 2008; Mitra, 2013), both because they do not trust their child to handle the traffic in a safe manner and because in general they think the traffic is unsafe.

Road safety is perceived lower at night. The cyclist is less visible, and traffic is often heavier (during peak hours) which makes cyclists more unsafe and hesitant to cycle at night. (Reis et al, 2013; de la Paz Díaz Vázquez, 2017). Parents in Belgium and the USA did statements about daylight and streetlights, restricting their children at night-time to go out in bicycle (Ghekiere et al., 2014; Roberts et al., 2019).

Separate cycling paths are often mentioned to minimise the risk of traffic accidents. Parents in Belgium state that they prefer their child to take a longer route over the good cycling path than take the shortest route which is less safe (Gehkiere *et al*, 2014). Among adults it is not clear if separate cycling lanes influence frequency or route while cycling.

Personal safety

On the bicycle one is not only more vulnerable in traffic, one is also more vulnerable for harm or 'stranger danger'. For both adults and children this is a topic of significant importance. Often a negative relation was found between fear or presence of crime or the feeling of safety and the amount of walking and cycling (Kerr et al, 2016).

While this fear of 'stranger danger' was often perceived by parents, most children and youths reported these concerns too.

"*Fear of violence formed a key thread in pupils' reported mobility concerns: girls and boys of all ages consider it unsafe to walk long distances on foot; there are shootings at night and young people reported seeing dead bodies on the way to school.*" (Porter et al., 2010, p. 799)

"*Um, I like sometimes, like start walking somewhere or I think about walking somewhere and get ready for it but then I start thinking about which path I'm gonna take and which people are there cause sometimes there are those little tunnels that are under the street and stuff and there's suspicious people there. So my Mom's like oh, I'm not sure if you should go that way so then I either change to do it later like I do something else*" (Roberts *et al*, 2019, p. 8)

Both quotes show that, severe danger (like shootings) and perception of danger (suspicious people) have the same outcome that children do not prefer active modes of transport. Safety influences not only if people use active transport, but if they do, it also influences the route they take. People prefer a safer route, even though they are longer (Porter et al., 2010). However, all statements made in these studies were about walking, which is a slower and potentially more vulnerable mode of transport, it is unknown how this unsafety relates to cycling from the literature.

Since safety is a reason not to use active transport (Kerr et al, 2016; Porter et al., 2010; Roberts et al., 2019) one should expect that in parts of the city with high crime rates less people cycle. Reis et al., (2013) sees that that is not as straightforward in Brazil. Cycling as mode of transport is often used by people in low social economic classes. Generally crime rates tend to be higher in low income neighbourhoods in Brazil. This means that people cycle anyway, regardless of the safety issues and in fact are more exposed to the dangers (Reis et al., 2013).

As already mentioned in the section of independent transport, gender makes a difference while discussing the topic of safety. Robert et al (2019) see that not only gender is of importance, but in the case study held in the USA, race is another personal factor that should be taken into account. The news shows that a combination of both gender and race can lead to fatal outcomes for young males of colour going about their daily mobility in the USA.

Robbery

Two studies done in the USA bring up the topic of parking the bicycle and the chance of it getting stolen. Participants explained that they sometimes do not like to go by bicycle if they have to park it somewhere unsafe with the chance it gets robbed. Parking facilities and robbing was sparsely mentioned in studies among adults, which is surprising, because if it affects children, it will affect adults as well.

4.3.4 Geographies

Different geographical aspects where mentioned in both SRA's that influence one's mobilities in bicycle. Either participants do not like to cycle while it rains, nor do they like to get sweaty. Yeung & Le (2019) state that *"there is a disproportionately larger number of studies based on developed countries. In particular, a research gap exists in this area for tropical countries in Africa and Asia."* (p. 55). As Yeung & Le, highlight, it is not very clear how hot climates influence cycling. Some participates from Hoffman et al. (2014) from the subtropical climate of Philadelphia state that they do not like to *"sweat a lot"* (p. 310). However, how this affects their mobility is unclear. The women cycling in Mexico city that participated in the research of De a Paz Días Váquez (2017) preferred not to cycle when it was raining or when it was cold and preferred taking other mode of transport like the metro.

Different studies recognize that gradient is of influence on cycling behaviour. When using the bicycle as mode of transport, instead of for fun, the rider has less influence on where

he or she cycles. This means sometimes you cannot escape the slopes. *"Like biking for fun is fine but I don't like trying to bike somewhere because all those hills and stuff I just don't like it"* (Roberts et al., 2019, p. 10). Gradient can prevent people using their bikes as mode of transport for certain destinations, even though they enjoy cycling.

4.3.5 To summarize

Independent transport, flexibility and low cost seem to be freedoms gained by using the bicycle. However, how much freedom is gained is dependent on personal factors of the rider. Safety concerns are an important and very relevant constraint for cycling as a mode of transport. The degree of danger, both road danger and personal safety, might differ greatly between different regions, they nevertheless have influence on the choices made concerning mode of transport and route. At last, geographies are of influence, indicating that some cities, seasons, or days are better for cycling than others.

4.4 Identity

This paragraph will explore the topic of identity in relation to cycling as mode of transport and tries to answer the third sub-question: *To what extend forms cycling a marker of identity for youth?,* based on the SRA's. Identity is always based on the interplay of social norms and individual identity (forming). Both aspects will come back throughout the chapter.

4.4.1 Social norms and acceptance

While talking about identity, social acceptance and reputation is one of the topics that often comes back. Verma et al., (2018) that researched the relationship between childhood attitude towards cycling and the use of bikes in adulthood concludes that *"social acceptance is found having a dominant impact on an individual's decision to switch from bicycle to another mode after childhood"* (p. 102). Hildalgo et al., (2016) states that promoting bicycle use to school might increase active transport at a later age, which is not completely backed up by the conclusion of Verma et al., (2018). Verma et al., (2018) continue the statement with "*In fact, various studies have indicated that the effect of a negative social environment can even mask the positive influence of providing a new cycling infrastructure."* (p. 102). This highlights the importance of social norms and identity when talking about urban daily mobility. This is in line with Reis et al., (2013) their conclusion, that see that personal characteristics are more decisive for using the bicycle than environmental variables.

Identity concerns mentioned by the youth themselves where often concerned with coolness (Forman et al., 2008; Panter et al., 2008; Ghekiere et al., 2014; Lorenc et al., 2008; Thigpen & Handy, 2018; Molina-García et al., 2018; Ding, 2019). This sometimes concerns (safety) clothes and appearance (Molina-Garcia et al., 2018; Ghekiere et al., 2014) or is compared to other 'cooler' modes of transport like cars (Lorenc et al., 2008; Roberts et al., 2019). Verhoeven et al. (2017) see that especially within the age groups of children, peers have strong influence on their behaviour. Not only because of wanting to be accepted (and 'cool') by peers, but also because children and youth like to cycle together and see active transport as a way to socialize with friends (Leung & e, 2019; Molina-Gracía et al., 2018; Roberts et al, 2019; Hoffman et al., 2014; Vervoeven et al., 2017).

4.4.2 Gender

As became clear from the first paragraph, it appears that mostly men cycle. One of the explanations from the literature is that cycling is not considered 'lady like' (Roberts et al., 2019; Thigpen & Handy, 2018). While the male participants of Thigpen & Handy (2018) have a positive attitude towards cycling and even stating that "*biking is just kind of part of life in Davis* [California, USA]" (p. 20). At the age of 15, the female participants had more negative attitudes towards cycling. "*This may be related to external, societal standards of appearance for young women.*" (p. 21).

This also means that cycling is more significant marker of identity for women if the social norm is not supporting this activity. Laverty et al (2015) explains that women therefore have to fight the stigma and, at the same time, fight to create (new accepted) identities. Cavalcanti (2019) also sees this dichotomy in identity forming, hence the title of her article, "*I'm a barbie and I'm bruta* [brutal/tough]" indicating that women can combine a feminine identity with a tough cycling identity. However this is not easy.

4.4.3 Cycling and wealth

Several articles suggest that cycling is a 'poor men's thing', either based on statistical data (Shokoohi & Nikitas, 2017) as well out of other sources (Verma et al., 2018). In several countries owning a motorized vehicle is a matter of status and class and often influences the choice of mode of transport (Verma et al, 2018). In the case of young migrants in Burkina Faso the bicycle is an important object of status and merit.

> "*Not only did it demonstrate their savoir faire* [expertise]*, but it was also a commodity that could be lent out, creating social debts that the lender would take advantage of later. Thus having a bicycle was an asset for adolescents in consolidating their social standing.*" (Faso & Thorsen, 2014 in Veale & Dona, 2014, p. 82)

On the one hand the bicycle is associated with poverty and on the other hand with wealth, which might seem conflicting. In fact, it highlights that the bicycle is more than only a device used for transport and indeed is an object that creates status and identity, sometimes of wealth, in other occasions it doesn't.

4.4.4 Age

It appears that 'coolness', or in other words, social acceptance of peers are the most important identity forming norms applicable for children. At older age identity forming around cycling as mode of transport becomes more complicated, adapting to and moving between multiple identities (Aldred, 2013; De La Paz Días Váquez, 2017; Bernasconi & Tham, 2016).

It appears that the mobilities and how these mobilities are perceived change depending on age. Growing older, young people gain more freedom but are also more concerned with identity forming. Lorenc et al. (2008) and Thigpen & Handy (2008) emphasize that cultural norms and acceptance are of more important aspects in the decision to cycle for older young people (>15). Cycling during childhood is seen as innocent and a form of freedom and joy (Aldred, 2013; Thigpen & Handy, 2018), this image seems to change when children grow older. Taylor & hall (2013) observe that youth are either perceived as a 'risk' or 'at risk' and therefore not taken serious in their mobilities by policy makers. Porter et al. (2010) feels friction between youth and adults, *"*[Y]*oung peoples mobility performance on the streets may cause unease among elders" (*p. 797). The innocent image of children cycling the neighbourhood seems gone and appears to be replaced by suspicion and tension between generations. As Porter et al. (2010) sharply formulates (based on theories of Sheller & Urry, 2006) that "[F]*reedom to be mobile can be viewed as an expression of power* […] *tension in inter-generational relations that is likely to back on the young in the form of mobility constraints and place related exclusions zones*" (p. 802). This highlights that social norms are of great importance on how the bicycle forms identities and how (young) people who cycle as mode of transport are received, use these identities and preform their mobilities.

4.4.5 To summarize

Identity is an important aspect for understanding cycling as a mode of transport. Because youth stands with one foot in the word of children and the other in the world of adults (and therefore creating their own unique world), different social norms apply for them and change over time. Identity forming is an important aspect of becoming an adult, mobility can be one of these identity formers. The bicycle can be an important marker, especially for women and people from low social economic classes.

5. Cycling through numbers: qualitative data on cycling as mode of transport in Mexico City

In 2017, the Mexico City municipality sent a research team into the streets and surveyed more than 4000 cyclists. This data is of particular convenience for this research, since the age of the respondents is known and grouped, this makes comparison between youth (15-24) and the rest of the sample easy. In the upcoming paragraphs, this data set will be explored, which is especially useful for answering the first sub-question. First a short introduction to Mexico City and the sample of the survey will be given.

5.1 Mexico City

Mexico City is the capital and biggest city of Mexico. The UN estimates that in greater Mexico more than 21 million people live (UN World Urbanization prospects, 2018). Mexico-city lies in a valley at an altitude of at least 2200 meter above sea level. The city is surrounded by higher mountains with peaks up to 5000 meters. Mexico City has a subtropical highland climate with temperatures ranging from 3 to 30 degrees Celsius. Most rain falls in the summer months of June, July and August. Mexico-city has an infamous reputation of being one of the most air polluted cities (Romo, 2019), however a great effort is made to decrease these pollution levels. Some of the measures to fight the pollution was the improvement of the public transport system, introducing a car restriction scheme (*Hoy no* circular), and a bike sharing system. By now, Mexico City has a metro and a suburban train connecting the metropolitan area. Furthermore regular and rapid bus transit systems are in place. However, Mexico City has still severe problems with congestion (Ciudad Mexico, Unknown). Therefore, with different policies Mexico City is aiming to become a bicycle friendly city (Ciudad Mexico, Unknown).

Recently Mexico made the news with the discontent over the high amount of femicides (Homicides of females), sexual harassment or other forms of violence against women in the country and city (Villegas, 2020)

The sample

The sample has a total count of 4324 respondents, from which 983 are between 15 and 24 years old (table 4). Table 5 shows the distribution within the age group of youth, which shows that only a small portion is younger than 18 (27%).

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Table 4 Age distribution of total sample (N=4324).

Age	Count	Percentage
<15	21	0%
15-24	983	23%
25-34	1217	28%
35-44	885	20%
45-54	634	15%
55-64	364	8%
65-74	159	4%
>75	34	1%

Table 5 Age distribution withing age group of youth (N=983).

Age	Count	% of total	% of youth
15	43	1%	4%
16	43	1%	4%
17	66	2%	7%
18	114	3%	12%
19	116	3%	12%
20	115	3%	12%
21	119	3%	12%
22	120	3%	12%
23	140	3%	14%
24	107	2%	11%

5.2 Characteristics of cycling as mode of transport

This chapter will again explore the first sub question of this research: *What are the characteristics of urban daily mobilities of cycling youth?* The qualitative nature this data source is very suitable for giving an insight into the characteristics of cycling. Throughout all the data, the comparison between youth (15-24) and the total sample will be made, which is visualized in the graphs. First some characteristics of the trips will be discussed, followed by some indicators of the riders.

5.2.1 Purpose of trip
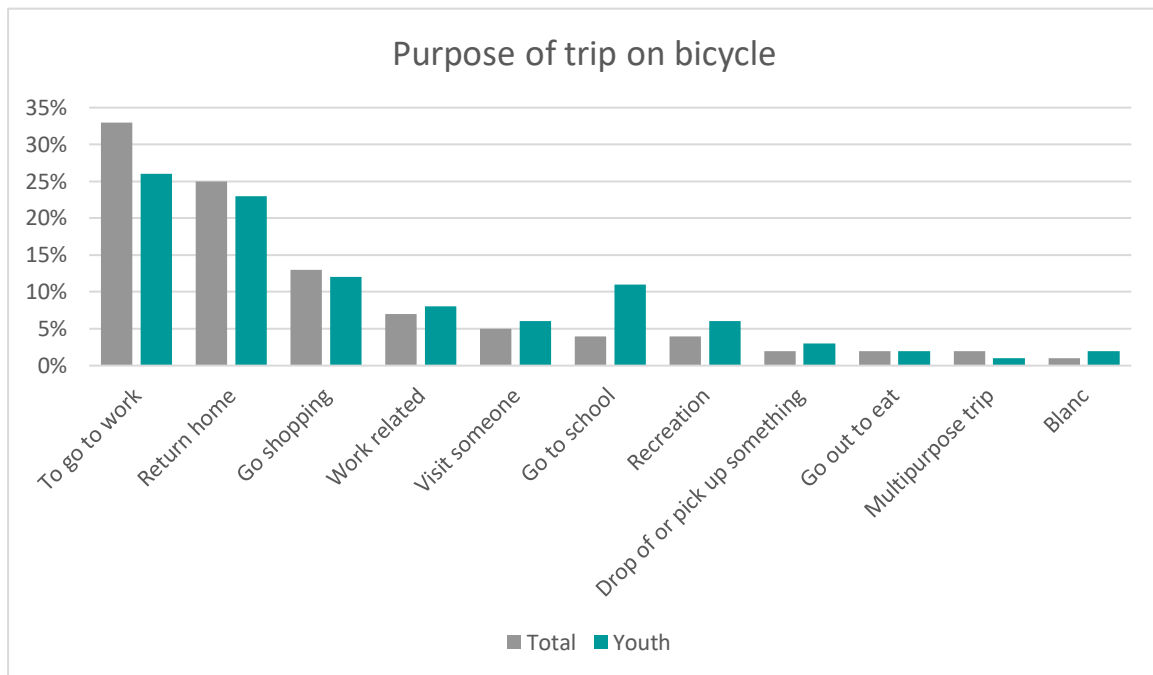
Figure 3 Purpose of trip by bicycle at the moment of surveying.

One of the questions asked in the survey is what the purpose of the trip is. Going home and going to work accounts for the majority of the trips (60%) while this for youth is slightly lower (49%). Not surprisingly is the percentage of trips made to go to school is higher than for the average (11% for youth, 4% in the total). If we see daily commutes as either going to school or work and afterwards going home, for both youth and the total this is around 60% of all trips.

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5.2.2 Frequency

The respondents were asked to indicate how often they made the trip they made at the moment of filling out the survey. The large majority states they make the trip daily, together with 'more than twice a week' this accounts for 88% (87% for youth). Therefore the large majority of the sample cycles very often. It should be noted that the more often one cycles, the higher the chance that this person gets asked to fill out the survey in the streets. Therefore, it is more difficult to encounter cyclists that only cycle once every

Figure 4 Frequency of the trip made during surveying.

two months because of the likelihood that this person was cycling while the researchers handed out the surveys. However, it indicates that the streets are mainly filled with people that cycle daily or more than twice a week.

5.2.3 Time and distance

The survey asked the time of departure and the time of arrival. Then it calculated the differences in minutes. For this analysis, these times have been grouped in time slots of 10 minutes going up to 70 minutes. The last category is a rather high percentage because this
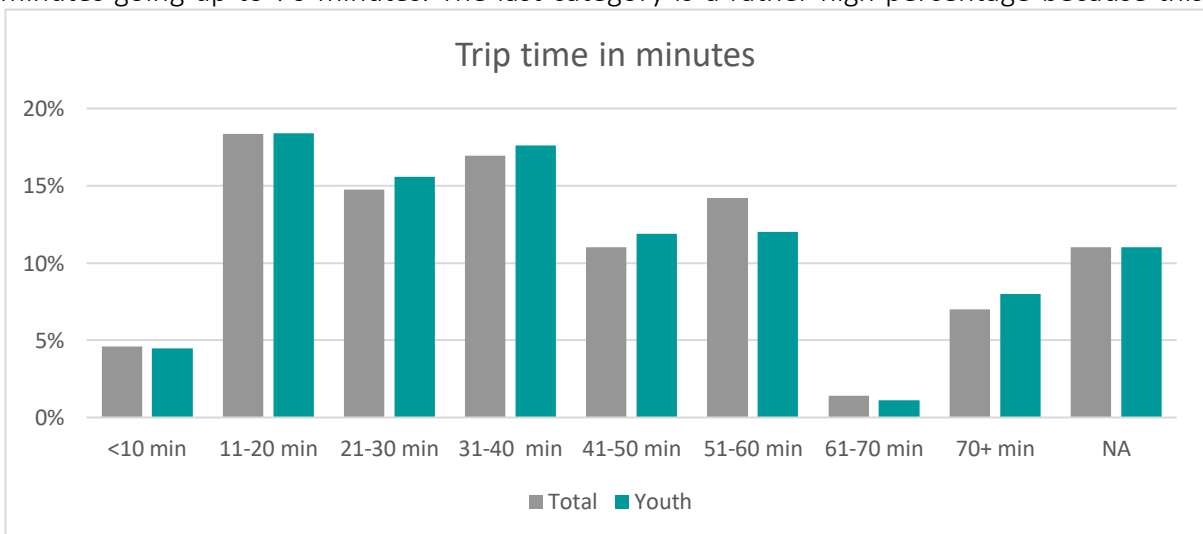
Figure 5 Distribution of trip time in groups of 10 minutes.

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category has a bigger range, namely from 70 till 600 minutes. Most trips made on bicycles are between 10 and 40 minutes, while 10-20 minutes is the biggest category. Hardly any difference between youth and the total sample are observed.

How much distance one covers in the given time of their trip is very dependent on one's physical condition, but also dependent on how fast one can move in the city. According to the municipality, the bicycle moves at an average speed of 16.4 km/h, which is faster than cars (12km/h) and public transport (14km/h) (Ciudad de Mexico, Unknown).

Because the respondents were asked where they came from and where they were going, distance of the trips were measured. Unfortunately, this data has a very high Not Applicable rate (2288 from 4324; 53%) and is not very reliable. Luckily the sample is big enough to still do statements about the distance. The average trip distance was 7,25 km, ranging from 1.7 km till 41 km. The average distance cycled by youth was slightly less, 6.8 km (n=422). For youth trips distance started at 1,8 km and ranged till 29 km. Unfortunately the filled out distances are not always realistic. According to the data one respondent had cycled 22 km in 20 minutes. That should be an average of 66 km/h which is very unlikely. This example shows that also the average distances as presented above are probably a little lower because of the errors in the data.

5.2.4 Who cycles?

Gender

As expected from the literature, women are less likely to cycle. This is what is observed in the data of Mexico city too. Only 14% (621) of the respondents are women. A slightly higher
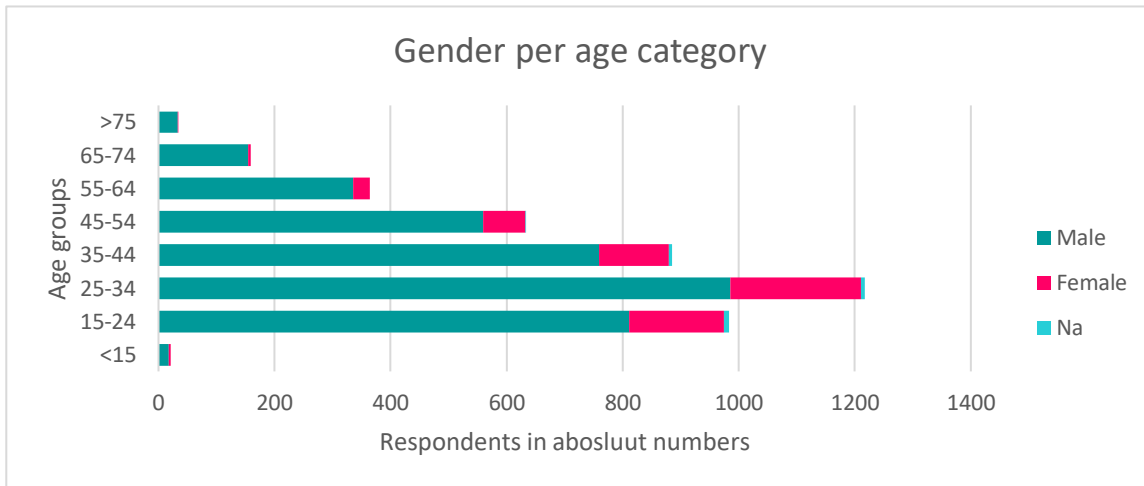
Figure 6 Gender in absolute numbers per age category.

percentage (17%) of the respondents in the youth group are female. Especially at an older age, less women appear to cycle. Unfortunately we do not know anything about the non-response rate. It could be that women were less likely to be willing to stop and fill out the survey, especially taking the safety concerns for women into account. However, this could indicate that the actual number of female cyclists is higher. However, the gap between the two genders is so big that it seems unlikely that this difference is only due to a higher non-response of women. Therefore it is presumable that indeed less women in Mexico city cycle.

Income

The income shown on the graph is the sum of the income from all the members in the household. Average monthly income per person in Mexico is a little less than the first income group of the graph. A household with two earners most likely will
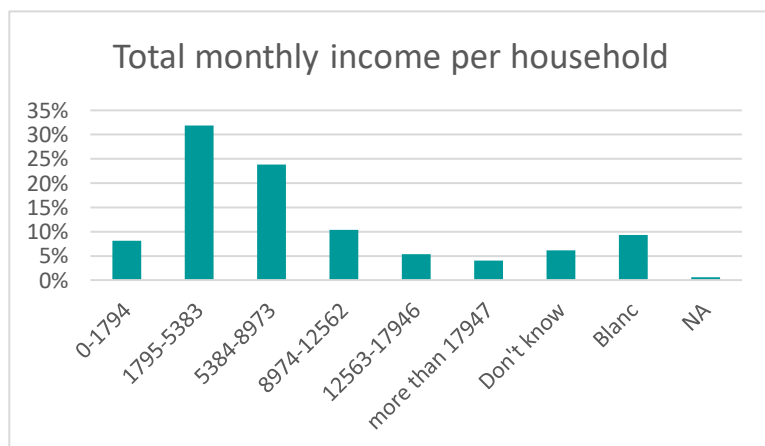
Figure 7 Sum of income from total household from the respondent in US dollars and categories.

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be in the second group (OECD, 2019). However, the minimum income is far lower than this average, around 200 dollars a month. The graph shows that only a small percentage of the cyclers is in the lowest income group, and that the majority is in the second and third group. Very little people from high income groups cycle.

Education

The graph suggests that very little highly educated people cycle. According to UNESCO, in 2017 about 40% of Mexico's population was enrolled in tertiary education (College, university) (UNESCO, 2017). Among the cyclists this is only 18%, showing that it indeed is a
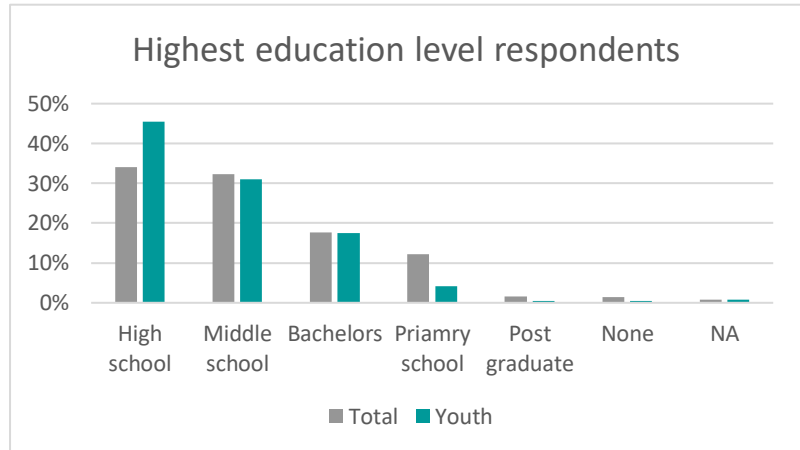
Figure 8 Highest noted completed education of respondents.

little less. Furthermore, the graph shows that youth is more likely to have finished a high school than primary school or middle school and use the bicycle as mode of transport. This can either indicate that youth more often finish all required education in Mexico or that dropouts are less likely to cycle.

Experience in cycling as mode of transport

At last, it is interesting to know how long cyclist are already cycling as mode of transport. It tends that women and youth started cycling more often recently, while in general the largest category has more than 3 years experience in cycling. The biggest group of female youth started 1-2 years ago with using the bicycle as mode of transport. For youth this might be because they grew into a phase in life where they need cheap and independent
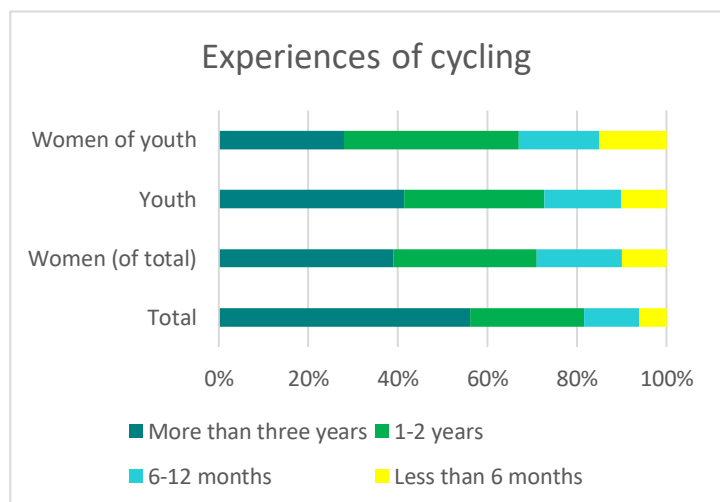
Figure 9 How long the respondent uses the bicycle as mode of transport in years.

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transport, while they did not need that before. However, considering that women are more likely to have started cycling recently, this begs the question if social norms and attitudes towards cycling are changing, being it more acceptable and desirable for women to cycles.

5.2.4 To summarize

The database gives us interesting insight in the characteristics of cycling, what purpose, how often, and how long people cycle. It seems that most people cycle for their daily commute either to school or to work, cycle multiple times a week with a trip between 10 and 40 minutes. Most cyclists cycle already for more than 3 years. Furthermore, men are more likely to cycle than women, however, recently more and more women started to cycle. People with a high income and educational level are less likely to cycle.

5.3 Freedoms and constraints

The qualitative data from this data base has limited abilities to give insights in the concepts of freedom, constraints, and identity. Therefore, this chapter will not discuss the third sub questions about identity forming. However, some data can give us an insight in the second sub-questions; *What constraints and freedoms does the bicycle bring to the daily urban mobilities of cycling youth?*

5.3.1 Reason to cycle
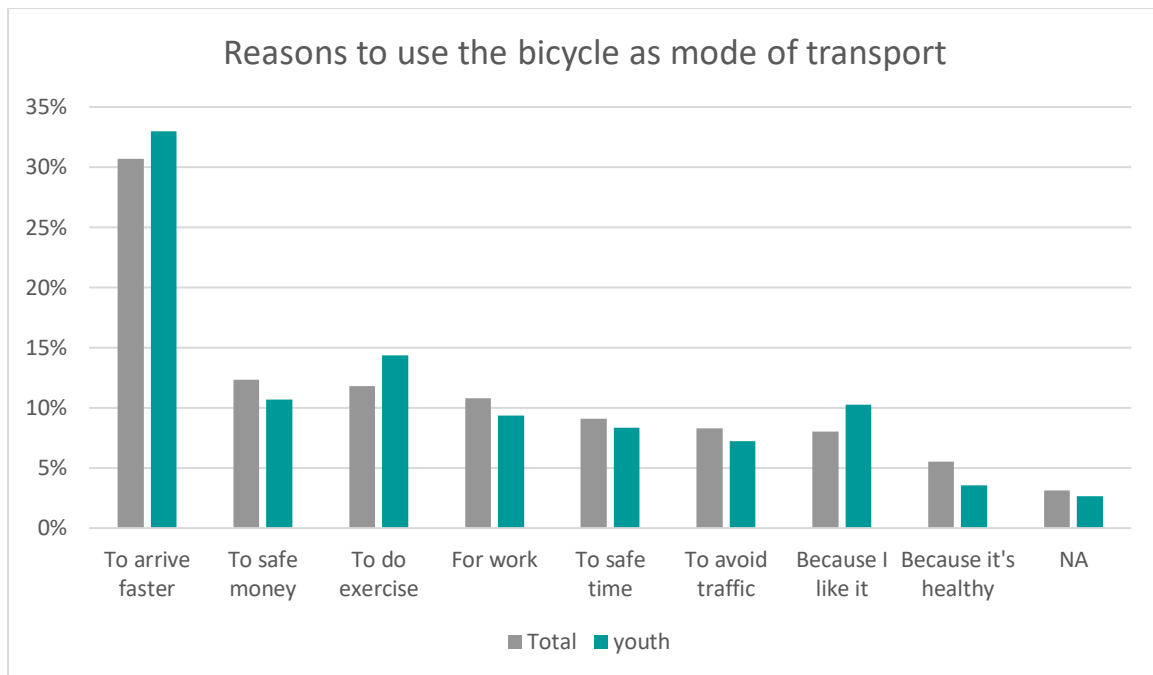
Figure 10 Reasons to use the bicycle as mode of transport of the respondents

The question on why people use the bicycle as mode of transport in general can give an insight into what freedoms it gives. Five out of eight reasons why people cycle are because of practical reason, namely either to be faster (to arrive faster; to save time; to avoid traffic), to save money or because of work. Three other reasons are of less practical nature and are more personal (to do exercise; because I like it, because it's healthy). The results state that from the age group of youth, 41% cycle because they want to arrive earlier or save time and 8% says they mainly cycle to avoid traffic. Therefore we can conclude that the majority cycles for convenient reason related to speed. This also confirms the calculations made by the municipality as discussed in paragraph 5.2.3 that cycling is the fastest mode of transport in Mexico City (Ciudad de Mexico, unknown). Being faster by bicycle appears to be an important advantage of cycling.

Some cyclists do not cycle because of practical reasons but because of personal reasons. This could indicate that they did not cycle in order to mobilize themselves, but to do sports or for recreation. From the age group of youth, 277 filled out one of the three personal reasons. However, only 43 filled out that the reason for the trip was recreation. This indicates that the other 234 went to cycle to mobilize themselves but their reasoning for cycling is not directly linked to pragmatic matters concerning the trip they make. They choose their mode of transport for their daily mobilities because they like it, combining joy and ordinary daily mobility.

5.3.2 Probability of road accident

The respondents were asked about the probability they would have an accident on the road they were on at that moment. The grand majority feels that the chance is high (a lot) or rather high (a bit) of having an accident on the road they are on. This is only slightly lower for youth. Because the
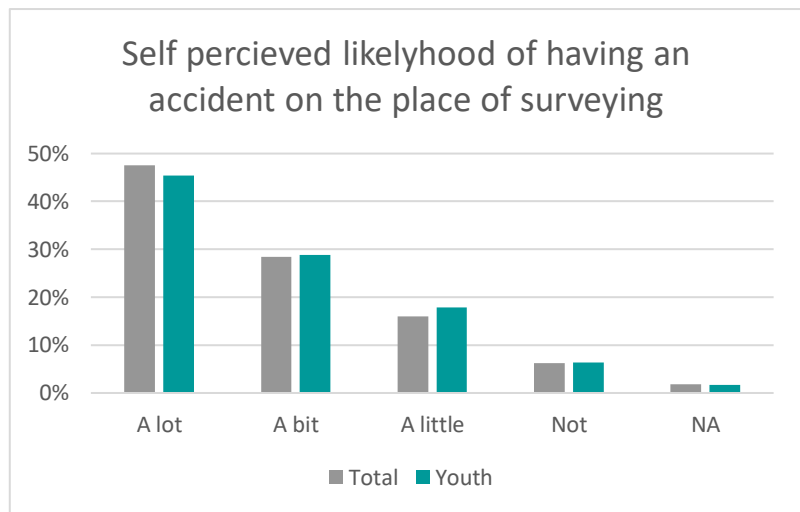
Figure 11 Self perceived likelihood of having an accident on the place of surveying

distribution of the survey was done at different locations in the city, we can conclude that on the majority of the roads people fear getting an accident.

For the 297 respondents who did not feel any fear of getting an accident several roads stick out that are often mentioned. One of them in Av. Culturas in North west of the city (Figure 12). From the 25 respondents

Figure 12 Av. Culturas, Azcapotzalco, Mexico City. From Google maps Streetview.

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surveyed on Av. Culturas, 17 state they do not fear having an accident here. Figure 12 shows that the road does not have any separated cycling lanes nor other cycling facilities. In fact, based on the results of the survey, separate cycling path do not guarantee that people deem the likelihood of getting an accident to be low. From the people surveyed on a cycling lane, 39% felt they have a lot of chance on having an accident (29% a bit; 20% a little, 8% not).

Cycling at night

From the SRA comes forward that cycling at night is perceived with more fear and discomfort. Only 9% (393) of the respondents in this survey cycle in twilight or dark hours in the evening (after 18:00, latest registered: 22:00). The composition of the overall sample generally corresponds with the composition of these 'night' cyclers. This indicates that this data base does not provide evidence that women or youth are less likely to cycle at night, even though the literature suggest they are more vulnerable and protected. Unfortunately, since the distribution strategy is not very clear, it is unclear how the research team distributed the survey precisely. Therefore it is not clear how representative these figures are. If the researchers surveyed more often at daytime, which is a presumable idea, it is more likely they have little respondents after office hours in the evening. Furthermore, the non-response is not known and therefore we don't know if people more often reject filling out the survey at night time, possibly because of fear or simply because they want to go home.

5.3.3 To summarize

Most cyclists in Mexico City cycle because of practical reasons like arriving faster or saving money. However, quite some cyclists have intrinsic reasons for cycling and combine their (daily) commute with the pleasure of cycling. Cyclists in Mexico city feel they have a high chance of getting an accident, on any kind of road, including (separated) cycling lanes. Furthermore, according to the survey, it appears that less people cycle in twilight and dark hour in the evening. There is no difference found between age or gender.

6. Cycling through experiences; a case study on cycling youth in Cali, Colombia

Based on my experience during the time in the field, and the interviews held with five cycling youth in Cali this third part will explore the three sub-questions in a specific cases study on Cali. First Cali will be introduced and framed in the regional context, after that the thematic chapters based on the sub questions will follow.

6.1 Regional context

Santiago de Cali (is short Cali) is the third largest city of Colombia, (+/-2,4 million inhabitants, Cali, 2018), located in the south west of the country. Cali is the capital of de department Valle del Cauca and is situated in a valley. Because of the proximity to the equator, Cali has a tropical climate whereby negligible differences in season are felt. This means that year-round Cali is hot, humid, and wet, with temperatures over 30 degrees Celsius, humidity over 70% and rain all year round.

6.1.1 Internal conflict

(CTRL+) Click on map 1 or 2 to open an interactive map. The map provides some background information on the conflict as described in the following paragraph.

For centuries Colombia has been wrapped in a complex internal conflict between guerrillas, para militaries, narco-cartels and the government. While officially the narco-cartels are mentioned as a separate party, in reality, the cocaine production and drugs trafficking is deeply integrated in the conflict and all parties are involved and profit from the narco-business. (Meltzer & Rojas, 2016)

The geographical location of Cali is of importance for explaining the characteristics of the city and the relation to the conflict. Cali is an important hub connecting the pacific coast and the
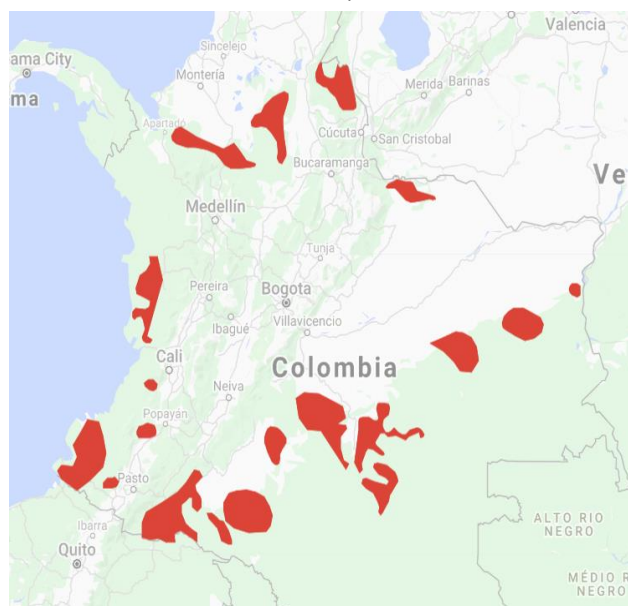
Map 1 Coca producing regions in Colombia. From Colombian Reports.

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southern part to the rest of the country. Cali is connected by road with the city of Buenaventura, which has the biggest port of the pacific coast (and second in the country). This is the only road that connecting the inlands with the entire pacific coast, which is separated by a thick jungle. Over the course of history, the (ex-)slaves (afro-Colombians) came to live in this
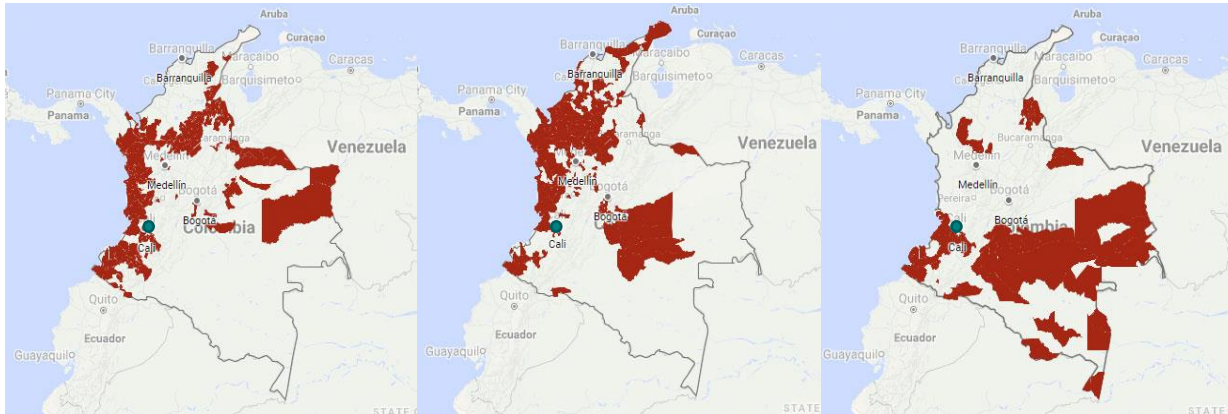
Map 2 Illegal armed forces in Colombia 2018. From left to right: Gulf Clan, ELN & FARC. Blue dot is Cali. From: Colombia Reports 2019b

secluded area, with discrimination and neglect as instigator and result (Asher, 2009). Nowadays the pacific region has the highest poverty rate in the country (ProPacifico, 2018).

The ongoing conflict causes a lot of violence over the past half-decade. The challenging geographies (thick jungle), seclusion, poverty and neglect of the pacific form favourable circumstances for illegal armed forces to operate in these regions. Additional to that the region provides fertile grounds for coca production. The geographies make it extremely difficult for authorities to control these territories, making it a 'free haven' for illegal activities (Kirk, 2003). These activities often led to violent confrontations between the different parties involved in the conflict, including the foreign interference of the USA, leading to many (civilian) casualties (Kirk, 2003).

Up till now between 5.6 and 7.6 million people (+/- 10% of the total populations) have been displaced because of this violent conflict, which is the highest total in the world (CIA, 2020; IDMC, 2018). Most displacements are from rural areas towards urban areas (IDMC, 2018). Afro-Colombian and indigenous populations disproportionately fall victim of forced displacements, accounting for 74% of all displacements (IDMC, 2017), while they together account for less than 13% of the total population (CIA, 2020). Not surprisingly, Cali received a large number of forced displaced afro-Colombians from the pacific region living in the midst of the conflict. Around 45% of the population in Cali is from Afro-Colombian descent, in other big Colombian cities this is about 10% (Cali, 2018b).

Cali serves as the urban hub for the cartels operating in the region (Colombia reports, 2019b). Partly due to this, among other factors, Cali has the highest murder rate in the country, currently around 1200 murders a year (Martell, 2019). Not only murder rates are worryingly high, also violent street crime are common place and have increased in recent years (Colombian reports, 2019).

6.1.2 Recent politics

While Colombia still faces her problems, big steps are made in order to restore peace and order (Meltzer & Rojas, 2016). Despite the internal conflict Colombia has always managed to ensure economic growth, just as Cali did (Cali, 2018). According to the municipality, the economy of Cali showed higher growth rates than the national economic growth (Cali, 2018). In 2018 Cali had a Gini coefficient of 46 (Colombia total: 51.7) (Colombia reports, 2019).

In 2012 the municipality launched *la estrategia de territories de inclusion y oportunidades:* TIO (The inclusion and opportunities strategy). With this strategy the municipality tries to attack multidimension poverty in the low socioeconomic neighbourhoods. The 2016 report displays detailed information of diverse socio-economic indicators, like schooling, health, public and cultural spaces and violence concerning various neighbourhoods (Paláez, 2016). The figures in the report show that the lower social economic neighbourhoods, often score low on health, public spaces, cultural facilities and high on violence and unemployment. Two respondents live in a 'TIO' neighbourhood. Over the past years, poverty and homicide rates decreased in Cali (DANE, 2019).

According to the municipality of Cali, almost 17% of the population is between 15-24 years old (Cali, 2018b). The circumstances in Cali and the great differences between neighbourhoods create several barriers for youth to prosper. The differences between neighbourhoods are often big (Peláez, 2016). Cali has an enrolment rate of 72.2% for primary education (basica primaria), this is about 67.3% for secondary education (DANE, 2018). Secondary education ends at the age of 15/16, after that youth can go to University or start working. Youth unemployment was about 17.5% in December 2018, for women this was about 22,4% for men 13.7% (DANE, 2019).

6.1.3 Mobility in Cali

Motorized transport

Cali has several '*autopistas*' (motor ways) that cross the city, from north to south and from west to east. Cali's main transport is motorized transport, and the city is designed to accommodate that (Mosquera Becerra, 2016). After Bogota, Cali is the most congested city in Colombia. Caleños spend an average of 95 hours in congested traffic a year, for Bogota this is 191 hours. The average speed in the inner city is about 20km/h. (Inrix, 2019).

Bus rapid transit system

Inspired by the Rapid Bus transit (RBT) system in Bogota, Cali implemented a similar looking system in 2009, named MIO (*Masivo Intergrado de Occidente*). MIO is a city wide bus system that has the aim to be an equitable system that provides high levels of accessibility to all residents (Delmelle, & Casas, 2012). While this is the aim, the research of Delmelle & Casas (2012)

Figure 13 Rapid Bus Transit system in Cali, MIO. From: El País Cali.

shows that the highest and lowest social-economic class neighbourhoods have the least access to MIO. The MIO network consists of trunk, pre-trunk and complementary routes, having either separated bus lanes, or shared lanes. The system has different kinds of bus stops, either those that look like metro stations (Figure 13) or ordinary bus stops. Cali has one cable car connection on the west side of the city, where the neighbourhoods crawl up the steep slopes. On a weekday, people spend an average of 55 minutes in public transport during their commute. An average commute has a distance of about 5,5 km. People wait an average of 22 minutes on public transport. (Cali Public transportations statistics, 2018).

Cycling

Cycling as a mode of transport is increasingly growing in Colombia. This goes hand in hand with an active policy to promote cycling. Bogota is worldwide known for her efforts to promote cycling. Since recent Cali has made different plans to promote cycling, including hard and soft measures, like promotion campaigns and increasing infrastructure. While in 2014 Cali had 30 km of cycling lanes (Cali, 2014), by now this is 228 km (El Tiempo, 2019). In 2017 about 18

cyclists died in a road accident, most of them are younger than 52 years old (El País, 2017). As part of the development plan 2016-2019 launched by the municipality *'Cali Progresa contigo'* (Cali progresses with you) Cali aims to be *amable y sostenible;* friendly and sustainable. It states that

> *"Sustainable mobility is privileged, giving priority to alternative modes of transport, bicycle and pedestrian, and mass transportation, through the improvement, maintenance and construction of the road network."* (Cali, 2018c, p. 1)

With this plan the municipality aims to implement 280km more cycling lanes. However, most cycling lanes have the be implemented in the existing infrastructure, which complicates design and execution. Mosquerra Becerra (2016) saw a missed chance, by combining the implementation of the Rapid Bus Transit system with creating more bicycle lanes. Unfortunately the public transport companies argued that cycling is a substitute to using public transport and therefore affecting their business. By then the municipality agreed with this argument. By now, the Cali municipality seems to be in favour of promoting cycling in Cali, alongside the public transport system. Nevertheless it shows that cycling and mobility are political and subject to power struggles, which can change over time.

Beside that the municipality is concerned with getting more people to cycle, several other parties are active on this matter. Cali has several (informal) bicycle collectives that promote cycling in their own way. One of the biggest is BiciArte, a group that promotes cycling mainly because of environmental reasons. Every Wednesday they organize a collective bike ride through different parts of Cali to ask attention for cycling and to claim space on the roads. Furthermore, are there several non-profit organisations active in Cali, like promote cycling among youth (Vivo Mi Calle) or initiatives that bring together people working on the topic (*Mesa de transporte non-motorizado*).

6.1.4 Partners and respondents

The fieldwork has been realized in collaboration with the Universidad Del Valle, in close collaboration with the departments of social sciences. Universidad del Valle is the public university of Valle del Cause, the department from which Cali the capital is.

The research was done as part of the research *group Acción Colectiva y Cambio Social* (ACASO): Collective action and social change. The group consist of several professors, PhD,

master, and bachelor students doing their research on a subject related to the field of interest of the group. The research group focusses on several *lineas de investingación* (lines of research):

- Armed conflict, violence and criminality,
- Action frameworks, state formation and social structuring
- Political processes, social cleavage and political cultures
- Resistance, interaction and meaning frameworks
- Urban studies
- Anthropology of the state, bureaucracies and public policies.

Furthermore, for this research co-operations with different local organizations like *Mesa de transporte non-motorizado,* BiciArte and BiciMia were accomplished. Unfortunately, due to the abrupt ending of the fieldwork, these collaborations remained limited and superficial.

The five respondents of the interviews all live in different places in the city and are from different social economic classes. All respondents study at the Universidad del Valle.

Leidy (22) lives with her partner in the south of the city and just finished her degree in foreign languages. She gives private classes in foreign languages at het students homes and works as an editor.

Maria-Paula (23) lives with her family in the far north of the city and is at the beginning of her studies in literature. She is very involved in promoting cycling in Cali. She had different side jobs over the years, like giving workshops on cycling as a mode of transport to primary school children, handing out free helmets commissioned by the municipality and working as a bicycle carrier.

Fransisco (22), in contrast to the other respondents, only lives in Cali since one year and lives by himself. He moved to Cali to start his degree in engineering. He lives in a neighbourhood in the south that is included in the TIO programme. Besides studying he works at a supermarket in a village south of Cali.

Brenda (21) lives with her parents in the north of the city in a middle class neighbourhood. She is in the beginning of her studies in biology.

Charly (24) studies on the subject of sports and physical activity. He lives with his family on the sloping neighbourhoods located on the steep hills on the west of the city, a neighbourhood notoriously known for it's violent reputation.

Covid-19 pandemic

The restriction in order to curb the spread of COVID-19 virus had a profound impact on the mobilities of the Colombians and the respondents in this research. In an early stage, Colombia implemented a strict lockdown. A lockdown in a country like Colombia (or more broad: in Latin America) is hard to uphold, since a large portion of the Colombians work in the informal economy and live day to day (NOS, 2020). The social and economic consequences of the lockdown make the lockdown not sustainable and for some not feasible at all. This made the effects of the lockdown limited, since movement and contact remained and infection numbers increased. Around July 2020, Latin America was the new epicentre of the pandemic. The only positive aspect of the lockdown in Cali seem to be the impressive drop in homicides in the first months of the lockdown (ElPaís, 2020). Unfortunately, this backfired in May and June. Homicide rates increased again when the lock down became less and less tenable and more movement occurred (ElPaís, 2020b). Fortunately all the respondents could continue their education and work online. However, since the moment the fieldwork abruptly ended until this thesis was finalized (4 months later), they have been limited to cycle or leave the house (only for necessities).

The empirical data comes with an interactive map of Cali. All quotes, fieldwork notes, photos that refer to a specific place in Cali are added to give the reader a lively image of the situation in Cali. The map is designed to support the written text with a visual aspect, it is not a way to present the data found in this research. A screenshot of the map is shown, CRTL+Clic on the map to open the interactive map.
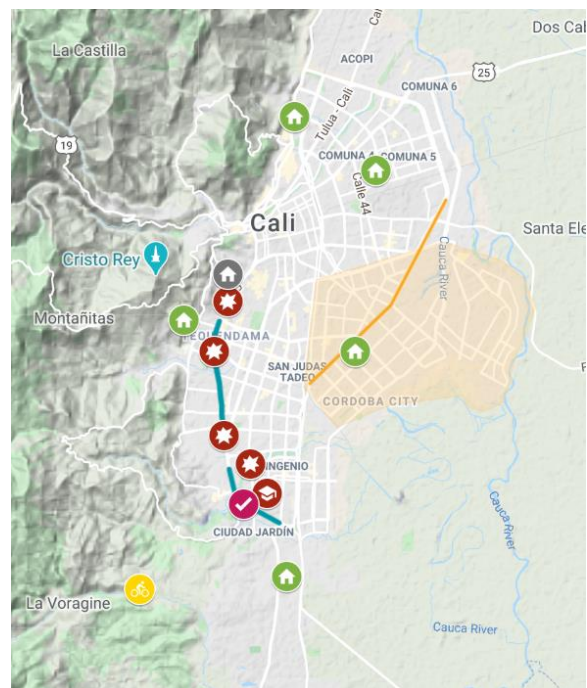
Figure 14 Screenshot of interactive map of Cali.

6.2 Characteristics of cycling as mode of transport

The five respondents gave an insight in their cycling habits in order to answer the firs sub question: *What are the characteristics of urban daily mobilities of cycling youth?* As discussed in this chapter. Besides the characteristics of the respondents themselves, this chapter discusses little of the personal characteristics of cyclists, this mainly comes back in the identity chapter, since it has more to do with social norms and stigmas.

Table 6 Characteristics of the cycling habits of the respondents.

Name	Charly	Maria Paula	Leidy	Francisco	Brenda
Experience	+9 years	+/- 5 years	+/- 3 years	+/- 1 year	+/- 6 months
Frequency	Daily	Daily	Daily	Daily	Weekends
Destinations	University, Sports practice, friends, Rio Pance	University, friends, meetings, trips to nearby villages	Work; different houses of her students, hang with friends	University. Sometimes work, explore the city	Park, corner shop, spend time with friends
Maximum distance	+15 km one-way	+30 km one-way	Enough to cover the city	Enough to cover the city	Max. 1 hour, with sufficient breaks
Learned cycling at age of	7	5	4	15	11

6.2.1 Destination and frequency

The five respondents range from "*the bicycle is my main mode of transport*" (Maria Paula) till "*only in the weekends*"(Brenda) and from almost 10 years of experience till only 6 months (see table 6). The bicycle is mainly used to go to university and work on a daily basis, mainly during the week. Brenda, however, does not cycle to university since that is too far and her physical fitness does not allow it. She does hope in the future she will go to more places on bicycle. However for now she was still "*getting to know her bike*", since she started cycling recent. Additional to the daily commutes of the respondents, the bicycle was used for activities like going for lunch, hanging with friends, or visiting the nearby river (Rio Pance) and parks. Leidy describes it as "*one of the alternatives ways of hanging out with your friends*". Nobody uses the bike in the evening often nor for activities common in the evening like going out for dinner, drinking, and dancing. If they do not take the bicycle they most often go with public transport, especially MIO. Sometimes they take an uber or get a ride by motor or car from friends and family. When talking about the future all respondents state they see themselves cycling more.

Francisco might see himself having a motor, and Charly comments on the practicalities of having a car when you have a family. However, both say that they prefer that the bicycle stays their main mode of transport.

6.2.2 Experience

In the interviews the respondents were asked how long they use the bicycle as mode of transport and when they learned cycling. All respondents started cycling when they needed either fast or independent transport. For most this was when they went to university or for Charly when he started doing sports practice when he was 15. Leidy started cycling when she moved to the south of Cali and she got too bothered with traffic and slow public transport. Both Francisco and Brenda who cycle the shortest as mode of transport told that they learned cycling late. Both were scared at younger age, Francisco tried at earlier age but broke his arm in these attempts, it took him until his 15th birthday to overcome these fears. The rest learned during early childhood. At this age the bicycle is a toy and used for fun. Later in life they picked up the habit of cycling again and started using their bicycle as a mode of transport.

6.2.3 Distance and gradient

How far the respondents cycle varies greatly. The more experienced riders like Maria Paula and Charly cycle over 15 km on a daily basis and reach even further distances in their free time, like visiting nearby villages. Brenda cycled the shortest distance and explains that she thinks her maximum time she could cycle is 1 hour, if she can have sufficient breaks. Francisco and Leidy live close to their daily destinations, but both say they enjoy riding the city and going different places further away. A popular cycling destination and recreational spot is Rio Pance. To get to Rio Pance one should cover at least 250 high meters and more if you want. Cali is situated in a valley, on the west side high slopes mark the edge of the city while at the east it is flat. This means that Cali itself is rather flat. Francisco highlights: "*there is something I like about Cali, it is that Cali is like, flat.* [...] *it doesn't exactly have hills where you have to work harder while pedalling.*" This makes cycling in Cali rather easy and less of a physical effort, however the mountains are close for the cyclists that enjoy that.

6.2.4 To summarize

Cycling for the respondents is not only useful for their daily commutes, they also cycle to enjoy themselves and hang with friends. The more experienced rider cycles rather large distances,

covering the entire city. Especially because of the flat circumstance and average size of Cali, this is possible.

6.3 Freedoms and constraints

The interviews gave a good insight into what cycling in Cali looks like. This chapter will explore the second sub questions about what freedoms and constraints the respondents feel while mobilizing themselves by bicycle. Again the chapter is not divided in freedoms and constraints but themes are discussed. Fieldwork notes of the researcher are added that illustrate the situations and resembles the experiences of the respondents.

6.3.1 Speed, friction, and flexibility

The respondents often state that cycling is a fast mode of transport in Cali. Traffic in Cali is very heavy and often clogs, making motorized transport very slow, which also affect the public transport system (MIO). For most respondents and destinations, cycling is faster than public transport, sometimes up to six times as fast. At times, the entire bus system collapses (e.g. because of heavy traffic) and no more buses come at all. Therefore, the bicycle is not only faster, it is also more reliable.

The bicycle gives the rider the ability to move through the city more conveniently, avoiding traffic or waiting for public transport. Therefore is riding a bike not only faster than congested traffic, there is also less 'friction'. Leidy, who leaves the house in the morning, visits several destinations (houses) for work and comes back home in the evening, shows that the bicycle makes her a lot more flexible.

> "[T]*o go to one house, it takes me 10 minutes. However, with MIO it takes me half an hour, one hour from one house to another. So* [with bike] *I don't have to plan my day thinking about the times it takes with Public transport, on the bike you don't have to do that.* **I see, so you are more free with you bike, basically?** *Yes, totally! Including as well that there are places in Cali where the MIO doesn't go, nor alternates* [other public transport] *go those routes, or when they drop you of far away and you have to walk. So obviously this walk takes time, on top of that you paid for the MIO as well."*

This example shows that Leidy safes time and money by using her bike but also that she is more free and flexible to arrange her day as she pleases, instead of being dependent on public transport times and routes.

6.3.2 To control and to relax.

While for an outsider it might seem like hard work, uncomfortable and risky mode of transport, the respondents show that is actually a relaxing activity. It gives them freedom and they feel good while cycling. Francisco explains that cycling creates a space where he feels free and in control.

> *"Because I'm sitting, I'm going in my own rhythm. When I want to cycle faster? Well, I cycle faster. Or do I want to go slower? I cycle slower. I can go to the places where I want to go when I say so. Well, that's nice for me. When I do not want to pass by a place that doesn't appeal to me, well than I just change the destination. So, I can go, as to say, the way I want to go and that pleases me a lot."*

Leidy gives another feeling of this freedom given to her by using the bicycle.

> *"Yes, I feel more free. Let's say it's afternoon and a friend says "come over", "come to my house", "let's go to the U* [Universidad del Valle]*". And like already one just thinks, ooh, I should get up, take the MIO or wait for it, then arrive. By the time you arrive, you are already tired, stressed and then you have to go back. With the bike, on the other hand, you take it, you go, and later you go back. I should say it is a feeling of freedom."*

Both quotes show that not only the bicycle gives them more flexibility but also that they can decide how, when and why they move. They are in control of their speed, routes, timing, rhythm, destinations and therefore have more freedom and power in designing their own lives. Maria Paula provides a good summary; *"the bicycle means freedom for me, it means power to move myself in a free way, an autonomous way*[.]"

These feelings of freedom are often part of a bigger feeling of joy that the bicycle brings. For Charly cycling is a moment of peace, where he creates fresh perspectives on his daily grind.

> *"Often if I didn't enjoy the day, then I enjoy cycling a lot. Well, I normally listen to music and after that it... it harmonizes me. Or sometimes when I'm tired or bothered, it relaxes me."*

> *"Well, I felt that* [when] *you are riding a bicycle, seeing another perspective of the day to day, I really like that."*

While riding his bicycle he can escape to his own space. He has time for himself, enjoying the ride and his music, being free to cycle in the way he likes and prefers. He suggests that cycling is also good for his mental health, as Maria Paula confirms. This implies that cycling is not only

nice because of the advantages as a mode of transport, but also that the act of cycling in itself is nice to do and useful.

However, the respondents also state they sometimes do not like cycling, like when they are tired or their muscles are sore (because of other physical activities). Sometimes the respondents feel stress and fear while cycling, as will be discussed in the next paragraph (6.3.3). Therefore, there tends to be a thin line between until what point cycling is relaxing and when it causes tress or discomfort. However, the respondents argue that these feelings of discomfort are not comparable with the feelings of freedom and joy the bicycle gives.

6.3.3 Safety

Fieldwork notes 4-3-2020: "I already stared at google maps for over 5 minutes. The route it showed seemed rather simple. However I wanted to make sure I would remember it by hard to make sure I wouldn't get lost, because getting lost and having to get out your phone is a bad idea. After 5 minutes of staring, I still was suspicious and decided to ask my Colombian roommate to help me. He looked at google maps and slowly shook his head... The area I wanted to go is not the best area in town and he would not recommend me to get lost there, especially at this time (evening). He advices me to either go with public transport or take a taxi."

While this is my own experience as a foreigner cycling in the city. Similar stories concerning safety are told by the respondents in this research. For example Leidy definitely does not cycle at night because she doesn't feel safe and Francisco takes the bus when he has to take his laptop to university to minimize the chance of getting robbed. The stories heard and the advice received during the fieldwork, affirm that these examples are just two of many. Cycling is an exposed and vulnerable mode of transport and Cali is a city with severe security issues. This makes cycling a risky mode of transport in Cali.

The respondents take several precautions to minimize the chance of harm. The most common is not cycling at night, which is generally accepted advice in Cali. In fact every mode of transport at night is more risky. Furthermore, certain areas of the city which have the reputation of being unsafe are either avoided or taken with caution. Maria-Paula explains that she prefers taking different route at nightfall, avoiding certain roads.

> *"[…] Simón Bolivar, which is a motorway, it is very wide and fast. However, at night, for example, it would not be advisable to transit there because it is dangerous, [..], for the danger that you could get robbed or that as a women they can do you harm"*

At last there is *Dar Papaya* (to give papaya), which is a typical saying in Cali which means being precautious in order to not get robbed or harmed. Or in other words, you should not make it too easy. Fransisco and Charly both state that their bikes are not so good, new, or fancy, which makes that they can cycle in their areas without attracting too much attention and minimizing the chance of getting robbed. The girls all state that they sometimes prefer cycling in a group or with others, so they feel more safe. Since another common *dar papaya* advice is never to walk or bike alone at night, especially as a woman.

Safety, residential area and gender

All Caleños know exactly where and where not it is considered safe. Avoiding unsafe places is very common, however, this is not always possible, especially when you live in such an area. Both Charly and Francisco live in a neighbourhood that is perceived as unsafe. Charly has lived his entire life in his neighbourhood; "*like you know, my neighbourhood is a mess*". Nevertheless he didn't expect he would almost get robbed from his bicycle close to his house. Francisco is not from Cali and only knows he lives in an unsafe neighbourhood because "*they have told me that in general where I live, it is like medium dangerous, that's why I try to avoid getting robbed*". Maria Paula explains, based on stories from her friends, how it is in neighbourhoods in the east of Cali.

> *"So, for example, in the neighbourhoods in the east of Cali, the insecurity is extremely serious. If you go out on your bicycle and just around the corner something can happen to you. Therefore, the situation for them is more delicate[.]"*

Therefore they cannot always avoid unsafe places, and are often exposed to unsafe situations.

While there are 'good' and 'bad' places, Charly and Maria Paula both highlight that, in the end, it does not matter where you are, something can happen everywhere. "*Honestly, nobody is 100% safe here in Cali*" explains Maria Paula. Stories of (armed) robberies of cyclists in transit are not uncommon, even the stories whereby only the bicycle is stolen were heard often during the time in the field. However, even when they are not in transit, the respondents fear their bikes gets stolen. This makes the respondents hesitative to take the bike if they cannot safely park it.

All three girls reflect on the gendered aspect of unsafety in Cali. Brenda explains that *"If a woman alone goes out with her bicycle, she is a lot more vulnerable than if a man goes cycling alone, and a young woman that is attractive even more."* When she got asked why this is and if she has an example she tells that she doesn't have a *"personal example no, [...] but the figures show that they [women] are a little bit more vulnerable."* Maria Paula explains that she normally takes her heavy padlock chain with her, first of course, to lock her bike. However in transit she likes to keep it withing reach since she imagines that it will serve well as a defence weapon if somebody tries to harm her. The cycling women in Cali face these risks, but Maria

Figure 15 Taxi's parking on the cycling lane. Calle 5 ('la quinta') Cali, Colombia. From: Google Maps Street view.

Paula understands that this is an important reason not to cycle.

> *"So it is a reality we should not ignore. And why? Because, well…, it's very, very serious, not? They put us in very vulnerable situations. That is why girls don't like to ride their bikes because they can touch them, they can harm them."*

Road safety

Fieldwork notes 21-02-2020 (interactive map: fieldwork notes; accident): "It was twelve in the afternoon, the hottest and very busy time of the day, and I took my bike to the University. The first part of the route the cycling path is at the side of the road, separated by little blocks (see figure 15). This gives me some protection from the cars, but it does not stop the motors from

entering my lane. It also means that taxis cannot park directly along the sidewalk and therefore park along the cycling lane.

Before I know it, a door of a taxi opens, hits my bike and I fly over my bicycle and crash on my back."

All respondents share at least one experience they had with feeling unsafe or stressed in traffic, (almost) having an accident or complain about rude drivers. The respondents see this as a problem of behaviour, respect and awareness. Maria Paula thinks that

> *"[I]n a perfect society, where everybody respects each other, we would not have needed cycling lanes. But at this moment these lanes are fundamental because they allow us to take care of other people."*

Infrastructure

As discussed before, the cycling network of Cali has been expanding over the past years. However, cycling in Cali still means you often have to cycle on the normal roads without marked parts for cyclists. Almost all respondents state that they feel uncomfortable in heavy traffic, they have to be more careful, feel more vulnerable and they go slower. They all prefer

Figure 16 On the left side a cycling line suddenly stops. Calle 13, Cali, Colombia. From: Google Maps Street View.

the separate cycling lanes, on these lane they do not have to bother with other traffic which increases the feeling of joy and freedom as described in paragraph 6.3.2.

However, as noted during the fieldwork and argued by Charly, the lanes are not always designed well (figure 16; interactive map: Figure 16 & 16b).

Fieldwork notes 14-02-2020: "Today I cycled from my house to the university for the first time. Everybody told me it is a safe and nice route, with a well designed cycling lane (Interactive map: Fieldwork notes, end of route) and that I should be fine. However, they forgot to mention that at some point the cycling lane stops and that it is not very clear where to go next. Especially because it stops at a complicated crossing with fly overs, a bus terminal, tunnels and god-knows what more. After cycling back and forth several times, trying to figure out where to go, I decided to take the main road.

It took me at least 4 or 5 trips before I found out the best way to cycling past this crossing, which indeed is partially on the main road."

The cycling path as described above (Figure 17; Interactive map: 'La quinta') is constructed along one of the main trunk lines of MIO connecting the north and south. The cycling path is separated, rather wide and mostly covered by the shades of trees. Charly's often cycles this route, where he can cycle rather fast in an urban setting (+/- 25 km/h). This indicates that this

Figure 17 Separated cycling lane in Cali, Colombia. The middle two lanes are bus lanes. Calle 5, Cali, Colombia. From: Google Maps Street View.

cycling path has little friction, and high viscosity. This cycling lane is considered one of the best in Cali, despite that it sometimes suddenly stops and is not always separate.

Despite the efforts to implement more cycling routes at some point cyclist cannot avoid cycling on roads where no space is reserved for them. This leads to a power struggle between road users (Mosquera Becerra, 2016). Maria Paula observes that cyclist take in less space and therefore contribute to the solving congestion problem. She believes they should be rewarded for cycling:

> *"Because mobilizing by bike also implicates taking care of other people,* […] *it helps as well to redistribute the public space. It is ecological because obviously we do not emit any type of emission when cycling. We have a pact with the future, a pack with the environment'*

> *"It is fundamental that we take care of the cyclist, because they are actors on the road that first are doing a very valuable job. […]. So that are the people that we should take care of. No? "*

One of the biggest cycling collectives in Cali, BiciArte, confronts this power struggle every Wednesday evening. In a cheerful way the cyclist ask attention for their presence and create awareness of cyclists.

6.3.4 Sweat and climate

Leidy laughingly states that cycling in Cali is synonym to sweating. This makes her hesitative for going to official meeting by bicycle, because she will arrive sweaty. However, for informal sweating is less of an issue, presumably because of the informal situation and the opportunity to refresh herself after arrival. Not only Leidy, every participant states that they dislike the sweat and heat in Cali and that this influences when and where they cycle. Some prefer cycling in the mornings and evenings when the temperatures are cooler, while others find coping mechanisms like Leidy.

> *"[W]hen I arrive at the houses of my students to give a class, I have to ask if I can go to the bathroom to wipe of my sweat. Well that's not very cool. But honestly, I don't care, this is nothing compared to what they* [the advantages] *are when you are riding a bike."*

The hot humid climate of Cali also implies that is rains often. However, while some mention they do not like cycling in the rain, this seems less of a problem. Presumably because of that

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cycling in the rain is easier avoided than cycling in the heat and therefor less influences their mobilities.

6.3.5 To summarize

Several freedoms and constraints are mentioned and discussed by the respondents. Freedoms mainly concern around practical reasons like being faster and more flexible and personal reasons like joy control and relaxation. However, as comes clear from this chapter, cycling in Cali is a challenging on different aspects. Fear for road accidents, poor infrastructure, sweating and fear of harm are all constraints that are felt on a daily basis. Despite the challenges, the respondents would not want to stop cycling for the world. The ability to design and control their lives as they please and the feeling it brings them makes them want to take the disadvantages for granted. However, the balance between the freedoms gained and the constraints felt is sensitive, which makes one wonder how easy it can tip over to being more constraining than freeing.

6.4 Identity

This chapter will explore what attitudes towards cycling are present in Cali, how the respondents deal with these attitudes and how the bicycle marks their identities.

6.4.1 Social norms and kinds of cyclist in Cali

All respondents see a dichotomy, the people who have positive feelings toward cyclist and the ones who have negative feelings towards them. Often they feel that the positive attitudes are from the ones that cycle as well or the ones that identify with aspects of cycling, like the freedom, being sporty or caring for the environment. Leidy sometimes feels that people might get to positive, often brag about cycling and feel as if they are better than others that do not cycle, which she does not like. On the other hand, there are the people that do not have positive feelings towards cyclist. According to the respondents this might be because of (road) space sharing or the idea that it is a poor people's thing. Maria Paula sees a strong stereotype that cyclist are lazy and 'useless' people that do not work nor studied. Notwithstanding, in general the respondents think that cyclist in Cali have a rather positive reputation and that people are receptive and welcoming towards cyclist in their city.

All respondents make a distinction between the people that cycle for recreation and sports and the ones that cycle to mobilise themselves. Within the group of people that cycle as mode of transport different types are recognized. Like the people that are overly proud as mentioned above. Some refer to the 'reckless' or 'rude' which are the cyclist that cycle dangerous and do not respect the traffic rules. Maria Paula feels that this type of cyclists are the reason that some conductors don't respect or like cyclist. Furthermore there are the activists, environmentalists, the carriers and the people that lack alternative modes of transport. When asked what group the respondents themselves fit in, they often see themselves as a mix of different types and purposes or would not describe themselves as one of these stereotypes and see themselves rather neutral or indifferent.

Costs

One image the respondents think exist, is that people think cycling is something for poor people, assuming that they do not have the resources to move in other modes of transport. Maria Paula feel this idea still exist, Charly and Leidy think that this image is changing (see next paragraph). However, nobody feels that they are part of this group. Interesting is, is that all

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participant mentioned the advantages of saving money by using the bicycle often. Furthermore, none of them own other modes of (motorized) transport and therefore are dependent on public transport, taxi services or friends and family. Despite this, they do not feel that they are in the category of the people that cycle because they lack alternatives. Presumably because they have the (financial) choice to take public transport when they want, they feel less dependent on the bicycle. Another reason could be that they consciously choose this mode of transport and really enjoy it and therefore the bicycle does not feel as their only option but as their preferred option. When asked how they deal with the stereotype of cyclist being poor, they answer that they do not really care what others think about them, nor do they really have the idea that people think that about them.

Chancing social norms

On different topics and among different respondents changes in the social norms came to the table. One aspect mentioned is the change in gender perspectives on cycling. Leidy, who learned cycling very young, explains that back in those days it was not very normal for women to cycle. Because she grew up with male cousins, she learned nevertheless. She sees that now a days it is very normal for a 4-year-old girl to have a bicycle as toy. Sometimes she hears that people believe women should not cycle or ride horses because of fable concerning loosing ones virginity, but she highlights that this taboo is from the past. Right now she doesn't feel a conflict in being a women and riding a bike, she even thinks that in Cali there are more women cycling than men.

Charly and Leidy both see that cycling was associated with low social classes, but that this is changing. They now see all kind of people cycling, not only the ones that lack financial means to use other modes of transport. Now people use their bicycle, car, or motor alongside each other. All in all they observes that more and more people cycle in Cali. Leidy sees that cycling by now is *"like a movement, something that can change the city."* She does not only see more cyclers, but also sees that physical aspect of the city and in the attitudes towards cyclist are changing.

6.4.2 The bicycle and identities

How connected the respondents felt with their bicycles varied greatly. Some would identify themselves more with the bicycle than others. Brenda, who cycles the shortest, explains that

she would not yet say that the bicycle is part of her identity, because it does not influence her life as such. Francisco does feel some connection with cycling as mode of transport but would not identify himself as cyclist because he believes he is not sporty enough. Maria Paula and Charly identify themselves a lot with the bicycle. Maria Paula feels that the bicycle is "*a central part*" of her, and Charly describes it as "*another face*" of him. Charly also mentioned that childhood memories influence why he identifies with the bicycle. Leidy does not really see the bicycle as a part of her identity but more as a "*supplement*" to her identity, which influences her identity. Before she was a rather stressed and busy person who never had time. The bike saves her a lot of time, which makes her less stressed and busy, and in general a more relaxed person. Freedom and joy marks one biggest benefits for the respondents and explains for a great deal why they identify themselves with cycling. This highlights that the bicycle means a lot more to the respondents than only a mode of transport.

Feeling connected

The respondents show that cycling creates a feeling of belonging and connection to other cyclists. Leidy enjoys encountering other cyclists and often salutes them.

> "*Let's say when I go by bike and I see somebody that I don't know… you know I might get to say hi, nothing more. Just because they are part of this* [group of people who know the advantages of cycling]'.[…] I'll *Probably never get to know this person, haha. But at the same time you know that you can talk to them. I mean like, it is weird, but they create a group, like a bike niche*"

Interesting was, that she explained that she even felt connected to me, while we never met each other in real life, but only because she knew I cycled in Cali. Charly feels partly connected, especially because he distances himself from '*the reckless*' cyclist in Cali. Despite that he later confesses that he not always respects the traffic rules while cycling either. Nonetheless they all cycle because they want to and most feel proud to be part of the group of people that cycles as mode of transport.

Bigger cause

For all respondents mention several benefits of cycling, like doing exercise, joy and convenience. However they all mention other benefits of cycling that do not benefit them directly. Most mentioned is the positive impacts of the environment. While they are all aware

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of it, most do not state that they identify with this aspect of cycling. "*I never entered the world of cycling just because you thought you were environmental friendly*" explains Leidy. However, somewhere they are proud of doing good, but somehow they are hesitative to identifying with this cause. A reason they do not identify themselves as activist could be that 'the good thing' they do is part of their daily grind, they feel humble or they do not like the reputation that comes along with the identity. Maria Paula, in contrary, does identifies herself as activist.

> "*We are activist because I consider myself part of the people who, in addition to riding a bike to move to work or do sports, we do it out of conviction. We do it for ourselves, to help in some way, to do social work.* […] *so we are like evangelizers of the bike, all the time. It is worth to change something*[.]"

Also Charly explains that he sometimes tries to "*infect others*", however for him, this is more because the bicycle means freedom and happiness which he would like to share with others. All in all, the respondents carry a form of pride with them, because they know the cycling has a lot of advantages for the city and the world, but some feel uncomfortable with identifying themselves with that.

Conflicting identities

Most respondents did not feel any conflict between different identities and cycling. Only one conflict came up, which was mentioned by Maria Paula and Leidy. They both felt a conflict between being a daughter and cycling. Leidy explains that, especially at the beginning her parents were very worried about her cycling, fearing that she would get an accident or get harmed. Maria Paula tells a similar story. What influence this had on their mobilities is not clear.

6.4.3 To summarize

Most respondents feel that there is a rather positive attitude towards cycling in Cali, however some remark the negative stigma that exist. Cycling is starting to become something more and more people do in Cali, gender and social economic class seems to become less important. There appears to be some threshold to identify as cyclist, which is linked with experience and frequency of use. For most respondents the bicycle is an important part of their identity. The bicycle has an important role in their lives, and with the feelings and benefits they identify.

7. Connecting the dots; synthesis

In this last part all the gathered data is put together and the three sub-question concerning characteristics, freedoms and constraints and identity are discussed one more time. Overlap and differences will be highlighted. This time some concepts and ideas from the conceptual model and other literature will be added in the analysis to create a critical view on the whole. Figures 17 shows the key concepts discovered by the different data sources according to the sub-questions, however many themes and subjects concerning the different sub questions are interlinked.

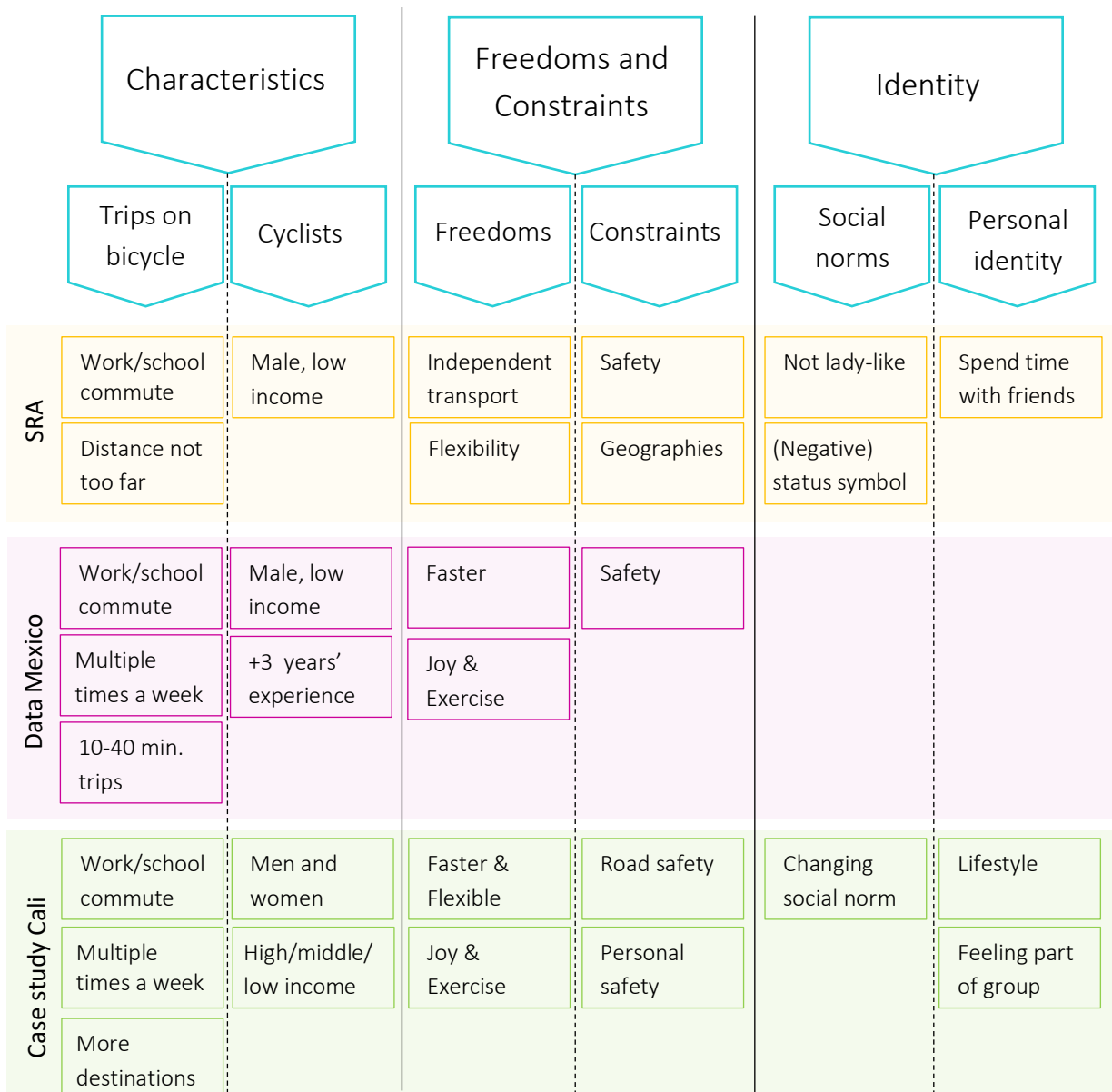| | Characteristics | | Freedoms and Constraints | | Identity | |
	Trips on bicycle	Cyclists	Freedoms	Constraints	Social norms	Personal identity
SRA	Work/school commute	Male, low income	Independent transport	Safety	Not lady-like	Spend time with friends
	Distance not too far		Flexibility	Geographies	(Negative) status symbol	
Data Mexico	Work/school commute	Male, low income	Faster	Safety		
	Multiple times a week	+3 years' experience	Joy & Exercise			
	10-40 min. trips					
Case study Cali	Work/school commute	Men and women	Faster & Flexible	Road safety	Changing social norm	Lifestyle
	Multiple times a week	High/middle/ low income	Joy & Exercise	Personal safety		Feeling part of group
	More destinations					

Figure 18 Structure of thesis; key concepts as found in the data per sub-question.

7.1 Characteristics of cycling as mode of transport

This paragraph will combine data presented in the paragraphs (4.2, 5.2, and 6.2) that write about the first sub question; what are the characteristics of urban daily mobilities of cycling youth?

7.1.1 Purpose, frequency and distance

When people use their bike as mode of transport, they are most likely to cycle to work or school. However, it appears that cyclists also go several different places and they often use the bicycle to enjoy themselves and recreate. As in the literature analysis comes forward, these other destinations are often overlooked. However they are relevant since they are important characteristics that shape day to day lives. Based on this research it appears that most cyclist often cycle daily or at least several times a week.

Distance is an often identified barrier in the literature, whereby cyclist will not take the bicycle if it is too far (Kerr et al, 2016). However, this appears to be not so straightforward. From both the data in Mexico and the data from Cali it appears that people are able and willing to cycle rather far, especially the more experienced riders. Most participant in Cali cover the whole city and nearby villages on bicycle. Therefore, cycling seems to be a manageable mode of transport in a mid-size, rather flat, city like Cali. For these cyclists, distance is not the most important factor in their decision making process and other factors like purpose of the trip or parking facilities are more important (see paragraph 7.2.5 & 7.2.6). What role distance plays for children and younger youth is less clear from the data in this research. The Literature from the SRA shows that parental control for children often limits the distances travelled (Ghekiere et al., 2014; Panter et al., 2008). How this is for youth aged between 15-19 is not clear.

7.1.2 Experience

The research show that more experience in cycling leads to more cycling, their physical condition improves, they know the city better and feel more comfortable while cycling. Similar observations are made in the research of Thigpen & Handy (2018) and Taylor & Hall (2013) among children (9-15) in the USA. Based on the data from Mexico city, the majority of the cyclists already cycle for more than 3 years. (Young) women tend to have started this habit more recently. Most respondents in Cali learned cycling when they were young, but merely

used it for fun and joy. At the moment the bicycle became a convenient device to transport them (e.g. started studying, getting stuck in traffic) they started cycling as mode of transport.

7.1.3 Who cycles?

The data from Mexico seems to match the majority of the literature on low- and middle-income countries when it comes to characteristics of cyclists. People with low- or middle-incomes are more likely to cycle than people with high-incomes. People with lower or average educated are more likely to cycle than the highly educated. However, the literature shows that this is very different between different local context, research in London shows that mainly highly educated white men cycle (Steinbach *et al*, 2011), while research in de USA shows that youth of colour and low income are more likely to cycle or walk (Roberts et al., 2019). A study previously done in Cali shows that lower income inhabitant mainly uses the bike as mode of transport (Mosquera Becerra, 2016). The respondents in Cali recognize this stereotype but see it as something from the past and that the composition is changing. The evidence may be stacked against them and the suggestions only comes from a small sample size, but their experiences and observations could be valid. They now a days see all kinds of people that cycle, men, women, high and low social economic class, which is in line with the observed increased popularity of cycling in cities worldwide (Golub et al., 2016).

7.2 Freedoms and constraints

Based on the data gathered in paragraphs 4.3, 5.3 & 6.3 and different works from the conceptual framework, this paragraph will discuss the second sub question: what constraints and freedoms does the bicycle bring to the daily urban mobilities of cycling youth?.

7.2.1 Independent transport and control

Over age, the bicycle evolves from a toy, enjoyed by younger children to play outside, into a mode of transport. This was observed in the literature and explained by the respondents in Cali. The bicycle can provide the first independent trip of children. Also at later age the independence from their parents is enjoyed. Nevertheless are youth subject to the influence of their parents. Coming from the literature, especially girls are restricted in their movements by their parents. This comes not directly forward from the respondents in Cali, however, Leidy and Maria Paula mention their parents being very worried about their safety while cycling. Because often decisions of parents are based on social norms (Lorenc et al., 2008), it is logical to conclude that if these change, this influence the decisions parents make concerning the mobility of their children. Parents also seem to have a positive role in influencing their children to cycle (Leung & Le, 2019; Mitra, 2013).

The respondents showed in different ways how freeing the bicycle is for them. Cycling is about being in control; being in control of the route, the timing, the speed and the rhythm. This control leads to the feeling of freedom. This feeling is so enjoyable that they take the disadvantages for granted. This shows that cycling is indeed more than just a commuter tool or an instrument, as often assumed in the literature. A trip made by bicycle is something the respondents look forward to, changing their perspectives on their daily grind and give them feelings of joy and relaxation. The experience of the movement (Cresswell, 2010) is an important motivator to cycle.

7.2.2 Speed and flexibility

One of the most mentioned reason to cycle deducted from the data from Mexico and based on the statements of the respondents in Cali, is that it is faster. In theory, cycling is a slower mode of transport than motorized transport. It is somewhat ironic that, in cities designed for cars, precisely not the car but the bicycle is a faster mode of transport. Obviously, the bicycle does not have more speed than private motorized vehicles, nor the public transport. However,

because the lack of friction and the limitation of the speed of motorized vehicles, the bicycle is often a faster mode of transport, both in Mexico and in Cali. Cresswell (2010) sees that *'to get somewhere quickly is increasingly associated with exclusivity'* (p.23). Because of the low entry threshold, the low costs and the (hard) physical work it seems difficult to link the bicycle to exclusivity. Especially since motorized vehicle are important objects of status in some societies (Verma et al., 2018), even in Cali as Maria Paula confirms. So for now, and for most cities, the bicycle indeed get's you somewhere quick, regardless of that, it is only 'exclusive' for the view that dare to use her in the city or lack alternatives.

Closely linked to being faster is being more flexible by bicycle. Based on the data in this research, often multiple destinations are targeted in one trip, making one less dependent on routes and timetables of public transport. De La Paz Díaz Váque (2017) observes similar efficiency and flexibility in her study in Mexico city. This efficiency for parents and women is also observed in the articles of Hidalgo et al (2016; Bogota, Colombia) and Bernasconi & Tham (2016; Santiago de Chilli, Chilli). With the bicycle you can, in theory, reach every destination at any willing time, and is often faster. In this case, the speed of other modes of transport is less of importance in order to be faster in bicycle, since the biggest gain won is the flexibility of going wherever you want, when you want. This gives the rider a great amount of freedom and flexibility, which is highly valued by the cyclists.

7.2.3 Doble Propósito

Cresswell (2010) observes that *'transport studies have too often thought of time in transit as `dead time' in which nothing happens'* (p.18). On the surface, the bicycle seems rather unsuitable for efficient use of the transit time. However, this appears to be a too simply concluded. The data from Mexico indicates that a lot of cyclist made their trip for a pragmatic reason but cycle for another (personal) reason like doing exercise or simply because they enjoy it. This indicated that they combine their mobility with other advantages related to health or fun. Leidy calls it a *"doble propósito"* (double purpose), the bicycle brings her places and she is doing exercise and having fun. All Partc recognize this. In fact all participant mention multiple advantages of cycling, beside practical reasons.

"To me it appears that the bicycle is an element that serves for everything. It serves for health, serves for mental well-being, serves for socializing, it seems to me that the bicycle can even rebuild social fabric."

Maria Paula explains. Cycling is therefore not only a convenient mode of transport but also the act of cycling is enjoyed and used for other purposes.

7.2.4 Infrastructure and respect

Based on both SRA's, road safety is one of the biggest concerns of cyclist and policymakers trying to implement cycling. Being in transit among (heavy) traffic makes cyclist feel stressed, vulnerable and fear getting an accident. Separate cycling lanes appear to be the holy grail for implementing cycling in a city (Ghekiere et al., 2014; Lorenc et al., 2008). The respondents in Cali really appreciated the separate cycling lanes, however they cannot always cycle on them since the amount of cycling lanes in limited. Additional to that, the cycling lanes are not always designed well, nor guarantee safety.Based on the data from Mexico, the separate cycling lanes do not guarantee that cyclist do not feel that an accident could happen there. In fact, some roads without any facilities for cyclist people felt little change of getting an accident. Therefore, there must be other factors that give people the feeling of safety from getting an accidents while cycling.

The respondents in Cali think their road safety will more likely improve if there will be more respect and awareness between all road users, from both the cyclist and other road users. They believe that education and respect are key. Interesting is, that most literature implies that cyclist should be protected, for instance by making separate cycling lane. However, when it comes to soft measures like education, the cyclists are most often targeted and are told and taught to protect themselves (Richmond et al., 2014), instead of educating other road users in order to protect cyclists.

In Cali, a power struggle between different road users is felt by the respondents. This makes that the cyclist constant have to negotiate their position and space in traffic. Some studies also observe this power struggle. Sagaris et al., (2020) make a powerful plea on how unjust the roads laws, use and distribution in Santiago de Chilli is, Mosquera Becerra, (2016) addresses the struggle in Cali.

7.2.5 Personal safety

Personal safety appeared to be a pressing issue concerning active transport and is a factor that constraints these modes of transport a lot. Unfortunately, the literature is often limited to walking as mode of transport while talking about personal safety. Cycling is a faster and therefore potentially safer mode of transport. The respondents in Cali show that also cyclist are subject to personal unsafety.

Safety, exposure to unsafety and fear are unequally distributed among society. This has disproportionately effect on low social economic classes, people of minority groups and women (Moser, 2005; Roberts et al., 2019; Porter et al., 2010). The cheap nature of cycling makes that people with a low incomes more often cycle. At the same time they are more exposed to unsafety in their direct surroundings. This was observed in both the literature (Roberts et al., 2019 Porter et al., 2010; Reis et al., 2013) as in the case study in Cali.

Based on the literature, ethnicity is an important factor influencing one's safety while being in transit (Roberts et al., 2019). However, the literature is limited to walking, how this plays out on the bicycle is fairly unknown.

Women are often negatively impacted in their mobilities because of safety concerns. Women are more vulnerable in public space (Yavuz & Welch, 2010; Franck & Paxson, 1989; Viswnath & Mehrotra, 2007), which limits women in their mobility. Additional, social norms that require protecting women in public spaces often keeps them indoors (Porter et al., 2010, Roberts et al., 2019). Based on the stories from the respondents in Cali, it is difficult to conclude if they factually are more limited in their mobilities by this fear of unsafety than males. However, the women are aware of their more vulnerable position and believe that this is an important reason why women do not like to cycle.

7.2.6 Sweat & hills

Based on the insights drawn from the respondents in Cali, the call from Yueng & Le (2019) for more research on cycling in tropical climates is relevant. Besides that the respondents dislike the heat and sweating, it actually influences when and where they cycle. The example of how Leidy deals with the inconveniences of sweating shows dedication from her side to continue cycling. It also shows that the purpose of the trip in a tropical climate influences the mode of

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transport, since people are less likely to go to official meetings arrive sweaty. The influence of sweating and destination remains an untouched topic in the literature.

Gradient and rain are other geographical factors the influence cycling habits, dry days and flat circumstances are praised by the ones that cycling to mobilize themselves. Depending on local context certain seasons, days or parts of the day are more favourable for cycling than others.

7.3 Identity

The last paragraph of this chapter will discuss the data gathered concerning social norms and identity forming in paragraphs 4.4 and 6.4 in order to answer the third sub question: To what extend forms cycling a marker of identity for youth?

7.3.1 Social norms

Mobility is inseparable connected to identity (Cresswell, 2010; Sheller, 2018), and identity is inseparable connected to social norms (Reynold et al., 2015). Social norms concerning mobility and cycling differ greatly per region and for personal factors. Sometimes the bicycle is a token of wealth, in other circumstance of poverty, for some it is something 'cool' or for others lame. These attitudes are of importance on who cycles, but also on how people that cycle identify themselves with this mode of transport.

Social norms do not only vary greatly, they also change over time, as the respondents in Cali observe. They experience cycling as a 'movement', changing the city in a positive way, which more and more people seem to appreciate. However, it should be noted that this is observed by cyclist who enjoy cycling themselves, not by outsider that do not cycle, which makes the perception a bit skewed. Interesting would have been to ask other, non-cycling, people what their perception is on cyclist to get a better view of the social norm, however this is beyond the scope of the research.

Accepting social norms towards cycling as mode of transport are, especially for youth, of great importance whether people choose the bicycle as mode of transport or they prefer other modes (Verma, et al., 2018). Often children cycle, during that time the bicycle is regarded as a toy and as something innocent and fun to do. If they pick up cycling later in life as a mode of transport, this comes with a more complex (power) game between different road users, generations, identities and social norms. Also the bicycle becomes an important marker of identity, while this is of less importance at a younger age.

Besides for age, social norms are also different for other personal factors like gender and race. Both the literature, the data from Mexico show that women are less likely to cycle. Cycling not being 'lady-like' is an often mentioned reason. The respondents in Cali, understand were these ideas comes from. However they do not feel this applies to them and they feel this image is changing. This is based on three respondents, which makes the power of these

statements limited. However, the respondents state they see a lot of women cycling, some even claim more women than men cycle in Cali. However, there is no qualitative data to back up this observation.

Coming forward from the literature, ethnicity (or race) is another factor on which different social norms apply concerning identity. Based on evidence from the United States, people of colour are more often dependent on public transport and active transport. Jaffe & De Koning (2015) see that especially for people of colour and migrants in the USA the status granted with mobility (e.g. cars) is of big importance. This marks off against the identity the bicycle probably gives and reduces the chance these groups will cycle if they had the choice. However, until now there is no knowledge on the relation between identity forming, cycling as mode of transport and ethnicity.

7.3.2 Identity markers

The research shows that the bicycle has many different ways of marking identities, from being a relaxed person, an activist or being poor. Most of all, the respondents in Cali show that the bicycle is an addition to their life and identity, giving them joy and freedom. However, not being a 'good' enough cyclist or not cycling often enough, makes that people do not feel comfortable with identifying with cycling, even though they cycle regularly. It indicates that being a cyclist is also something to look up to, a status that requires certain aspects. This was also observed in a case study done in the United Kingdom (Aldred, 2013).

Cycling has the potential to create a group feeling, like the respondents in Cali show, and comes forward from the literature (Thigpen & Handy, 2018). This group feeling is based on a niche, the fact that little people cycle and cycling the norm is. This makes relating easier and cyclists exceptional. The respondents assume that other cyclists are nice and 'like them'. They feel part of a bigger group or even a greater cause. On top of that, young people that cycle often do not only use the bicycle to go places like school or work, they also use it to do fun activities and spend time with friends. All respondents state that their friends cycle too, and they often go 'hang' together with their bicycles. Other literature also observes that young people often enjoy cycling because of these social reasons (Thigpen & Handy, 2018; Hoffman et al., 2014). This makes that for youth, the bicycle can be seen as a lifestyle, influencing their mobilities, friends, and social activities.

8. To complete the cycle; Discussion

Based on the three sub questions this thesis aims to theories the lives of urban youth that uses the bicycle as mode of transport in a context where this is not common. The first part of the discussion chapter will interpret the data collected and places it in the bigger framework of the lives of urban youth. Following form this, the chapter will examine how the collected data relates to safe, accessible, affordable and sustainable transport systems and theories how this influences youth. Throughout the entire chapter shortcomings of this research and suggestions for further research are mentioned. The chapter ends with a reflection on the relevance of this research in the field of international development studies and some critical notes towards the methodology of this research

The research has shown many sides, aspects, and concerns of cycling as mode of transport. At the same time, the research gives us an insight in the lives of urban youth and their mobilities. Being in your youth goes hand in hand with gaining independence, forming identities, and designing one's own life. The bicycle gives youth an affordable mode of transport which gives them the feeling of freedom and control which is much appreciated in this time frame in life. However, social norms are not always in favour, for which youth is rather sensitive (Verma et al., 2018; Allat, 1997). Social norms differ per context and can in a more or lesser manner be accepting for different personal factors, like gender (Thigpen & Handy, 2018; Roberts, et al., 2019; Hoffman et al., 2014) or ethnicity (Roberts et al., 2019; Molina-Garcia et al., 2018). The bicycle is an important marker for identities for youth, till the point it is a lifestyle, influencing leisure time and friends. Most research on identity and social norms concerning cycling, including this one, are based on self-reported evidence of cyclers (Aldred, 2013; Cavalcanti, 2019). In these cases, the outsider view misses. A research asking both the cyclist and other road users on the perceptions and identities of cyclists would be an interesting addition to the knowledge on this topic.

Unfortunately, for many cycling youth, the received freedom is paid by a (high) price of taking risks, both because of the chance of getting a road accident as well as personal safety are pressing issues, as illustrated in the case study in Cali. Experience of the movement is key in this aspect of mobility, as Cresswell (2010) highlights. All people have the right to freedom of bodily movement but also to safe and comfortable transport (Sheller, 2018). Unfortunate,

in Cali, and many more cities around the world, safety is a privilege. A privilege divided by class, gender, ethnicity, and in this case, more than anything, owned by car owners. The lack of this privilege has profound influence on the mobilities and lives of youth, since mobilities are highly valued and demanded by youth. Unfortunate they often lack access to safer modes of transport. Especially in Latin America, the USA (people of colour) and Africa youth has difficulties accessing and affording mobility and safe modes of transport, which forces them to take active transport, despite the safety concerns (Saveijne & Van den Borgh, 2015; Moser et al., 2005; Porter et al., 2010; Lucas, 2011; Roberts et al., 2019). Porter et al., (2010) see that this often leads to frustration:

> "*For young people, mobility achieved may, on the one hand, be a source of excitement, temptation, thrills, inclusion, opportunity, and perceived success; on the other, a cause of exhaustion, danger and fear. Mobility frustrated, by contrast, is most often seen purely in negative terms: a source of anger, despair, exclusion and perceived failure*".
> (Porter et al., 2010, p. 796)

The importance for youth, and the difficulty they face to access it, begs the question if policies targeted towards supporting youth should be more centred around (supporting) safe, accessible, and affordable mobility for youth. This is in line with the idea that young people should have more prominent roles in the policy making of our cities. An examples that shows how policies can target the mobility of youth it the free public transport for students in several European countries (Goeverden et al., 2006). However, literature or examples of supporting policies specifically for cycling youth are scarce and often limited to primary- or high- school age (Hidalgo et al., 2016; Richmond et al., 2014). This research shows the complex nature of cycling urban youth, therefore more research is needed to understand how policies should be specified to support and safeguard cycling youth.

Youth is often poorly understood because they are either categorized as children (-18) or adults (+18) (Hansen, 2008). There is limited research specific on the age range of youth, cycling, and mobility as comes forward from the SRA's. The original aim of the research was to understand the mobilities of youth, ranging from 15 to 24 years old, to understand the full transition phase. Unfortunately, this research has no respondents between 15-20 years old, and therefore lacks empirical data to understanding the full phase of being in one's youth. Age is an important factor concerning cycling and mobility (Thgipen & Handy, 2018; Shokoohi &

Nikitas, 2017), especially since attitudes, needs and life's change greatly in these ten years of being in one's youth (Furlong, 2012). Because of the combination of different data sources, the research can do some statements on the full age range of youth. Nevertheless the lack of empirical data of younger youth limits the ability of this research to understand the phase in life profoundly. Furthermore, a knowledge gap exists on the role of ethnicity on urban daily mobilities of cycling youth. Unfortunately the sample of the empirical data misses different ethnic backgrounds too. Therefore this research cannot do statements related to this topic. Cali was chosen as interesting fieldwork location because of her multi-ethnicity. People from Afro descent in Cali are more likely to be of low income (Zuleta, 2017). Moreover, discrimination against indigenous and Afro-Colombians in not unknown in Cali (Castillo & Abril, 2009). In the original research and sampling strategy, ethnicity was included. Due to the changed methods and the shortened fieldwork period (due to COVID-19 virus), nor younger youth, nor youth of different ethnic backgrounds were included in the sample. More research of cycling youth, with a bigger and more complete sample size in needed to fully understand the dynamics surrounding cycling, urban youth and their mobilities. The participatory research methods and sampling strategy, as designed in the original design of this research, would have been very relevant for exploring the topic. It would have created insight in different phases and realities of cycling urban youth and contributed to better understanding of these dynamics.

The UN aims to create cities with safe, affordable, accessible, and sustainable transport systems. The research shows that the bicycle is an affordable and sustainable mode of transport. The low entry threshold makes it rather accessible (despite that the rider should be able bodied and rather fit) for most people in the city. Therefore the bicycle has great potential to transform our transport systems and infrastructure towards more sustainable, equal, safe and affordable systems and infrastructure. Not surprisingly, a lot of people, groups and parties acknowledge these benefits and highly praise the bicycle as a device to change our cities (Civitas, 2020; Golub et al., 2016; Pucher et al., 2010). While on paper this is indeed seems the case, the lived experiences of cycling should not be often forgotten, overlooked or ignored. This research shows that the (personal) safety issues concerning cycling are of profound impact on what freedoms and constraints characterize the urban daily mobilities. While in theory nobody is denied to use the bicycle, in practice equal and safe access is not guaranteed for

everyone, since safety concerns differ depending on local context and personal factors. Especially the ones that lack alternative modes of transport are forced into an unsafe and uncomfortable modes of transport. But also the ones that choose to cycle themselves and have other alternative options, have the right to do what they like in a safe environment. Especially because cyclist contribute in a valuable way to create sustainable and mobility just cities (Golub et al., 2016), it cannot be the case that they pay a high price for this. Therefore, cities should not strive for equal rights for cyclist, but aim for equity, especially for youth. Like many other cities around the world, Cali favours sustainable transport over non-sustainable transport, when concerning infrastructure. This is a good step towards creating a more just infrastructure and mobility justices as defined by Sheller (2018). However, if personal safety cannot be guaranteed, it is hard to imagine that more and more people will cycle. This research argues that safety and equality should not be presumable facts that characterize cycling, an afford has to be made to achieve this. This afford should reach beyond safeguarding road safety.

Whether youth is more vulnerable than older people for harm while cycling is not clear. Literature suggest that youth does fear the additional risk of recruitment (Winton, 2005; Lucas, 2011) and sexual harassment or harm of young women (Kearl, 2014), however how this relates to mobilities by bicycle is not clear. Since most literature is based on evidence of walking and the empirical data of this research is limited, until now, the knowledge on the relating between mobility, cycling, safety and youth is limited. More profound research on the relation between personal safety and cycling is needed to make the bicycle indeed can be a mode of transport that chances our cities.

Cycling as mode of transport for urban youth, moves at the interface of different challenges addressed by the (interdisciplinary) discipline of international development studies. Urbanization, sustainable cities, equality, mobilities, mobility justice, upward social mobility, safety, and the growing share of young people especially in low- and middle-income countries, are all important topics concerning international development studies. Despite, the challenges mentioned in this research, the bicycle has great potential in being an important player in changing our cities towards a more just and sustainable places. Especially for youth, the bicycle has a lot of advantages, answering their demands and overcoming their struggles to develop. Therefore, this research fits neatly in the discipline of International Development Studies and

is believed to be a valuable contribution to the discipline. However, traditionally international development studies focussed on the 'Global South' or the 'Developing World', drawing a sharp line between the 'Western' world and the rest. More and more voice rise, that these differences are not so stark as the words suggest (Arnold, 2016) and that highlighting these differences in colonial, obsolete and problematic (Kothari, 2005). Problems concerning development are not solely concentrated in these 'Developing Countries', as also becomes clear from this research. Often Latin-America, Africa and the USA are mentioned in one sentence. In many examples, the United states did not seem to differ a lot from the case study of Cali. In this case, the more nuances (or factual) words used like low- and middle-income countries versus high-income countries does not even seem to endure.

9. Conclusion

As Cresswell (2010) states in his article; politics of mobility that mobility is one of the most important resources of the 21th century. However, creating equal access to mobility for everybody is not easy (Sheller, 2018). More and more people live in urban areas and the share of young people in cities is growing. Accessing mobility in these cities is challenging for youth. On the same time many cities are challenged transport systems that are not feasible nor sustainable. Since recent many cities now look at the potential of the bicycle as mode of transport. This research aims to understand the role of the bicycle on urban daily mobilities of youth. The research is based on three data sources, both secondary and primary, but also qualitative and quantitative. First, two systematic review analysis have been done. Second, a data set of a survey held in Mexico City have been examined. At last the research is based on empirical data from the fieldwork and interviews held in Cali. Together they gave us an understanding of the main question and sub-questions.

The first sub-question: What are the characteristics of urban daily mobilities of cycling youth? gave insight in some practicalities of cycling. Destination, purpose, frequency, but also the characteristics of cyclers where discussed. It appears that most people that cycle as mode of transport use the bicycle for their daily commute to school or work, and therefore cycle daily or at least several times a week. The distance and time people spend on the bicycle varies greatly between context and personal factors. In general distances should not be too far. Depending on the size and geographies of the city, cyclist are able to cover the full city (like Cali, a mid size, rather flat city). There is a general idea that cycling as mode of transport is a poor men's thing. The literature and the data show indeed that lower or middle income people are more likely to cycle, and that men are more likely to cycle than women. However, also this is dependent on local context and some evidence shows that this is changing; the share of women and higher income groups that cycle is growing.

The second sub question: What constraints and freedoms does the bicycle bring to the daily urban mobilities of cycling youth? discusses the freedoms and constraints experienced during cycling. Cycling appears to bring, more than anything, joy, control, flexibility and convenience to youth. Unless the positive experiences, cyclist feel different forms of constraints. First, since the research is on cities where cycling is not the norm, the infrastructure is usually design for and dominated by cars. This often means a lack of facilities

for cyclist, but also a lack of awareness of other road users, which leads to not respecting the cyclers and their space. Therefore cyclist often feel unsafe and vulnerable in transit with other road users. Another pressing issue that came up, especially from the case study in Cali, is the unsafety and vulnerability of cyclist of harm, crime, and violence. Both safety issues are experienced differently depending on personal factors like gender, but also influence greatly when and where somebody cycles. The empirical data from this research shows the importance of (the impact of) personal safety on cycling as a mode of transport, however, the sample size is small which makes the evidence is limited in power. Since this subject is absent in the existing literature, a knowledge gap exists, which asks for future research on this topic. Lastly geographical factors, like climate and gradient are of influences whether and when people cycle. This sometimes is restricting or freeing, depending on the situation.

The last sub question explores the relation between cycling and identity: To what extend forms cycling a marker of identity for youth? Mobility and youth are both inevitable connected to identity forming, it is not surprising that identity and social norms are of great importance while discussing the topic of cycling as urban daily mobilities of youth. Social norms influence greatly if youth cycle, which varies greatly per local context and personal factors. Sometime cycling is not 'lady like' or associated with poverty. The negative associations with these stigma's often transcend the advantages of that the bicycle brings and influences if youth (and adults) cycle (Verma et al., 2019). This also means that cycling is an important marker for identities, both when the social norms are accepting or not accepting. The youth that cycles often proudly identify with the bicycle and the advantages that comes along with it. The bicycle is often more for them than a device that supports their movements. It is an object that compliments their identities and lives. It influences the things they do in their spare time and the friends they have. Lastly, it makes them feel connected to other cyclist. These ideas and feelings are reinforced because cycling is not the norm in the city they cycle; cycling is a niche. Therefore, in that context, the bicycle also creates lifestyles.

These three sub-questions helped getting an insight in the subject and aspects as posed in the main question: **What influence does cycling have on the urban daily mobilities of youth in immature cycling cultures and what explains these mobilities?**

The characteristics of the bicycle matches in many ways the demand and desires of youth and their mobilities. It provides them independent flexible and convenient transport, with a low

entry threshold (no license etc.), low costs (especially after the purchase), a wide scope they can reach, and the bicycle can meet their high demand for mobility. Therefore cycling, indeed, fits well with the lives of youth and has a positive influence of increasing their mobility, independence, and lifestyles. However, the urban mobilities of cycling youth are also explained by constraints. Because of safety concerns, youth cannot cycle always or everywhere as they please. In many cases, cycling is a risky mode of transport, and leaves youth more restricted in their movements, because they more often lack alternative modes of transport. Furthermore is the bicycle an important identity marker that can shape lifestyles, which explains who their friends are and how they spend their free time.

This research lacks empirical data from younger youth and youth of ethnic minorities. Since the literature also lacks on this, there remains a knowledge gap in understanding the role of the bicycle in the lives of these youths. The research argues future research is needed to fully understand the role of the bicycle in youth live's.

Literature

Aldred, R. (2013). Incompetent or Too Competent? Negotiating Everyday Cycling Identities in a Motor Dominated Society. *Mobilities*, *8*(2), 252–271.

Allatt, P. (1997) Conceptualising youth: transitions, risk and the public and the private, in: Bynner, J., Chisholm, L. and Furlong, A. (eds) Youth, Citizenship and Social Change in a European Context, Aldershot: Ashgate Publishing Limited, 89–102.

Arango, C. M., Parra, D. C., Eyler, A., Sarmiento, O., Mantilla, S. C., Gomez, L. F., & Lobelo, F. (2011). Walking or bicycling to school and weight status among adolescents from Montería, Colombia. *Journal of Physical Activity & Health*, *8 Suppl 2*(Suppl 2), 171–177.

Arnold, G. (2016). *The end of the Third World*. Springer.

Asher, K. (2009). *Black and green; Afro-Colombians, development, and Nature in the pacific lowlands.* Duke University Press, Durham, USA. DOI: https://doi.org/10.1215/9780822390879

Baarda, B., Bakker, E., Fischer, T., Julsing, M., Peters, V., van der Velden, T., & de Goede, M. (2013). *Basisboek kwalitatief onderzoek: Handleiding voor het opzetten en uitvoeren van kwalitatief onderzoek*. Noordhoff Uitgevers.

Banister, D. (2011). Cities, mobility and climate change. *Journal of Transport Geography*, *19*(6), 1538 1546.

Bayón, M. C., & Saravi, G. A. (2013). The cultural dimensions of urban fragmentation: Segregation, sociability, and inequality in Mexico City. *Latin American Perspectives*, *40*(2), 35-52.

BBC. (2020). Nirhbaya case: Four Indian men executed for 20120 Delhi bus rape and murder. Published on 20 march 2020. *BBC*. From: https://www.bbc.com/news/world-asia-india 51969961

BERNASCONI, O., & THAM, M. (2016). UN ENFOQUE PRAXIOGRÁFICO A LA BICI-MOVILIDAD EN SANTIAGO DE CHILE. El ciclismo urbano como un logro colectivo. *Antropología Experimental*, *16*.

Borsdorf, A., & Hidalgo, R. (2010). From polarization to fragmentation. Recent changes in Latin American urbanization. In *Decentralized Development in Latin America* (pp. 23-34). Springer, Dordrecht.

Bos, F., & Jaffe, R. (2015). A rejuvenated approach to urban development and inequality: Young people's perceptions and experiences in Rio de Janeiro. *Habitat International*, *48*, 106-112.

Brickell, C. (2019). Transport cultures and young people's histories in New Zealand, 1880–1950. *Journal of Historical Geography*, *63*, 2–11.

Brodie, D. A., Andrews, G. J., Andrews, J. P., Thomas, B. G., Wong, J., & Rixon, L. (2005). Working in London hospitals: Perceptions of place in nursing students' employment considerations. *Social Science & Medicine*, *61*(9), 1867-1881.

Cali Public transportations statistics. (2018). Moovit insight pubic transit index Colombia. From: https://moovitapp.com/insights/en/Moovit_Insights_Public_Transit_Index_Colombia_Cali 1462

Cali, (2018c). *Rehabiitacion y construccion red de cicloinfraestructura, plan de manejos de trafico*. Secretaria de Infraestructura.

Cali. (2014). PIMU: Movilibad en Bicicleta From: https://www.cali.gov.co/planeacion/publicaciones/138967/pimu-movilidad-en-bicicleta/

Cali. (2018). La economía del Valle del Cauca crece más que el nacional. From: https://www.scribd.com/document/425229393/La-economia-del-Valle-del-Cauca-crece-mas que-la-nacional-docx

Cali. (2018b). Demografía de Santiago de Cali. From: https://www.cali.gov.co/planeacion/publicaciones/144497/demografia-de-santiago-de-cali/

Cass, N., & Manderscheid, K. (2010). Mobility justice and the right to immobility–from automobility to autonomobility. In *unpublished paper presented at the Association of American Geographers Annual Conference, Washington, DC, April*.

Castillo, S. S., & Abril, N. G. P. (2009). Discourse and racism in Colombia: Five centuries of invisibility and exclusion. *Racism and discourse in Latin America*, 131-170.

Cavalcanti, T. S., Santos, A. B. L., Moura, C. B. G., & Moura, D. L. (2019). "I am Barbie and I am bruta": the empowerment in cycling. *Estudos Feministas*, *27*(2).

Charafeddine, R., & Boden, L. I. (2008). Does income inequality modify the association between air pollution and health?. *Environmental research*, *106*(1), 81-88.

Chavez, L., & Menjívar, C. (2017). Children without borders: A mapping of the literature on unaccompanied migrant children to the United States. *Migraciones internacionales*, *5*(18), 71 111.

CIA (2020). The world factbook. South America, Colombia. From: https://www.cia.gov/library/publications/the-world-factbook/geos/co.html

Ciudad Mexico, Unknown: Estrategia de movilidad en Bicicleta de la ciudad de México. From: http://data.sedema.cdmx.gob.mx/sedema/images/archivos/movilidad-sustentable/movilidad en-bicicleta/emb/estrategia-movilidad.pdf

Civitas. (2020). Smart choices for cities, Cycling in the city. From: https://ec.europa.eu/transport/sites/transport/files/cyclingguidance/smart_choices_for_the city_cycling_in_the_city_0.pdf

Colombia Reports (2019). Poverty and inequality. From: https://colombiareports.com/colombia poverty-inequality-statistics/

Colombia reports. (2019b); Crime and security in Cali. From: https://colombiareports.com/cali-crime security-statistics/

Cook, N., & Butz, D. (2016). Mobility justice in the context of disaster. *Mobilities*, *11*(3), 400-419.

Cook, N., & Butz, D. (Eds.). (2018). *Mobilities, mobility justice and social justice*. Routledge.

Cresswell, T. (2010). Towards a politics of mobility. *Environment and planning D: society and space*, *28*(1), 17-31.

DANE (2018). Estadísticas por tema, Educación. *Departamento Administrativo Nacional de Estadística.* From: https://www.dane.gov.co/index.php/estadisticas-por-tema/educacion

DANE (2018b). Población que se autorreconoce como afrocolombiana, según municipio 2018. *Departamento Administrativo Nacional de Estadística.* From: http://geoportal.dane.gov.co/servicios/servicios-web-geograficos/sociedad/grupos-etnicos/

DANE (2019). Estadísticas por tema, Mercado Laboral. *Departamento Administrativo Nacional de Estadística.* From: https://www.dane.gov.co/index.php/estadisticas-por-tema/mercado laboral

Das, S., & Bibeka, A. (2020). Understanding crime and demographic influence on non-motorized trips: Macro-level analysis. *Journal of Human Behavior in the Social Environment*, *30*(3), 251–264.

Day, K. (1999). Embassies and sanctuaries: women's experiences of race and fear in public space. *Environment and Planning D: Society and Space*, *17*(3), 307-328.

Day, K. (2006). Being feared: Masculinity and race in public space. *Environment and Planning A*, *38*(3), 569-586.

de la Paz Díaz Vázquez, M. (2017). La bicicleta en la movilidad cotidiana: experiencias de mujeres que habitan la Ciudad de México. *Transporte y Territorio*, *16*(16), 112–126.

Delmelle, E. C., & Casas, I. (2012). Evaluating the spatial equity of bus rapid transit-based accessibility patterns in a developing country: The case of Cali, Colombia. *Transport Policy*, *20*, 36-46.

DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). Digital inequality: From unequal access to differentiated use. In *Social inequality* (pp. 355-400). Russell Sage Foundation.

Ding, Y. (2019). "Parents, Me & X-Sports": Mapping the BMX Culture in Contemporary China. *Journal of Sport and Social Issues*, *43*(5), 353–367.

Duran, A. C., Anaya-Boig, E., Shake, J. D., Garcia, L. M. T., Rezende, L. D., & Hérick de Sá, T. (2018). Bicycle-sharing system socio-spatial inequalities in Brazil. *Journal of Transport & Health*, *8*, 262-270.

DW. (2020). Coronavirus inspires cities to puch climate-friendly mobility. *DW*. From: https://www.dw.com/en/coronavirus-inspires-cities-to-push-climate-friendly-mobility/a 53390186

El Tiempo. (2019). 38 kilómetros de vías para las bicicletas en Cali, en diciembre. From: https://www.eltiempo.com/colombia/cali/38-kilometros-de-vias-para-las-bicicletas-en-cali en-diciembre-398262

Elpaís (2020). Marzo el me con menos homicidios en los últimos 27 años. *El País, Cali.* From: https://www.elpais.com.co/judicial/marzo-el-mes-con-menos-homicidios-en-los-ultimos-27 anos-en-cali.html

ElPaís (2020b). Pese la cuarentena, en mayo se han resigtrado 72 muertos violentas en Cali. *El País, Cali.* https://www.elpais.com.co/judicial/pese-a-la-cuarentena-en-mayo-se-han-registrado 72-muertes-violentas-en-cali.html

ElPaís (2017). ¿Por qué Cali es segunda en muertes de ciclistas?, conozca algunas causas. *El País, Cali.* From: https://www.elpais.com.co/cali/por-que-es-segunda-en-muertes-de-ciclistas.html

Evans, B. (2008). Geographies of youth/young people. *Geography Compass*, *2*(5), 1659-1680.

Faso, B., & Thorsen, D. (2014). *Phones : Adolescent Migrants '*. 67–68.

Finney, J. R., & Potter, A. E. (2018). "You're out of your place" Black Mobility on Tybee Island, Georgia from Civil Rights to Orange Crush. *southeastern geographer*, *58*(1), 104-124.

Forman, H., Kerr, J., Norman, G. J., Saelens, B. E., Durant, N. H., Harris, S. K., & Sallis, J. F. (2008). Reliability and validity of destination-specific barriers to walking and cycling for youth. *Preventive Medicine*, *46*(4), 311–316.

Foro de transporte sostenible para América Latina. (2011). *Bogota declaration sustainable transport objectives.*

Franck, K. A., & Paxson, L. (1989). Women and urban public space. In *Public places and spaces* (pp. 121-146). Springer, Boston, MA.

Furlong, A. (2012). *Youth studies: An introduction*. Routledge.

Gasparini, L., & Lustig, N. (2011). *The rise and fall of income inequality in Latin America* (No. 118). Documento de Trabajo.

Ghekiere, A., van Cauwenberg, J., de Geus, B., Clarys, P., Cardon, G., Salmon, J., de Bourdeaudhuij, I., & Deforche, B. (2014). Critical environmental factors for transportation cycling in children: A qualitative study using bike-along interviews. *PLoS ONE*, *9*(9).

Van Goeverden, C., Rietveld, P., Koelemeijer, J., & Peeters, P. (2006). Subsidies in public transport.

Golub, A., Hoffmann, M. L., Lugo, A. E., & Sandoval, G. F. (Eds.). (2016). *Bicycle justice and urban transformation: Biking for all?*. Routledge.

Gough, K. V. (2008). 'Moving around': the social and spatial mobility of youth in Lusaka. *Geografiska Annaler: Series B, Human Geography*, *90*(3), 243-255.

Gough, K. V., & Franch, M. (2005). Spaces of the street: Socio-spatial mobility and exclusion of youth in Recife. *Children's Geographies*, *3*(2), 149-166.

Hansen, K. (2008). *Youth and the City in the Global South*. Indiana University Press.

Hidalgo, D., & Huizenga, C. (2013). Implementation of sustainable urban transport in Latin America. Research in transportation economics, 40(1), 66-77.

Hidalgo, D., Miranda, L., Lleras, N., & Ríos, J. (2016). Al Colegio en Bici: Bike-to-school program in Bogotá, Colombia. *Transportation Research Record*, *2581*(September), 66–70.

Hino, A. A., Reis, R. S., Sarmiento, O. L., Parra, D. C., & Brownson, R. C. (2014). Built environment and physical activity for transportation in adults from Curitiba, Brazil. Journal of urban health, 91(3), 446-462.

Hitchens, B. K., Carr, P. J., & Clampet-Lundquist, S. (2018). The context for legal cynicism: Urban young women's experiences with policing in low-income, high-crime neighborhoods. Race and Justice, 8(1), 27-50.

Hoffman, M. F., Hayes, S., & Napolitano, M. A. (2014). Urban Youths' Experiences and Perceptions of a Community Cycling Initiative. *Urban Studies*, *51*(2), 300–318.

Honwana, A. (2015). "Enough Is Enough!": Youth Protests and Political Change in Africa. In *Collective Mobilisations in Africa/Mobilisations Collectives En Afrique* (pp. 43-66). Brill.

Hopkins, P., & Pain, R. (2007). Geographies of age: thinking relationally. *Area*, *39*(3), 287-294. https://www.nytimes.com/2019/06/24/world/middleeast/saudi-driving-ban-anniversary.html

IDMC. (2017). Colombia, tackling protracted displacements post conflict. From: https://www.internal displacement.org/global-report/grid2017/pdfs/2017-GRID-colombia-spotlight.pdf

IMDC (Internal displacement monitoring centre). (2018). Colombia reports. From: https://www.internal-displacement.org/countries/colombia

Inrix (2019). Global transport scoreboard, Cali, Colombia. From: https://inrix.com/scorecard/

Jaffe, R., & De Koning, A. (2015). *Introducing urban anthropology*. Routledge.

Jang, S., An, Y., Yi, C., & Lee, S. (2017). Assessing the spatial equity of Seoul's public transportation using the Gini coefficient based on its accessibility. *International Journal of Urban Sciences*, *21*(1), 91-107.

Janoschka, M. 2002 "El nuevo modelo de ciudad latinoamericana: fragmentación y privatización." EURE 28 (85): 11-29.

Jirón, P. (2009). *Mobility on the move: Examining urban daily mobility practices in Santiago de Chile* (Doctoral dissertation, London School of Economics and Political Science (United Kingdom)).

Kearl, H. (2014). Unsafe and harassed in public spaces: A national street harassment report.

Kerr, J., Emond, J. A., Badland, H., Reis, R., Sarmiento, O., Carlson, J., ... & Schofield, G. (2016). Perceived neighborhood environmental attributes associated with walking and cycling for transport among adult residents of 17 cities in 12 countries: the IPEN study. *Environmental health perspectives*, *124*(3), 290-298.

Kirk, R. (2003). *More terrible than death; violence, drugs, and America's war in Colombia.* PublicAffairs, USA.

Kothari, U. (2005). From colonial administration to development studies: a post-colonial critique of the history of development studies. *A radical history of development studies: Individuals, institutions and ideologies*, 47-66.

Kwan, M. P. (1999). Gender and individual access to urban opportunities: a study using space–time measures. *The Professional Geographer*, *51*(2), 210-227.

Langevang, T. (2008). 'We are managing!' Uncertain paths to respectable adulthoods in Accra, Ghana. *Geoforum*, *39*(6), 2039-2047.

Langevang, T. (2008a). Claiming place: The production of young men's street meeting places in Accra, Ghana. *Geografiska Annaler: Series B, Human Geography*, *90*(3), 227-242.

Langevang, T., & Gough, K. V. (2009). Surviving through movement: the mobility of urban youth in Ghana. *Social & Cultural Geography*, *10*(7), 741-756.

Laverty, A. A., Palladino, R., Lee, J. T., & Millett, C. (2015). Associations between active travel and weight, blood pressure and diabetes in six middle income countries: A cross-sectional study in older adults. *International Journal of Behavioral Nutrition and Physical Activity*, *12*(1).

Leung, A., & Le, T. P. L. (2019). Factors associated with adolescent active travel: A perceptive and mobility culture approach – Insights from Ho Chi Minh City, Vietnam. *Transportation Research Part A: Policy and Practice*, *123*(September 2018), 54–67.

López León, L. (2016). Pedalear En La Red . *Revista de Antropología Experimental*, *Monográfic*(No. 16), 53–69.

Lorenc, T., Brunton, G., Oliver, S., Oliver, K., & Oakley, A. (2008). Attitudes to walking and cycling among children, young people and parents: A systematic review. *Journal of Epidemiology and Community Health*, *62*(10), 852–857. https://doi.org/10.1136/jech.2007.070250

Louf, R., & Barthelemy, M. (2014). How congestion shapes cities: from mobility patterns to scaling. *Scientific reports*, *4*(1), 1-9.

Martell, C. (2019). Estudio, Las 50 ciudades más violenta del mundo. *Seguridad, justicia y paz.* From: http://www.seguridadjusticiaypaz.org.mx/seguridad/1567-estudio-las-50-ciudades-mas-violentas-del-mundo-2018

Matei, S., Ball-Rokeach, S. J., & Qiu, J. L. (2001). Fear and misperception of Los Angeles urban space: A spatial-statistical study of communication-shaped mental maps. *Communication Research*, *28*(4), 429-463.

Matthews, H. (2003). The street as a liminal space: the barbed spaces of childhood. In *Children in the City* (pp. 119-135). Routledge.

Maurice, A., Lavoie, M., Hamel, D., & Riva, M. (2020). Adoption of municipal bylaw legislating mandatory helmet use for cyclists under the age of 18: Impact on cycling and helmet use. *Health Promotion and Chronic Disease Prevention in Canada*, *40*(1), 11–17.

Meltzer, J., & Rojas, C. (2016). Elusive Peace: International, National. *Elusive Peace: International, National, and Local Dimensions of Conflict in Colombia*, 1.

Mesch, G. S. (2000). Perceptions of risk, lifestyle activities, and fear of crime. *Deviant Behavior*, *21*(1), 47-62.

Millett, C., Agrawal, S., Sullivan, R., Vaz, M., Kurpad, A., Bharathi, A. v., Prabhakaran, D., Reddy, K. S., Kinra, S., Smith, G. D., & Ebrahim, S. (2013). Associations between Active Travel to Work and Overweight, Hypertension, and Diabetes in India: A Cross-Sectional Study. *PLoS Medicine*, *10*(6).

Mitra, R. (2013). Independent Mobility and Mode Choice for School Transportation: A Review and Framework for Future Research. *Transport Reviews*, *33*(1), 21–43.

Molina-García, J., Queralt, A., García Bengoechea, E., Moore, A., & Mandic, S. (2018). Would New Zealand adolescents cycle to school more if allowed to cycle without a helmet? *Journal of Transport and Health*, *11*(October), 64–72.

Moser, C. O. (2004). Urban violence and insecurity: an introductory roadmap.

Moser, C. O., & McIlwaine, C. (2000). *La violencia y la exclusión en Colombia según la percepción de comunidades urbanas pobres*. Región de Latinoamérica y el Caribe, Banco Mundial.

Moser, C., Winton, A., & Moser, A. (2005). Violence, fear, and insecurity among the urban poor in Latin America. *The Urban Poor in Latin America*, *125*.

Mosquera Becerra, M. J. (2016). El transporte en bicicleta: consolidando inequidades en las calles de Cali, Colombia. *sociedad y economía*, (31), 95-120.

Mullen, C., & Marsden, G. (2016). Mobility justice in low carbon energy transitions. *Energy Research & Social Science*, *18*, 109-117.

National Research Council (2005). Growing Up Global: The Changing Transitions to Adulthood in Developing Countries. Panel on Transitions to Adulthood in Developing Countries. C. B. Lloyd (Ed.). Washington, DC: The National Academies Press.

NOS (2020). Waarom het coronavirus zo hard toeslaat in Latijns-Amerika. *NOS*. From: https://nos.nl/collectie/13841/video/2339591-waarom-het-coronavirus-zo-hard-toeslaat-in-latijns-amerika

OECD (2019). Better life index, Mexico. From: http://www.oecdbetterlifeindex.org/countries/mexico/

Osborne, C., Baldwin, C., Thomsen, D., & Woolcock, G. (2017). The unheard voices of youth in urban planning: using social capital as a theoretical lens in Sunshine Coast, Australia. *Children's Geographies*, *15*(3), 349-361.

Oxford wordpower dictionairy (2006). Ofxford wordpower dictionary, new 3de edition. *Oxford University press*.

Pain, R 2003 Youth, age and the representation of fear Capitaland Class 60 151–71

Paláez, I., F. (2016). Análisis de datos para comunas TIO y elaboración de índice de priorización estrategia territorios de inclusión y de oportunidades. *Secretaría de desarrollo territorial y bienestar,* Santiago de Cali.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and policy in mental health and mental health services research*, *42*(5), 533-544.

Panter, J. R., Jones, A. P., & van Sluijs, E. M. F. (2008). Environmental determinants of active travel in youth: A review and framework for future research. *International Journal of Behavioral Nutrition and Physical Activity*, *5*, 1–14.

Porter, G., Hampshire, K., Abane, A., Robson, E., Munthali, A., Mashiri, M., & Tanle, A. (2010). Moving young lives: Mobility, immobility and inter-generational tensions in urban Africa. *Geoforum*, *41*(5), 796–804.

ProPacifico. (2018). Anuario de Pacifico 2018. From: https://propacifico.org/publicaciones-y-estudios/

Pucher, J., Dill, J., & Handy, S. (2010). Infrastructure, programs, and policies to increase bicycling: an international review. *Preventive medicine*, *50*, S106-S125.

Reis, R. S., Hino, A. A. F., Parra, D. C., Hallal, P. C., & Brownson, R. C. (2013). Bicycling and walking for transportation in three Brazilian cities. *American Journal of Preventive Medicine*, *44*(2), e9 e17.

Reynolds, K. J., Subašić, E., & Tindall, K. (2015). The problem of behaviour change: From social norms to an ingroup focus. *Social and Personality Psychology Compass*, *9*(1), 45-56.

Richards, G. (2015). The new global nomads: Youth travel in a globalizing world. *Tourism Recreation Research*, *40*(3), 340-352.

Richmond, S. A., Zhang, Y. J., Stover, A., Howard, A., & Macarthur, C. (2014). Prevention of bicycle related injuries in children and youth: A systematic review of bicycle skills training interventions. *Injury Prevention*, *20*(3), 191–195.

Roberts, J. D., Mandic, S., Fryer, C. S., Brachman, M. L., & Ray, R. (2019). Between privilege and oppression: An intersectional analysis of active transportation experiences among Washington D.C. area youth. *International Journal of Environmental Research and Public Health*, *16*(8).

Romo, R. (2019). Mexico city's extreme air pollution, in photos. *CNN*. From: https://edition.cnn.com/2019/05/17/americas/mexico-city-pollution-in-photos intl/index.html

Rüttenauer, T. (2018). Neighbours matter: A nation-wide small-area assessment of environmental inequality in Germany. *Social science research*, *70*, 198-211

Sagaris, L., Berríos, E., & Tiznado-Aitken, I. (2020). Using PAR to frame sustainable transport and social justice on policy agendas. A pilot experience in two contrasting Chilean cities. *Journal of Transport Geography*, *83*(January), 102654.

Sánchez, M. J. (2016). Pobres, deportistas y ecologistas. Paradojas, estereotipos y afectos en el ciclismo urbano, un análisis desde las corporeidades. *Antropología Experimental*, (16).

Sheller, M. (2018). Theorising mobility justice. *Tempo Social*, *30*(2), 17-34.

Sheller, M. (2018b). *Mobility justice: The politics of movement in an age of extremes*. Verso Books.

Sheller, M., & Urry, J. (2006). The new mobilities paradigm. *Environment and planning A*, *38*(2), 207 226.

Shokoohi, R., & Nikitas, A. (2017). Urban growth, and transportation in Kuala Lumpur: Can cycling be incorporated into Kuala Lumpur's transportation system? *Case Studies on Transport Policy*, *5*(4), 615–626.

Skelton, T. (2013). Young people's urban im/mobilities: Relationality and identity formation. *Urban Studies*, *50*(3), 467-483.

Sorin, G. (2020). *Driving While Black: African American Travel and the Road to Civil Rights*. Liveright Publishing.

Specia, M. (2019). Saudi Arabia granted women the right to drive. A year on, it's still complicated. *New York Times*. From: https://www.nytimes.com/2019/06/24/world/middleeast/saudi driving-ban-anniversary.html

Steinbach, R., Green, J., Datta, J., & Edwards, P. (2011). Cycling and the city: a case study of how gendered, ethnic and class identities can shape healthy transport choices. *Social science & medicine*, *72*(7), 1123-1130.

Taylor, K. H., & Hall, R. (2013). Counter-mapping the neighborhood on bicycles: Mobilizing youth to reimagine the city. *Technology, Knowledge and Learning*, *18*(1–2), 65–93.

Thigpen, C. G., & Handy, S. L. (2018). Effects of Building a Stock of Bicycling Experience in Youth. *Transportation Research Record*, *2672*(36), 12–23.

Thomason, E. (2018). China's New Kingdom of Bikes: Bicycling and the quest for modernity. *Journal of Consumer Culture*, 1469540518806948.

Un DESA (2018). Revision of World Urbanization Prospects, United Nation Departments of Economic and Social Affairs.

UN SDG. (2019). United Nations department of Economic and social affairs, Sustainable development. From: https://sdgs.un.org/goals/goal11

UN World Urbanization prospects (2018). United Nations department of Economic and social affairs, Population dynamics. From: https://population.un.org/wup/

Unesco, (2017). Education and Literacy Mexico. From: http://uis.unesco.org/en/country/mx

UNHabitat (2012). Cities of Youth: Cities of Prosperity. Department of Economic and social affairs, youth. From: https://www.un.org/youthenvoy/wp-content/uploads/2018/09/18-00080_UN Youth-Strategy_Web.pdf

UNhabitat, (2014). State of the urban youth report, 2012-2013. Department of Economic and social affairs, youth. From: https://issuu.com/unhabitatyouthunit/docs/state_of_the_urban_yourh_report_201

UNhabitat. (2011). State of Urban Youth 2010/11, levelling the playing field. Department of Economic and social affairs, youth. From: https://www.un.org/development/desa/youth/publications/2010/09/state-of-the-urban youth-20102011-leveling-the-playing-field/.

Valentine, G. (2003). Boundary crossings: transitions from childhood to adulthood. *Children's Geographies*, *1*(1), 37-52.

Veale, A., & Dona, G. (Eds.). (2014). *Child and youth migration: Mobility-in-migration in an era of globalization*. Springer.

Verhoeven, H., Ghekiere, A., van Cauwenberg, J., van Dyck, D., de Bourdeaudhuij, I., Clarys, P., & Deforche, B. (2017). Which physical and social environmental factors are most important for adolescents' cycling for transport? An experimental study using manipulated photographs. *International Journal of Behavioral Nutrition and Physical Activity*, *14*(1), 1–13.

Verma, M., Rahul, T. M., Vinayak, P., & Verma, A. (2018). Influence of childhood and adulthood attitudinal perceptions on bicycle usage in the Bangalore city. *Journal of Transport Geography*, *72*(September), 94–105. https://doi.org/10.1016/j.jtrangeo.2018.08.016

Villegas, P. (2020). In Mexico, women go nationwide on strike nationwide to protest violence. *New York Times.* From: https://www.nytimes.com/2020/03/09/world/americas/mexico-women strike-protest.html

Viswanath, K., & Mehrotra, S. T. (2007). 'Shall We Go out?'Women's Safety in Public Spaces in Delhi. *Economic and political weekly*, 1542-1548.

Winton, A. (2005). Youth, gangs and violence: analysing the social and spatial mobility of young people in Guatemala City. *Children's Geographies*, *3*(2), 167-184.

Yang, J., Chen, J., Zhou, M., & Wang, Z. (2015). Major issues for biking revival in urban China. *Habitat International*, *47*, 176-182.

Yavuz, N., & Welch, E. W. (2010). Addressing fear of crime in public space: Gender differences in reaction to safety measures in train transit. *Urban studies*, *47*(12), 2491-2515.

Young, L., & Barrett, H. (2001). Adapting visual methods: action research with Kampala street children. *Area*, *33*(2), 141-152.

Zuleta, H. (2017). Raza, Geografía y pobreza en Colombia. *Foco Económico.* From: http://focoeconomico.org/2017/09/11/raza-geografia-y-pobreza-en-colombia/

Appendices

A. SRA search justification and statistics

General SRA

Justification search criteria:

The main aim of the SRA is to understand 'cycling'. Research about 'cycling' or 'bicycles' can range from bicycle design, cycling as sport to cycling as mode of transport. Since the research is about urban daily mobility only articles that write about the bicycle as a mode of transport are included.

The research is about cycling in countries where cycling is not a common form of transport, therefor research done in certain countries was not included in the selected articles. All search term always included a term concerning bicycles (Bicycle use, Bicycle, Cycling transport, cycling, ciclismo) and a region denotation (low income countries, developing world, global south, Africa, (Southeast) Asia, India). These region denotations are used, not as suggested by the terminology, to differentiate between the global south/north, low/high income countries or the developing/developed world, since I believe this is an obsolete worldview. They are used to exclude cities/countries with a mature cycling infrastructure or in general well organized (urban) spatial planning. However, until today still a lot of authors use these terms and therefor they are used for the search.

Despite always adding the regional denotation term, the fast majority of the literature is written about European, American or Australian cases. In order to avoid this, some specific countries or regions are used in the search terms. It will take a lot of time searching for every country separately and it is believed this will not be very fruitful. Because of the commonness of certain regional denotation, either regions or countries were used (e.g. India separate from Southeast Asia).

Some bias occurred while using the term *ciclismo* (cycling). Most articles where about sports, therefore *ciclismo en la ciudad* was used (cycling in the city). This makes that the result are about an urban contexts and therefore are a little biased in the statistics. Furthermore, a region was not added while using this search terms, since it is assumed that it would be about the Spanish (or Portuguese) speaking world, all articles about Spain or Portugal were excluded.

Lastly only articles published after 2010 where selected. Cycling as a mode of transport is highly dynamic and these dynamics are changing fast over the last years (Golub et al., 2016). Additional to that, most of the low and middle income countries are rapidly changing, therefor articles published more than ten years ago are considered outdated.

All articles related to E- bikes are not included. Especially literature concerning China covered a wide range of articles on E-bikes. E-bike are excluded because they mainly used in maturing cycling countries and therefore not relevant for this research.

Search criteria general SRA

- Bicycle AND Low, middle income country
- Bike use AND low, middle income country
- Bicycles and Global South
- Bicycles and Developing world
- Ciclismo
- Urban cycling AND developing world
- Ciclismo en la ciudad
- Cycling AND Africa
- Cycling AND India
- Bicycle use AND southeast Asia
- Cycling transport AND developing world
- Cycling transport AND low income countries

Search results statistics:

Table 7 Regional distribution of general SRA.

Region	Count	Percentage
Asia	23	39%
Latin-America	24	41%
Africa	10	17%
NA	3	5%
Worldwide	1	2%

Table 8 Disciplinary focus distribution of general SRA.

Disciplinary focus	Count	Percentage
Transport and planning	8	14%
Environmental science	8	14%
Public health	8	14%
Human geography	5	8%
History	4	7%
Development studies	4	7%
Anthropology	4	7%
Sociology	3	5%
Feminism	1	2%
Economics	1	2%

Table 9 Age labelling distribution of general SRA

Age groups	Count	Percentage
Defined	34	58%
not defined	11	19%
NA	25	42%
Children	6	10%
All	8	14%

Table 10 Country distribution of general SRA

Country	Count	Percentage
Brazil	12	20%
China	9	15%
India	9	15%
Mexico	5	8%
Chile	4	7%
Colombia	4	7%
South Africa	3	5%
N A	6	10%

Table 11 Distribution of Rural or urban context of general SRA.

Rural/Urban	Count	Percentage
Urban	46	78%
Rural	3	5%
NA	11	19%

Second SRA on youth

Justification and discussion of search criteria

The first SRA analysis tried to emphasize on age and youth, however because of the choices made this was difficult and the majority of the articles were not about youth. Therefor the second SRA has other requirements and criteria in order to find out what literature is available for youth and the subject of cycling. For that reason, the criteria of the region (before focussing on low- and middle-income countries without a mature cycling infrastructure or culture) was dropped and the theme of youth (or children) was made one of the primary criteria. Furthermore the search included not only cycling (because of the limited results) but all active modes of transport. This resulted in search term that always included something related to active transport and an age indication like Youth of Children. Again because of the limited results, the publication range was widened, adding 10 years, everything published from 2000 could include in the results. All article on injuries to the body or other specific (medicine relate) body issues and disease where left out, since these articles are not about cycling as a mode of transport. All search term that included the word 'children' gave more articles about safety and injuries than with the search term 'Youth'. Most of these articles where about helmet use, which appears to be a very well studied topic.

Search terms second (youth) SRA
- Bicycle mobility AND youth
- Bicycle use AND Youth
- Cycling AND Children
- Cycling NAD youth
- Urban Cycling AND Children
- Urban Mobility AND children
- Urban Mobility AND youth
- Youth AND Urban transport AND identity

Results statistics:

Table 12 Region distribution of youth SRA.

Region	Count	Percentage
North America	23	33%
Europe	16	23%
Oceania	11	16%
Africa	9	13%
NA	7	10%
Asia	6	9%
Latin America	1	1%

Table 13 Country distribution of youth SRA.

Country	Count	Percentage
USA	15	22%
Canada	8	12%
Australia	7	10%
UK	4	6%
New Zealand	3	4%
Ghana	3	4%
Sweden	2	3%
Belgium	2	3%
N A	7	10%

28 countries in total (most often found are mentioned in the table)

Table 14 Distribution of disciplinary focus of youth SRA.

Disciplinary focus	Count	Percentage
Public health	25	36%
Transport and planning	12	17%
Human geography	11	16%
Youth studies	4	6%
Systematic review	4	6%
Sports and physical activity	3	4%
Gender studies	2	3%
History	2	3%
Mobility	1	1%
Paediatric science	1	1%
Urban studies	1	1%

Table 15 Distributions of labels 'cycling' and 'Identity' of youth SRA.

Cycling	Count	Percentage
Yes	48	70%
No	21	30%

Identity	Count	Percentage
Yes	34	49%
No	35	51%

Table 16 Distribution of rural or urban context of youth SRA.

Urban/Rural	Count	Percentage
Urban	49	71%
Rural	9	13%
NA	14	20%

B. Questions used from survey data Mexico City

Source: http://www.data.sedema.cdmx.gob.mx/base-datos-movilidad-bicicleta-2017/

	Description	Question	Categories
1	Pregunta filtro edad	¿Cuántos años cumplidos tiene?	
	Question to filter age	How old are you?	
2	Grupo de edad,, se agruparon los datos cada 10 años	Categorización de la pregunta F1 por grupos de edad	Menos de 15 años (1), 15 a 24 (2), 25 a 34(3), 35 a 44(4), 45 a 54(5), 55 a 64(6), 65 a 74(7), Mas de 75 años(8).
	Age group in groups of 10 years	Categorization of question 1 in age groups.	Less than 15 years (1), 15-24 (2), 25-34 (3), 35- 44 (4), 45- 54 (5), 55-64 (6), 65-74 (7), more than 75 years (8)
3	Pregunta 1	¿De qué lugar viene usted?	(1) Hogar, (2) Trabajo, (3) Centro comercial, tienda, mercado, (4) Otra vivienda, (5) Otra escuela, (6) Restaurante, bar, cafetería, (7) Otro, (8) No sabe, (9) No contesta
	Question 1	From which place are you coming?	(1) Home, (2) Work, (3) Shopping mall, store, (super)market, (4) other stores, (5) Other school, (6) Restaurant, bar, cafetaria, (7) other, (8) Don't know, (9) blanc
4	Pregunta 3	¿Hacia dónde se dirige usted en este momento?	(1) Hogar, (2) Trabajo, (3) Centro comercial, tienda, mercado, (4) Otra vivienda, (5) Otra escuela, (6) Restaurante, bar, cafetería, (7) Otro, (8) No sabe, (9) No contesta
	Question 3	Where are you going in this moment?	(1) Home, (2) Work, (3) Shopping mall, store, (super)market, (4) other stores, (5) Other school, (6) Restaurant, bar, cafetaria, (7) other, (8) Don't know, (9) blanc
5	Pregunta 5	¿Cuál es el motivo de su viaje?	(1) Ir al trabajo, (2) Regreso a casa, (3) Ir a la escuela, (4) Hacer compras, (5) Llevar o recoger a alguien, (6) Recreación, (7) ir a comer, (8) Relacionado al trabajo, (9) Trámite, (10) Ir de visita, (98) No sabe, (99) No contesta
	Question 5	What is your motive for this trip?	(1) to go to work, (2) return home, (3) go to school, (4) go shopping, (5) drop of or pick up something, (6) recreation, (7) Go out to eat, (8) multi purpose trip, (10) Visit somebody, (98) Don't know, (99) blanc
6	Pregunta 6	¿Con qué frecuencia realiza este viaje?	(1) Diario, (2) Más de dos veces por semana, (3) Una vez al mes, (4) Una vez cada dos meses o más, (5) Ocasionalmente, (8) No sabe, (9) No contesta
	Question 6	Whit what frequency do you realize this trip?	(1) Daily, (2), More than twice a week, (3) once a month, (4) Once every two month or more, (5) occasionally, (8) Don't know, (9) Blanc
7	Duración estimada de viaje	NA	Duración de viaje en minutos
	Estimated duration of the trip	NA	Time of the trip in minutes

8	Codificaión de la pregunta 14	¿Cuál es la principal razón por la que usted utiliza la bicicleta como medio de transporte?	(1) Para llegar más rápido, (2) Para ahorra tiempo, (3) Para evitar tráfico, (4) Para ahorrar dinero, (5) Porque es saludable, (6) Para hacer ejercicio, (7) Porque me gusta, (8) Por trabajo
	Codification of question 14	What is the main reason for using the bicycle as mode of transport?	(1) To arrive faster, (2) to safe time, (3) to avoid traffic, (4) to safe money, (5) because it's healthy, (6) To do exercise, (7) Because I like it, (8) for work.
9	Pregunta 16	¿Cuánto tiempo lleva utilizando la bicicleta como medio de transporte?	(1) Menos de 6 meses, (2) 6-12 meses, (3) 1-2 años, (4) 3 años o más, (8) No sabe, (9) No contesta
	Question 16	For how long have you been using the bicycle as mode of transport?	(1) Less tan 6 months, (2) 6-12 months, (3) 1-2 years, (4) 3 years or more, (8) don't know, (9) Blanc
10	Pregunta 17	Sexo	(1) Hombre, (2) Mujer
	Question 17	Sex	(1) Men, (2) Women
11	Escolaridad agrupada por nivel se haya o no concluido el grado	Categorización de la pregunta 18 por grados completos de escolaridad	Sin (sin escolaridad), Primaria, Secundaria, Preparatoria, Licenciatura, Posgrado
	Education level grouped whether or not is has been completed	Categorizing question 18 in completed degrees	Without (without schooling), primary, Middle, secondary, bachelors, postgraduate.
12	Pregunta 19	Sumando lo que ganan todos los que trabajan en su casa, incluyéndose usted, aproximadamente, ¿cuál es el ingreso mensual de su familia?	(1) De 0 a 1 SM ($1 hasta $1,794), (2) De 1 a 3 SM ($1,795 a $5,383), (3) De 3 a 5 SM ($5,384 a $8,973), (4) De 5 a 7 SM ($8,974 a $12,562), (5) De 7 a 10 SM ($12,563 a $17,946), (6) Más de 10 SM ($17,947 o más), (8) No sabe, (9) No contesta
	Question 19	Sum of income from all people working in your household, including yourself. What is the monthly income of your family?	(1) $1 til $1794, (2) $1795 till $5383, (3) $5384 til $8973, (4) $8974 till 12 562, (5) $12 563 till 17946, (6) more than $17 947, (8) don't know, (9) Blanc.
13	Pregunta 15	¿ Qué tan probable es que usted sufra un accidente al circular por esta vialidad?	(1) Mucho, (2) Algo, (3) Poco, (4) Nada, (8) No sabe, (9) No contesta
	Question 15	How probable is it that you suffer an accident on the road your are on now?	(1) A lot, (2) a bit, (3) A little, (4) not, (8) don't know, (9) blanc
14	Pregunta 23	Lugar de circulación al momento del levantamiento	(1) Ciclovía, (2) Ciclocarril, (3) Carril de transporte público, (4) Arroyo vehicular, (5) Camellón, (6) Banqueta
	Question 23	Location of circulation at the moment of surveying	(1) Ciclovía, (2) Cycling path, (3) ane for public transport, (4) Vehicle stream, (5) ridge/shoulder, (6) sidewalk

C. Coding & Topic list

Deductive theme codes:

- Daily mobility

- Constraints and freedoms

- Identity

Inductive codes (no colour coding, comments function of Microsoft Word used)

- Power struggle

- Childhood memories

- Doble propósito

- Feeling of Freedom

- Insecurity

- Congestion

- Group feeling

- Respect

Topic list/interview guide

Gracias por participar en esta investigación. Esta entrevista solo se usará para mi investigación. Si usaré citas directamente de su entrevista, quiero pedir permiso para usar su edad y género para identificarlo, si es posible su nombre sin apellido. Quiero pedir permiso para grabar la entrevista.

Bueno, primero, cuenta me algo sobre tu. ¿Quien eres? Tu edad, donde vives (barrio) y que haces...

Intro:

?Quién eres?

    ¿Edad, barrio y qué haces?

¿Cuenta me algo sobre tus hábitos de ciclismo?

    ¿Cuál tipo de bicicleta tienes tu?

¿Porque andas en bici?

¿Qué opinas sobre pedalear?

¿Qué te gusta del pedalear?

¿Qué no te gusta del pedalear?

Daily mobilities

Often made trips example table:

Destinación	Cuantas veces de semana	Modo de transporte
La U	5	Bici,
Familia	Fin de semana (2 veces a mes)	bici
Centro commercial	1 a 2	Bici
…..		

¿Cuántas veces de semana normalmente usas tu bici?

¿Dónde vas? ¿Cuál parte di ciudad? ¿Qué ruta?

¿Por qué usas la bici (en estos momentos)?

       Es dependiente de hora/locación/ruta?

       ¿Dónde te gusta montar bici?

       ¿Eso tiene influencia en tus rutas, tus destinos? ¿O sea, tomas otra ruta por la

infraestructura?

¿Cuánto tiempo es tu viaje más o menos?

¿Cuál es el tiempo máximo que quieres pedalear?

¿Dónde no vas en bici?

Cuando no usas la bici…. ¿Por qué usas una otra moda de transporte?

¿En cuáles momentos del día (no) usas la bici?

¿Te gustaría usar tu bicicleta más, o menos?

¿Qué son los beneficios de usa la bici para el transporte?

     ¿Tienes un ejemplo?

¿Qué son los contras de usa la bici para el transporte?

     ¿Tienes un ejemplo?

     Tienes ideas para mejorar esta situación/los contras?

¿Cuándo te restringe la bicicleta en tus movimientos / cosas que quieres hacer?

Experiencias

¿En qué momentos te sientes bien pedalear?

     ¿Cuándo y por qué?

     ¿Tienes un ejemplo?

¿Hay momentos que no te sientes tan bueno?

    ¿Cuándo y por qué?

    ¿Tienes un ejemplo?

¿Con quién andas en bici?

¿Tus amigos tienen bicis también?

    ¿Por qué si o no?

    ¿O tu familia?

    ¿Por qué si o no?

Identity

¿Que significa la bicicleta para ti?

    ¿Por qué?

¿Qué piensas en las ciclistas en Cali?

¿Cómo hablan la gente sobre las ciclistas en Cali? / ¿Qué es la opinión popular sobre las ciclistas en Cali?

¿Qué imago/reputación tienen los ciclistas en Cali?

¿Pienses que estés parte de este grupo? ¿Por qué si o por qué no?

¿Qué diferentes tipos de ciclistas están allá en Cali?

    ¿Cómo los reconoces?

    ¿Cuáles sea tu?

¿Te sientes conectado con otros ciclistas?

    ¿Cómo?

¿Cómo te describirías como ciclista?

¿Como te sientes cuando andes en bici?

    ¿En cuáles momentos es esta identidad importante?

¿Hay alguno conflicto con otras identidades?

    ¿Cómo lo combine?

Fade out

¿Si tu piensas en tu movilidad diaria… estas satisfecha?

    ¿Qué te gustaría cambiar?

¿Por qué piensas no más gente pedalear en Cali?

¿Cuándo aprendiste montar bici?

¿Tienes preguntas para mi?

D. Quotes & Translation

All quotes have been translated from Spanish to English. Here the original Spanish quote is stated next to the translated as can be found in the text. Click on the link (English quote) to go to location in text.

Brenda: *getting to know her bike'*

porque aún estoy en proceso de conocer la [Bicicleta]

Leidy: *"one of the alternatives ways of hanging out with your friends."*

Es unas de otras alternativas de 'hanging out with your friends'.

Fransisco: *"there is something I like about Cali, it is that Cali is like, flat. […] it doesn't exactly have hills where you have to work harder while pedalling."* Hay algo que me gusta de Cali, que Cali es como plano. Entonces no tienes, no tienes exactamente lomas donde tengas que esforzarte más parada pedalear.

Leidy: *"[T]o go to one house, it takes me 10 minutes. However with MIO it takes me half an hour, one hour from one house to another. So* [with bike] *I dont have to plan my day thinking about the times it takes with Public transport, on the bike you don't have to do that.* **I see, so you are more free with you bike, basically?** *Yes, Totally! Including as well that there are places in Cali where the MIO doesn't go, nor alternates*[other public transport] *go those routes, or when they drop you of far away and you have to walk. So obviously this walk takes time on top of that you payed for the MIO as well."*

Ir al una casa de la otra me pase 10 minutos. Pero en MIO me toma medio hora, una hora entre casa a casa. Entonces no tenia que planear mi día pensar en el tiempo del transporte publico, pero en la bici no hacerlo. **Así, tu eres mas libre en bici, básicamente.** Si, total! Incluso también hay lugares en Cali por no los pasan MIO, no hay rutas que pasan allentes. O cuando te dejar lejos en luego caminar. Y obviamente estas camina tomas tiempo mas además de pagar por el mio. '

Fransisco: *"Because I'm sitting, I'm going in my own pace. When I want to cycle faster? Well, I cycle faster. Or do I want to go slower? I cycle slower. I can go to the places where I want to go when I say so. Well, that's nice for me. When I want to pass by a place that doesn't appeal to me, well then I just change the destination. So, I can go, as to say, the way I want to go and that pleases me a lot."*

Porque yo voy sentado voy a mi ritmo, quiero pedir más rápido, pues pedaleo más rápido, si quiero ir más lento, pedaleo más lento y pues puedo pasar por los lugares donde yo quiera donde yo diga. Bueno me parece esto bonito, quiero pasar no me parece, pero entonces voy a cambiar de lugar. Entonces yo puedo andar, por así decirlo, a mi manera me gustó y eso me agrada mucho.

Leidy: *'Yes, I feel more free. Let say it's afternoon and a friends says 'come over' ,'come to my house', 'let's go to the U*[niversity del Valle]*'. And like already one just thinks, ooh, I should get up, take the MIO or wait for it, then arrive. By the time you arrive, you are already tired, stressed and then you have to go*

back. With the bike, on the other hand, you take it, you go, and later you go back. I should say it is a feeling of freedom'.

Si, me sientes mas libre, digamos que esta medio tarde, y un amigo me dice, 'hey, van aquí', 'ven a la casa' o 'vamos a la U' . Y como que ya, uno siempre piense ooh, que presa llevantarse, tomar mio o esperar lo, llegar. Cuando llegas ya estas cansada, estresada, y luego regresar. En cambio en la bici, si tomas, te vas en luego regresas. Yo debería decir que es un sentimiento de libertad.

Charly: *"Often if I didn't enjoy the day, then I enjoy cycling a lot. Well, I normally listen to music and after that it… it harmonizes me. Or sometimes when I'm tired or bothered, it relaxes me."*

"Well, I felt that you are riding a bicycle, seeing another perspective of the day to day, I really like that."

Muchas veces como que no disfruta el día a día. Entonces me gusta mucho andar en bicicleta, pues yo mayormente, pues escucho música antes como qué… Me harmonía, o a veces cuando estoy cansado, molesto, como que me tranquilizo.

Pues el sentí que andas en bicicleta o ver cómo otra perspectiva del día a día, eso me gusta mucho.

Maria Paula: *"the bicycle means freedom for me, it means power to move myself in a free way, an autonomous way[.]"*

la bicicleta significa libertad para mí significa poder moverme de manera libre, manera autónoma y de manera sostenible.

Maria Paula: *'Honestly, nobody is 100% safe here in Cali'.*

La verdad, ninguna es 100% segura aquí en Cali.

Maria Paula: *"[…] Simón Bolivar, which is a motorway, it is very wide and fast. However, at night, for example, it would not be advisable to transit there because it is dangerous, [..], for the danger that you could get robbed or that as a women they can do you harm"*

Simón Bolívar, que es una autopista, es muy amplia y muy rápida, pero que en la noche, por ejemplo, no sería aconsejable transitar por ahí porque es peligrosa […] por ahí o por lo de la inseguridad de que te pueden robar y de que siendo mujer que se pueden hacer más daño

Charly: *"like you know, my neighbourhood is a mess".*

Como tu sabes, mi barrio es de lío

Fransisco: *'they have told me that in general where I live, it is like medium dangerous, that why I try to avoid getting robbed'. 'Ah pues me han dicho que por lo general donde yo vivo es como medianamente peligrosa entonces para evitar el hurto, robo…'.*

Maria Paula: *'So, for example, in the neighbourhoods in the east of Cali, the insecurity is extremely serious. If you go out in your bicycle and just around the corner something can happen to you. Therefore, the situation for them is more delicate[.]' Entonces, por ejemplo, barrios del Oriente de Cali y la*

inseguridad es extrema enserio que tú sales en tu bici y, a la vuelta de la esquina, te puede pasar algo. Entonces la situación de ellas es más delicada

Brenda: "*If a women alone goes out with her bicycle, she is a lot more vulnerable than if a man goes cycling alone, and a young women that is attractive even more".*

Tengo una mujer sola en cicla, es mucho más vulnerable si sale un hombre solo en cycle y una mujer jóvenes y claes, pues más atrayente, *"personal example,[…] but the figures show that they* [women] *are a little bit more vulnerable."*

Pues ejemplo personal mío, no […] Si, las cifras y muestran que un poquito más vulnerables.

Maria Paula: *"So it is a reality we should not ignore. Why? Because, well…, it very, very serious, not? They put us in very vulnerable situation. That is why girls don't like to ride their bikes because they can touch them, they can harm them"*

Entonces eso es una realidad que no deberíamos desconocer. ¿Por qué? Pues también es.., es muy, es muy grave no? nos pone en una situación de mucha vulnerabilidad. Y eso hace que las chicas no quieren salir de sus bicicletas porque las pueden tocar, les pueden hacer daño.

Maria Paula: *"in a perfect society, where everybody respects each other, we would not have needed cycling lanes. But in this moment these lanes are fundamental because they allow us to take care of other people."*

En una sociedad perfecta donde todo el mundo respetar a todo el mundo, no habríamos, no habría necesidad de tener ciclo rutas, pero en este momento las rutas son fundamentales porque nos van, nos permiten cuidar de la vida de las otras personas.

Maria Paula: *"Because mobilizing by bike also implicated taking care of other people, […] So it helps as well to redistribute the public space. It is ecological because obviously we do not emit any type of emission when cycling. We have a pact with the future, a pack with the environment"*

"It is fundamental that we take care of the cyclist, because they are actors on the road that first are doing a very valuable job. […]. So that are the people the we should to take care of. No? "

Porque movilizarse en bicicleta implica también cuidar de la de las otras personas, […] Entonces, ayuda también a redistribuir el espacio público. Es ecológica entonces pues claramente, no tenemos ningún tipo de misiones al andar en bicicleta, lo cual a futuro nos puede significar un pacto en el medio ambiente.

Es fundamental si queremos cuidar a los ciclistas, porque son unos actores de la vía que primero están haciendo una labor muy valiosa que el moverse en un vehículo que no emite ningún tipo de emisión, ningún tipo de contaminación. Entonces son a personas a hay que cuidar. No? Son personas que van mucho más expuestas,

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Leidy: *"[W]hen I arrive at the houses of my students to give a class, I have to ask if I can go to the bathroom to wipe of my sweat. Well that's not very cool. But honestly, I don't care, this is nothing compared to what they* [the advantages] *are when you are riding a bike".*

Y el otro es pues, es cuando llegar a las casas de mis alumnos para dar clase, me toca a pedir si puedo prestar el baño para secarme de sudor. Y entonces eso no es chévere. Pues en realidad no me importa, no es nada a comparado lo que sean si andas en bici.

Leidy: *"like movement, something that can change the city"*

como movimiento, como algo que puede transforma la ciudad

Leidy: *"Let's say when I go by bike and I see somebody that I don't know... you know I might get to say hi, nothing more. Just because they are part of this* [group of people who know the advantages of cycling]*'.[...] I'll Probably never get to know this person, haha. But at the same time you know that you can talk to them. I mean like, it is wierd, but they create a group, like a bike niche"*

Pero también es chevere, digamos cuandos ir en bici y ver algiun mas en bici, si no lo conozco…. Sabes que podría llegar a saludar nada mas, porque están parte de esto. ? […] Lo mas probable es jamás vayas a conocer a este persona, jaja. Pero también sabes que si puedes hablarlo. Osea es raro,pero si ayudan a crear un grupo, como un nicho en bici.

Leidy: *"I never entered the world of cycling just because you thought you were environmental friendly"*

'[N]unca entreda la vida de la bici solo porque pensabas ser amigable por el ambiente.

Maria Paula: *"We are activist because I consider myself part of the people who, in addition to riding a bike to move to work of do sports, we do it out of conviction. We do it for ourselves, to help in some way, to do social work. […] so we are like evangelizers of the bike, all the time. It is worth to change something to be telling the people that move with the bicycle, to look* [at them] *that you are better*[.]*"*

Que somos activistas porque me considero parte de ellos personas que además de montar en bici para moverse, para para trabajar o para hacer deporte, lo hacemos por una convicción. Lo hacemos por mí, por ayudar de alguna manera, por hacer un trabajo social, […] entonces somos como evangelizadores de la bici gusta todo el tiempo, vale para cambiar algo, estar diciéndole a la gente que se mueve en bici, que mire que estés mejor[.]

Maria Paula: *"To me it appears that the bicycle is an element that serves for everything. It serves for health, serves for mental well-being, serves for socializing, it seems to me that the bicycle can even rebuild social fabric".*

Y me parece que la bicicleta es un, es un elemento, Qué sirve para todo. Sirve para la salud, sirve para el bienestar mental, sirve para para socializar, me parece que incluso la bicicleta puede reconstruir tejido social.