# bicycle account Bogotá 2014

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despacio

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**Bogotá 2014 Bicycle Account**

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**Bicycle Account website:** www.bicycleaccount.org

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# 1

# Bogotá 2014 Bicycle Account in brief

The Bogotá 2014 Bicycle Account provides timely data about the state of bicycle infrastructure and use in Bogotá, as well as the results of survey data on popular perceptions of bicycle use. Drawing on existing research and several surveys conducted over the past few years, the report provides a preliminary English-language study of trends, perceptions and needs for cycling in Bogotá.

This report primarily uses three mobility surveys and three opinion polls conducted between 1996 and 2014, as well as several studies of mobility and cycling in the city. Despacio conducted two of the opinion surveys, through both in-person and online outreach. The complete Bicycle Account can be downloaded from www.bicycleaccount.org

**Bicycle use: then and now**

Bogotá's reputation as a bike-friendly city dates to the late 1990s with two mayors that promoted bicycles as a viable mode of transportation and developed bikeways and other infrastructures. Although bicycle promotion and infrastructure construction have lagged since then, bicycle use in the city has steadily increased from around 0.5% of daily trips in 1996, before the construction of the first bikeways, to 6% in 2014. The figure below draws from three comprehensive mobility surveys as well as the annual Bogotá Cómo Vamos phone survey.

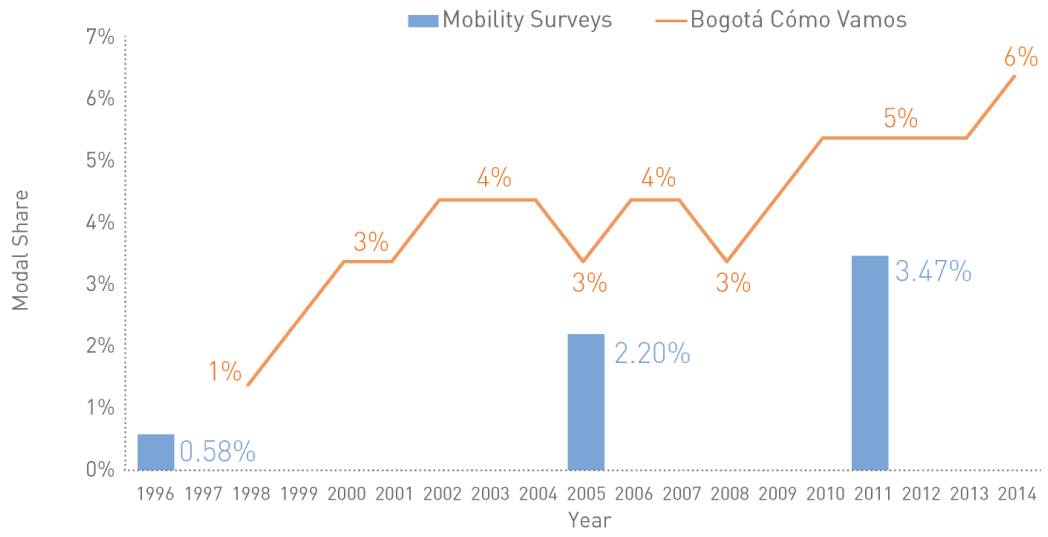


**Figure 1 Bicycle use in Bogotá 1996-2014**
Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011) (Bogotá Como Vamos, 2014)

**Cycling infrastructure and multimodal integration**

Bogotá currently has 392 km (243 miles) of bikeways. The development of bikeways and other infrastructures is crucial to bicycle promotion. The pace of bikeway construction has slowed significantly since its peak under Mayor Enrique Peñalosa, who built 232 km (144 miles) of bikeways during his three-year administration, 60% of the current system.

The current administration has laudably prioritized the construction of in-road bike lanes as opposed to placing them on sidewalks, which had been the norm. There has also been greater emphasis on integrating bicycles with Bus Rapid Transit. These recent actions have the potential to not only increase bicycle use but also shift mobility patterns in Bogotá more broadly.

As Figure 3shows, the coverage of each station is much larger when a passenger can easily bike rather than walk there. Figure 2 shows the extent of bikeways built (in kilometers) during each mayoral term between 1995 and mid-2014.

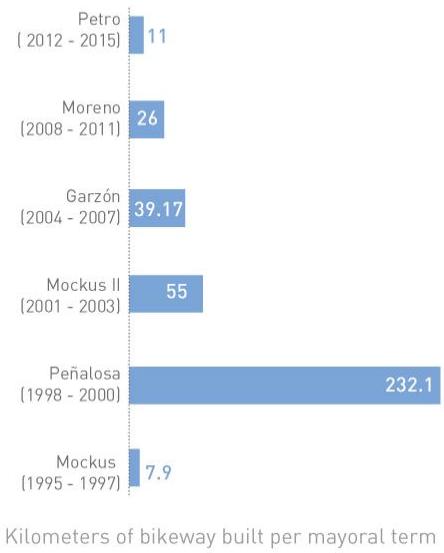


**Figure 2. Bicycle infrastructure built per mayoral term.**
Data Source: (Bogotá Como Vamos, 2014), IDU, Secretaría de Movilidad

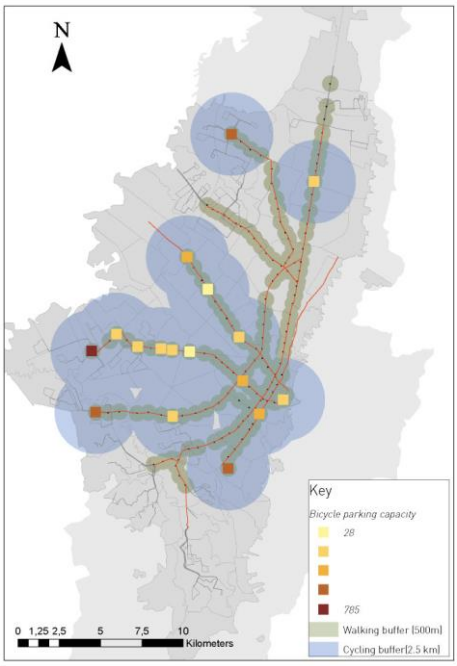


**Figure 3 Coverage of Transmilenio with walking and cycling buffers**
Data Source: (Pardo & Calderón, 2014)

**Who uses bicycles in Bogotá?**

According to survey data, the composition of cyclists in Bogotá is as follows:

- 75% men
- 85% under 44
- 96% from the lowest three socioeconomic groups (out of six)

Further, men take longer trips than women. Age groups with the highest levels of bicycle use on a typical day were from 25 to 44 (57% of all trips). The three lowest socioeconomic groups make up nearly all bicycle trips in the city. The longest trips are taken by residents in districts farthest from the center. In some of these reside people from the lowest socioeconomic groups.

**What do bogotanos think about bicycles?**

A review of recent survey data indicates that the main positive perceptions of biking in Bogotá are fitness, health, beating car traffic, and the recreational Ciclovía. Road and personal safety, weather, and driver behavior are the main negative factors. Measures to improve popular perceptions of bicycle use include an

expanded and enhanced bikeway network with particular attention to intersection safety, integration of bicycles with mass transit, a public bicycle system, and campaigns to improve driver behavior.

**Table 1 Positive and negative factors associated with cycling in Bogotá**

| Rank | **Positive Factor** *(Response %)* | **Negative Factor** *(Response %)* |
|---|---|---|
| 1 | Fitness (44%) | Being attacked (56%) |
| 2 | Health (28%) | Being hit (53%) |
| 3 | Trip duration (28%) | Weather/rain (46%) |
| 4 | Environment (25% | Car behavior towards cyclists (42%) |
| 5 | Reliability (22%) | Pollution from motor vehicles (39%) |
| 6 | Trip cost (21%) | Bikeway design & obstacles (37%) |

Data Source: (Despacio, 2014)

**Safety in numbers holds true in Bogotá**

There appears to be a clear relationship between bicycle use, bicycle infrastructure, and cyclist casualties in Bogotá. Bikeway construction has led to increased bicycle use over the past decades, which is itself inversely associated with cyclist casualties. This follows what Peter Jacobsen defined as "safety in numbers," a phenomenon seen in many other cities as well (Jacobsen, 2003).

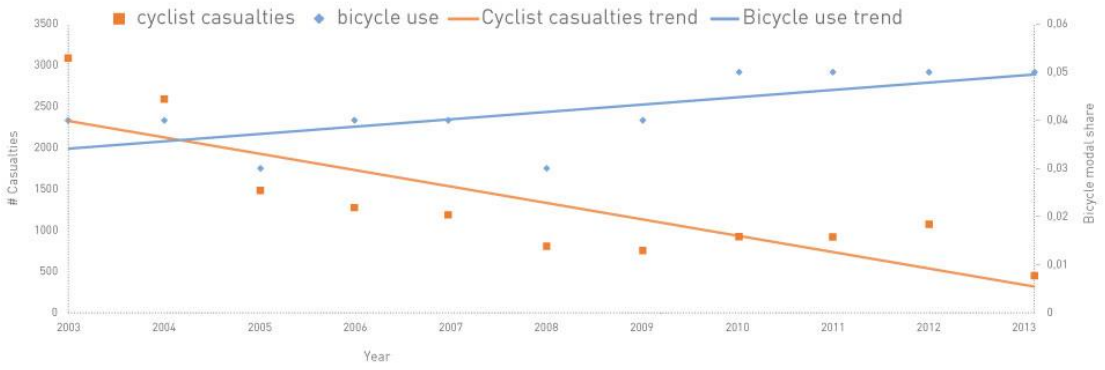


**Figure 4 Cyclist casualties and bicycle use, 2003-2013**
Data Source: (Bogotá Como Vamos, 2014) and (Secretaría Distrital de Movilidad, 2014a)

**What are the (estimated) benefits?**

This report also provides approximations of the environmental and economic benefits of bicycle use in the city, summarized below. It indicates the carbon dioxide equivalent and particulate matter emissions avoided

due to cycling. Applying the 2011 motorized modal distribution, it calculates what would have been emitted had cyclists opted for other modes. The economic gain calculated takes into account various positive and negative externalities related to cycling, including the reduction of road congestion and parking, improved road safety, and energy savings (see Table 2).

**Table 2. Estimated benefits of cycling**

| | |
|---|---|
| $CO_2$ eq. emissions avoided | 86,431 tons |
| PM emissions avoided | 8.0 tons |
| Economic gain | 820 million USD |

Source: (Litman, 2014; Steer Davies Gleave, 2013)

**From car to bicycle**

There is a tremendous opportunity in Bogotá to shift from cars to bicycles. Per capita, there are more bicycles than cars in the city (171 bicycles versus 98 cars per 1000 inhabitants) (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011). Significantly, bicycles are evenly distributed across socioeconomic groups, unlike cars, which are concentrated in the upper classes. Our findings showed that people in the lower socioeconomic groups make fewer trips but travel longer distances during the day while those in the upper groups on average make more, short-distance trips. Given that bicycle use in the higher groups is low, this would imply that wealthier people in Bogotá own bikes but primarily use cars for transport, even for short trips that could be easily accomplished by bicycle.

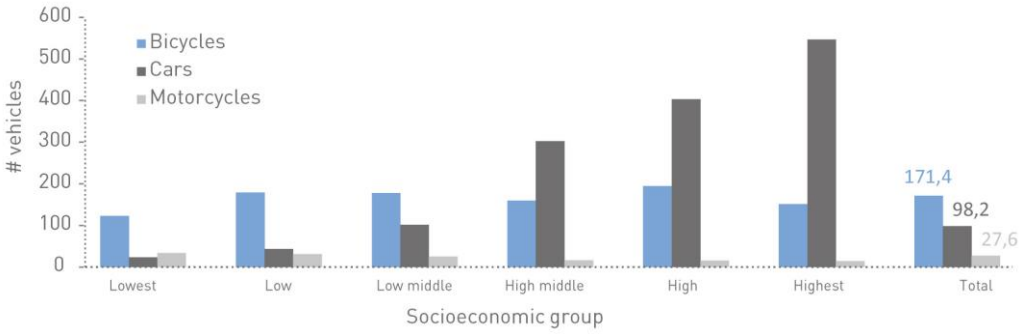


**Figure 5 Number of vehicles per 1000 inhabitants according to socioeconomic group**
Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

**Conclusions and next steps**

The preliminary research and analysis conducted in this report indicate the strengths and weaknesses of cycling in Bogotá. There are many recreational users, and bicycle transportation in the city continues to grow. However, improved road safety through bikeway investment, upgraded intersection design, and public awareness campaigns for drivers are needed to better the perceptions and realities of bicycle use. Complementary infrastructures, such as more bike parking in BRT stations and in private and public destinations, are also key. Developing these elements could encourage a mode shift to bicycle, especially among people from social groups that currently do not use them regularly.

The Bogota 2014 Bicycle Account is just the beginning; more research and monitoring are needed. Despacio hopes to produce printed editions in the future with more thorough data collection and analysis, and would therefore be grateful for any assistance in making this a reality. Can you help out?

# 2

# Introduction

Bogotá has experienced what is often considered one of the greatest urban and cultural transformations of the last decades. Towards the end of the twenty-first century, a series of mayors changed the meaning of citizenship, the use of public space, and the physical landscape of the city. One of these mayors' most visible efforts was the promotion of cycling as a viable mode of daily transport. Before 1995, there were no segregated bikeways in the city; at the end of 2014, there are almost 400 kilometers (Secretaría Distrital de Movilidad, 2014b). Bicycle use in Bogotá has increased dramatically (from less than 1% modal share in 1996 to 6% in 2014) (Bogotá Como Vamos, 2014; Steer Davies and Gleave & Centro Nacional de Consultoría, 2011), as have the number of citizen-led cycling initiatives. However, there have been few publications that describe bicycle use in the city (and none in English that describe it thoroughly), and efforts to understand the city's cycling culture have not been published or recognized. This document looks to fill that gap.

The *Bogotá 2014 Bicycle Account* produced by members of Despacio (a Bogotá-based NGO), presents critical, up-to-date facts and figures about the state of cycling in Bogotá, Colombia's capital and largest city. Home to nearly eight million people, Bogotá is often considered a bike-friendly city due to its extensive network of bikeways, which has grown since the late 1990s, and the recreational Ciclovía on Sundays and holidays, in existence since 1974. However, in many areas, cycling policy in the city still needs improvement. This report is modeled after Copenhagen's landmark publication, *Copenhagen: City of Cyclists- Bicycle Account*, published every two years since 1996. Copenhagen's reports concisely describe the perceptions and state of bicycle use in the famously bike-friendly city (City of Copenhagen, 2012). Authorities in the Netherlands have produced similar documents, such as "Cycling in the Netherlands" (Ministerie van Verkeer en Waterstaat, 2007; Mobycom, Fietsberaad, Ligtermoet & Partners, & Waterstaat, 2009).

This report draws on previous research about bicycle use in the city to understand trends, highlight emerging issues, provide new information, and make recommendations. The *Bogotá 2014 Bicycle Account* is divided thematically and begins with a brief **historical overview**. It then discusses infrastructural issues, specifically the city's **bikeway network** and bicycle **integration with Transmilenio,** Bogotá's Bus Rapid Transit (BRT) system. Next, using survey data from various sources, the report presents key **social statistics** about who uses bicycles and what people in the city think about bike use. The report also discusses issues of **road safety,** an essential consideration when promoting bicycle use. Finally, it examines prospects for increased bicycle use by analyzing the **associated benefits** and the potential for **mode shift** from car to bicycle.

Bicycle use is likely to grow along with the city; a 2013 study by Steer Davies Gleave predicted a 14% increase in bicycle use in the following decade (Steer Davies Gleave, 2013, p. 90). Bicycles should therefore figure centrally in Bogotá's mobility plans. Bicycles offer both speed and flexibility in travel, and provide a number

of positive environmental and health benefits. The city's Mobility Plan (Alcaldía Mayor de Bogotá, 2006) and the country's new transport policies aim to provide better conditions for cyclists and give priority to pedestrians and cyclists in policies and projects. Although there is still considerable work to be done to make this a reality, the city is slowly moving forward towards these goals.

It should be mentioned that this document is preliminary. It is a basis from which we hope to develop future reports with improved methodology and scope, as well as more policy recommendations.

| Bogotá Key Facts |
| --- |
| Population: 7.78 million *(2014- estimated)* (DANE, 2014) |
| Urban Area*: 384 $km^2$ (148 $mi^2$) (Observatorio Ambiental de Bogota, n.d.) |
| Urban Density*: 20,127 inhabitants per $km^2$ (52,221 inhabitants per $mi^2$) |
| Elevation: 2600 m (8,530 ft.) above sea level |
| Average temperature: 14° C (57.2° F) |
| * Bogotá D.C. encompasses Sumapaz, an enormous rural area (1222 $km^2$/ 471 $mi^2$) with a very small population. It is not included for purposes of counting area or density as it would heavily skew the data of this report (which primarily describes an urban activity). |

## 2.1 Main Sources and Despacio's Survey Methodology

This report analyzes information from various investigations into bicycle use in the city, and in many cases draws from those analyses to provide new information and conclusions. Despacio produced all of the graphs and tables in the report with the data sources noted below each figure. Below are the **most relevant** publications and data sources (a complete list of references can be found at the end of this report). The **bolded reports** are the results of surveys conducted by Despacio. The methodologies for those two surveys are explained in greater detail below.

<u>Mobility Surveys</u>

- Alcaldía Mayor de Bogotá D.C. & Secretaría de Tránsito y Transporte. (2005). *Encuesta de Movilidad Urbana*. Bogotá.

- JICA. (1996). *Estudio del plan Maestro del transporte urbano de Santa Fé de Bogotá en la República de Colombia: informe final (informe principal)* (p. 39). Bogotá: Chodai Co Ltd, Yaicho Engineering Co Ltd,.
- Steer Davies and Gleave, & Centro Nacional de Consultoría. (2011). *Informe de indicadores Encuesta de Movilidad de Bogotá 2011*. Bogotá.


Opinion Surveys


- Bogotá Cómo Vamos. (2014). *Resultados de la Encuesta de Percepción Bogotá Cómo Vamos 2014*. Bogotá.

- **Despacio. (2014). *Conocer para promover la bicicleta*. Bogotá.**

  Despacio conducted surveys of 229 people in total. 25% of the surveys were done in five different locations at "Ciclovía Dominical" and the rest of the surveys were conducted via web. It deals primarily with perception of bicycle use for recreation and transport purposes. Potential methodological shortcomings include mainly the lack of a representative sample.

  This survey was conducted online and at the Sunday Ciclovía event, and as such, the makeup of the sample of respondents reached for this survey may be different than the characteristics of people that undertake urban trips by bicycle on weekdays. This data should be considered **exploratory** and more as a basis for future surveys with cyclists for utilitarian urban trips.
- **Steer Davies Gleave. (2013). *Formulación y estructuración de un plan estratégico para promover el uso de la bicicleta como medio de transporte cotidiano en grupos: informe poblacionales específicos*. Bogotá.**

  Despacio conducted surveys of 1110 people via web during one month. It deals primarily with perception of specific issues of cycling in Bogotá and its network, policies and regulations. Because of the sample size, this survey is quite robust, though it was done online and this may be a shortcoming in terms of adequate representation of all of Bogotá's population (this was anyway controlled with questions related to income and education).

Key Publications


- Pardo, C. (2013). Bogotá's non-motorised transport policy 1998-2012: the challenge of being an example. In W. Gronau, W. Fischer, & R. Pressl (Eds.), *Aspects of Active Travel How to encourage people to walk or cycle in urban areas* (pp. 49–65). Mannheim: Verlag Meta GIS Infosysteme.
- Pardo, C., & Calderón, P. (2014). *Integración de transporte no motorizado y DOTS* (1st ed.). Bogotá: Despacio; CCB.

# 3

# Background

## 3.1 History

Bicycles have been used in Bogotá since the late 1800s by different groups of *bogotanos* (Bogotá residents) for various reasons (see Table 3). The city's bicycle-friendly reputation arises from a very specific period of its history, namely the mayoral administrations of Enrique Peñalosa (1998-2000) and Antanas Mockus (1995-1997, 2001-2003). The city was already well-known at the time for inventing the Sunday *Ciclovía* in 1974, in which 121 kilometers of the city's major roads are closed to vehicular traffic for the exclusive use of people on foot, bikes, skateboards, rollerblades, doing aerobics classes, etc. However, this has always been a recreational event. It was not until the late 1990s that bicycles were promoted as a means of daily transport. During this boom period, the governments of Peñalosa and, to a lesser extent, Mockus built hundreds of kilometers of bicycle routes, developed alongside the Transmilenio BRT and other public space interventions (Pardo, 2013).

**Table 3 Historical summary of main phases of bicycle use**

| Historical Moment | Bicycle Users | Bicycle Uses | Perception of Bicycles |
|---|---|---|---|
| **1800s arrival of the bicycle** | High-income men and women | Transport<br>Recreation | High status |
| **1903 arrival of the automobile** | High-class children primarily | Children's recreation | Bicycles are for children |
| **1950 Vuelta a Colombia (Tour of Colombia)** | Low-income people | Sport | Vehicle of the poor (upper-class perception) |
| **1974 implementation of Ciclovía (Sunday carfree day)** | Everyone | Sport, recreation | Vehicle for everyone's recreation |
| **1998 – first mass bikeway construction** | Varied (mostly low income, but increasingly high income as well) | Transport | Increasingly positive |
| **2000 – first Carfree day (one a year)** | Everyone | Transport | |

Source: Adapted from (Pardo, 2013)

Under the following mayors, Lucho Garzón and Samuel Moreno (2004-2011), bicycle initiatives languished, as these mayors dedicated few resources to the construction, management or maintenance of infrastructure. This period is also associated with increased traffic casualties involving cyclists. Despite initially running on an anti-Peñalosa ticket, the current mayor, Gustavo Petro, has renewed attention and resources to bicycle infrastructure and management (more than Garzón and Moreno, but far less than Peñalosa or Mockus). Petro's main contribution to cycling policy is his inclusion of bicycle advocates and activists in government positions. These appointments, along with recent pro-bicycle campaigns like "Pedalea por Bogotá" are cause

for optimism that Bogotá will continue its trajectory as a bicycle-friendly city (Camara de Comercio de Bogotá, 2014; Pardo, 2013).

Dividing bikeway construction by mayoral term is a useful way to understand the recent developments in bicycle policy. Figure 6 accordingly shows the kilometers of bikeways constructed in Bogotá during each mayoral administration from the beginning of the system in 1995 to the present. Annual construction peaked during the administration of Enrique Peñalosa (1998-2000) but has declined significantly since then. According to the Secretariat of Mobility, there are currently 392 kilometers of bikeways in the city (Secretaría Distrital de Movilidad, 2014b).

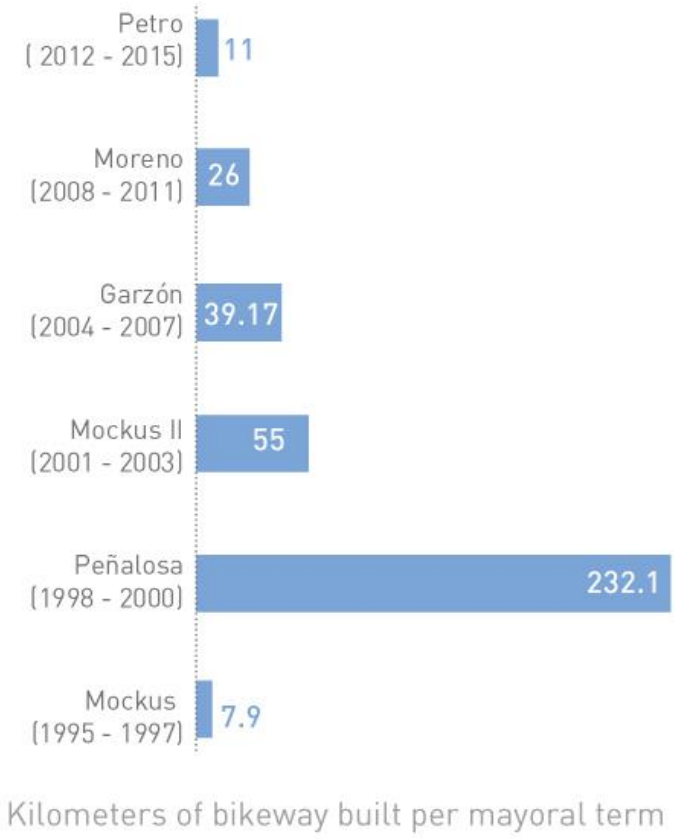


**Figure 6 Bikeways built per mayoral term**
Data Source: (Bogotá Como Vamos, 2014), IDU, Secretaría de Movilidad

## 3.2 Modal Share

Another important statistic is modal share, the percentage of total daily trips in the city made by bicycle. The most comprehensive sources for this metric are the city mobility surveys conducted in 1995 (JICA, 1996), 2005 (Alcaldía Mayor de Bogotá D.C. & Secretaría de Tránsito y Transporte, 2005) and 2011 (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011), but it is very difficult to find trends by comparing these three years alone. Another source is the annual household survey conducted by Bogotá Cómo Vamos (BCV), a local think tank. This phone survey is less useful than the mobility surveys for transport planning because it does not ask respondents for detailed information about origin and destination, only whether they use a bicycle. However, BCV is an important source for comparison due to its historical continuity. Figure 7 shows bicycle modal share since 1996 as reported by the mobility surveys and BCV (the latter beginning in 1998). It shows the steady increase of bicycle use in the city over the past twenty years, from just over half of one percent in 1996 to six percent in 2014 (according to the mobility survey and BCV, respectively). The discrepancy between BCV and the mobility surveys is due to methodology: BCV is a phone survey using a smaller sample, whereas the mobility survey is an on-the-ground survey of a larger sample that identifies bicycle use from a total distribution of trips. It is therefore possible that current bicycle use is lower than 6%. Notably, if one does not include journeys on foot that take less than 15 minutes, the modal share of bicycles increases. The 2011 Mobility Survey's share increases to 4.63% while that of BCV 2014 jumps to 8%. However, the graph below sticks with a more conservative estimate and includes all trips.

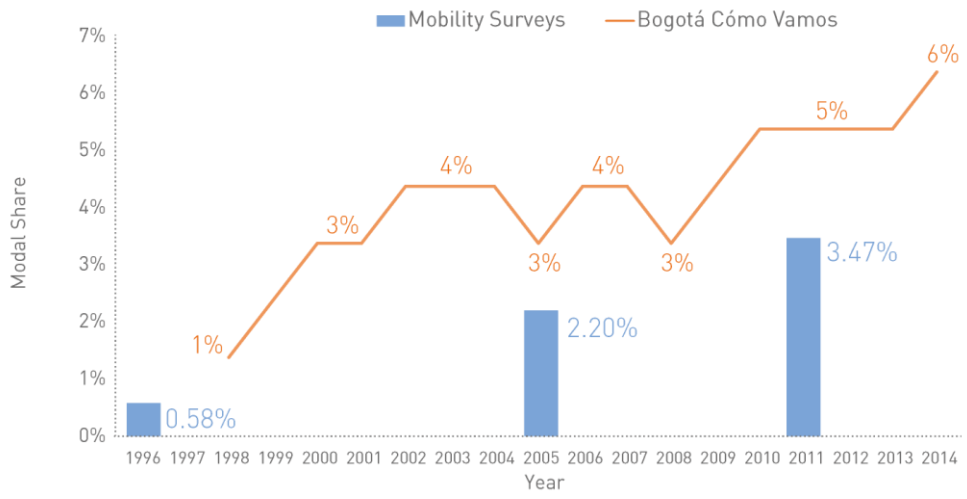


**Figure 7 Bicycle use in Bogotá 1996-2013**
Data Source: (Alcaldía Mayor de Bogotá D.C. & Secretaría de Tránsito y Transporte, 2005; Bogotá Como Vamos, 2014; JICA, 1996; Steer Davies and Gleave & Centro Nacional de Consultoría, 2011).

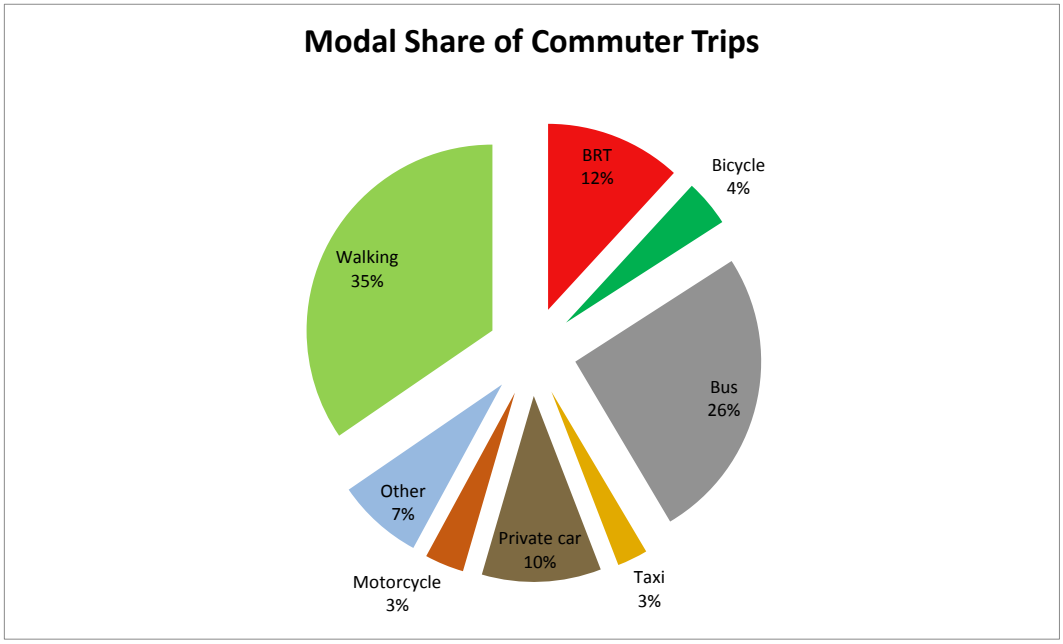


**Figure 8 Modal share of commuter trips (2011)**
Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

Figure 8 shows the modal share of commuter trips in the city according to the 2011 Mobility Survey. Commuter trips entail all trips to and from sites of work or study. This subset of trips was selected because it entails travel to and from high-utility, obligatory activities and is therefore useful for understanding people's typical travel behaviors. The largest modal shares were for walking and bus, which combined account for 60% of the city's commuter share. Transmilenio (BRT) and private car use were about equal (each at around 10%), while bicycles made up 4% of all trips. We strongly suspect that the current modal distribution is different, given the creation of additional Transmilenio trunk lines, implementation of SITP (a new local bus system), and expansion of the bicycle network since 2011.

# 4

# Bicycle Infrastructure

## 4.1 Types of Bikeways

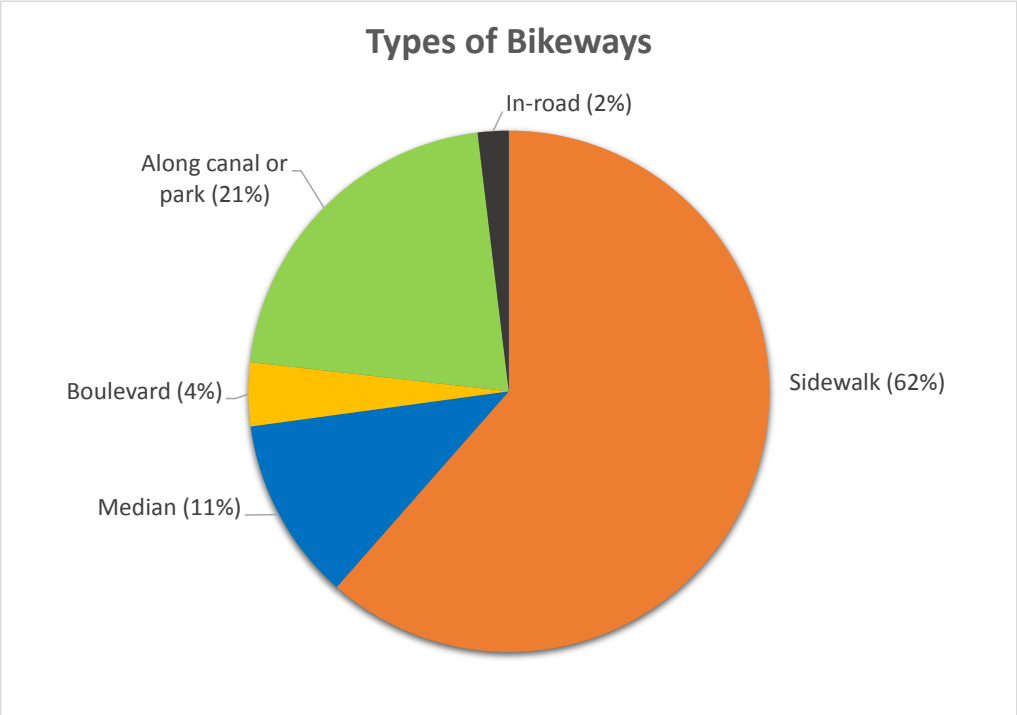


**Figure 9 Types of bikeways**
Data Source: (Steer Davies Gleave, 2013)

Figure 6 presented the overall development of bikeways in the city since construction began in 1995. In Figure 9, one can see the distribution of different types of bikeways in Bogotá. The vast majority, nearly two-thirds, is on sidewalks, meaning that cyclists travel in bikeways alongside pedestrians on sidewalks. This configuration is the norm in Latin America but it creates potential for conflicts between pedestrians and cyclists and maintains the prioritization of motor vehicles. A quarter of bikeways are on wide boulevards or along canals, car-free thoroughfares with ample space for bikes and pedestrians alike. Another 11% are in the median of wide roads and finally, 2% are bike lanes in the road itself. This last statistic would indicate that although Bogotá's network of bike routes is extensive, by leaving the majority of road space to cars, it does not massively change urban mobility patterns. The current government has promised to build 145 kilometers of in-road bikeways (termed "ciclocarriles") but official figures show it constructed a mere 11 kilometers in 2013.

## 4.2 Investment

Funding for bikeway construction and maintenance is critical to the proper functioning of the infrastructure. Amsterdam and Copenhagen, two of the world's most famously bike-friendly cities, spend approximately $29 USD per capita on bicycle infrastructure (City of Copenhagen, 2012). In its plan for road infrastructure, the current mayoral administration has apportioned approximately $15.3 million annually for the period 2014 to 2016, which per resident comes out to around $1.96. Table 4 displays a comparison of various cities' investment per capita in bicycle infrastructure and the bike modal share.

**Table 4 Investment per capita in bicycle infrastructure and modal share for various cities**

| City | Investment per capita (USD) | Bike Modal Share (year) |
|---|---|---|
| Amsterdam | 29 | 29% (2008) |
| Copenhagen | 28 | 29% (2008) |
| Portland, USA | 3.5 | 4% (2008) |
| Bogotá | 1.96 | 3.5% (2011) |

Source: (City of Copenhagen, 2012; Instituto de Desarrollo Urbano, 2014; International Energy Agency, 2009; Pardo, 2012)

# 5

# Integration with TransMilenio

Bogotá's mass transit system centers on the Transmilenio, an extensive Bus Rapid Transit (BRT) network that opened in 2000 and is now one of the world's largest. Bicycle integration with Transmilenio stations has the potential to enhance overall mobility in the city. Bicycles are particularly useful for the so-called "first and last mile" of trips, providing a multimodal, door-to-door alternative to private motor vehicles (CROW & Groot, 2007, p. 59; Pardo, Caviedes, & Calderón Peña, 2013). Bike parking is especially important given that many people in Bogotá use their bicycles for irregular trips, that is to say ones with non-recurring origins, destinations and schedules (Steer Davies Gleave, 2013, p. 90). The following graphs show the capacity and occupancy of bicycle parking at Transmilenio stations.

## 5.1 Bicycle Parking Capacity

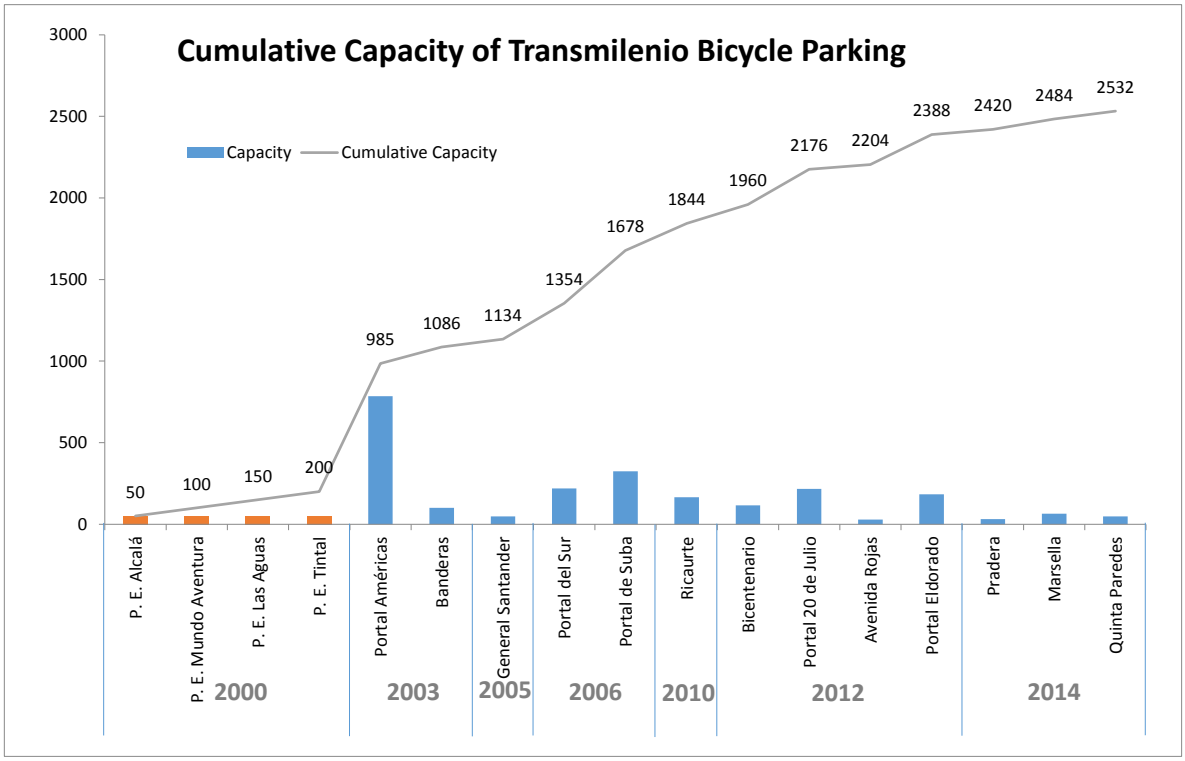


**Figure 10 Cumulative capacity of Transmilenio bike parking**
Data source: (Pardo & Calderón, 2014)

Figure 10 shows bicycle parking capacity at Transmilenio stations according to the year the parking area opened. The first four, which opened in 2000, are *puntos de encuentro* (meeting points), meaning that the parking area is located outside the station and therefore lacks access control. With the creation of bike parking at Quinta Paredes in 2014, the system's current capacity is 2,532. Transmilenio now has more bicycle parking than any other BRT system in the world, with the exception of Guangzhou's BRT, which has 100% bicycle integration at all 26 stations. However, the first phase of the system did not include bicycle integration; in fact,

there was significant opposition to creating bicycle parking in stations. The decision to build a bicycle parking area in Portal Américas during Phase 2 was primarily made to reduce the use of feeder buses (which are generally very crowded and expensive to operate). Currently, Transmilenio users can park bicycles at stations for free and are allowed to bring folding bicycles inside buses during off-peak hours (Pardo & Calderón, 2014b).

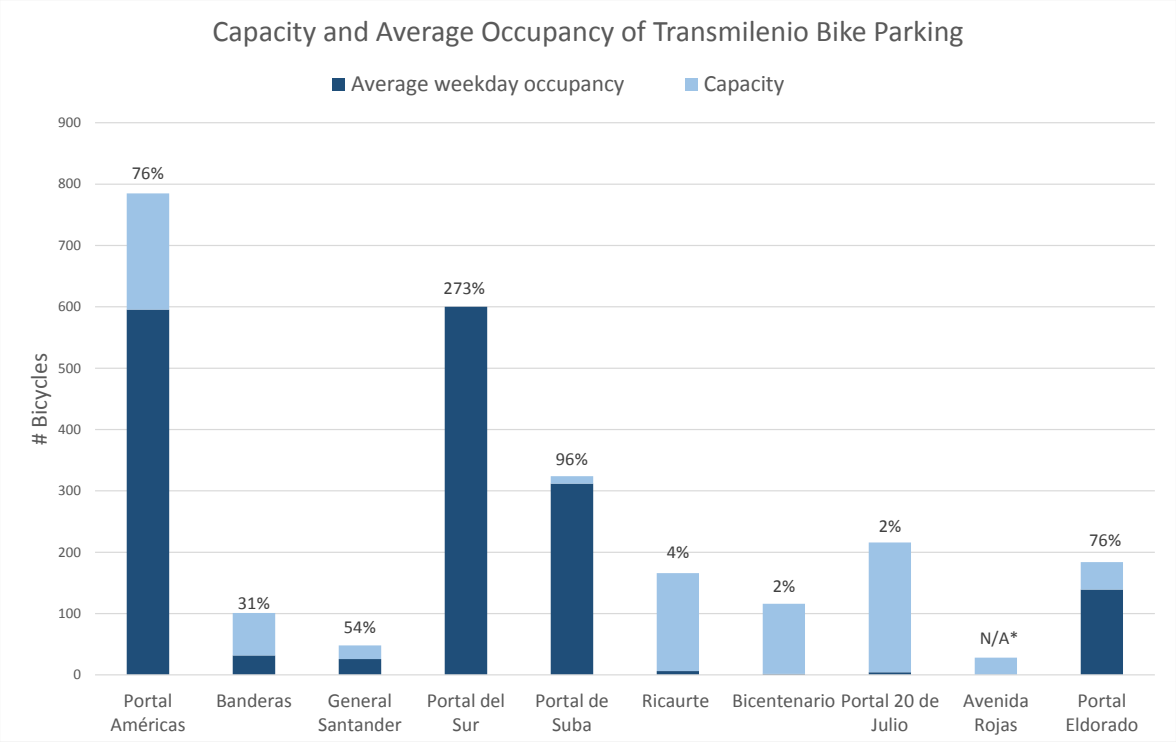


**Figure 11 Capacity and average occupancy of Transmilenio bike parking**
* In Avenida Rojas station, there is no access control and therefore the average occupancy cannot be counted.

Data Source: Response to Derecho de Petición TMSA—2014ER27021, October 10, 2014.

In Figure 11, one can see the capacity of each Transmilenio bike parking lot and its average weekday occupancy between June 2013 and August 2014. There is enormous variation in use, from Portal 20 de Julio, with an average of 2% of its 216 spaces in use, to Portal Sur whose use is almost three times its capacity. This is because bicycle-parking spaces in stations are allotted based on available space as opposed to demand; there have not been demand studies during the construction of these bicycle-parking stations.

## 5.2 Bicycle Parking Locations


**Figure 12 Transmilenio diagram indicating locations of bicycle parking**
Source: (Pardo & Calderón, 2014)

Figure 12 displays the locations of bicycle parking within the Transmilenio system. The trunk lines with the most parking spaces are Avenida de las Américas (F), Avenida El Dorado (K), and Autopista Sur (G). These were part of construction Phases II and III on the south and west sides of the city. Trunk lines constructed during Phase I (A, B, D and H) have next to no bicycle parking, despite being some of the busiest sections of the system. This was due to a lack of interest, and at times active opposition, to bicycle-BRT integration during the system's first phase.

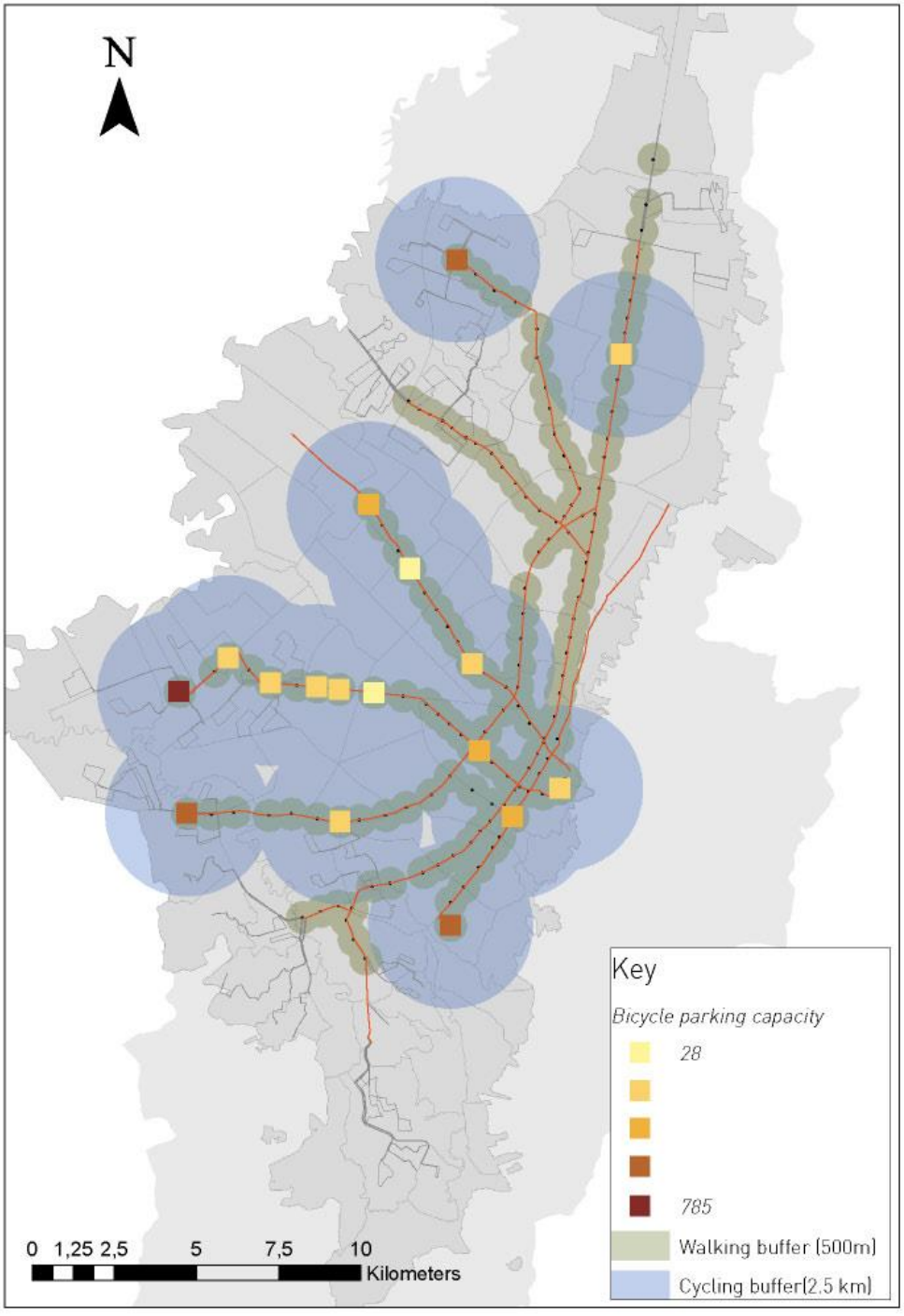


**Figure 13 Coverage of Transmilenio with walking and cycling catchment areas**
Data Source: (Pardo & Calderón, 2014)

Figure 13 shows the expanded coverage of Transmilenio when bicycles are considered. The walkable distance to a station is 500 meters while the bikeable distance is 2.5 kilometers. This means that the catchment area

of stations with bicycle parking is up to five times larger than those without. There is a noticeable gap in coverage along the central and northwest corridors (trunk lines A and D, the system's first two lines). The colored squares mark the bike parking stations in the system, with darker shades of red indicating higher capacity.

# 6

# Demographic Data

A notable feature of cycling in Bogotá, and indeed one of the major challenges for policymakers and bicycle advocates, is the disparities of use across demographic categories: gender, age, and socioeconomic group. Bicycle transport remains dominated by men between 25 and 44 from lower socioeconomic groups. The following sections utilize the 2011 Mobility Survey to explain these disparities in detail and suggest potential remedies.

## 6.1 Gender

**Table 5 Bicycle use by gender**

| Gender | % of Bicycle Trips on a Typical Day | Average length of trip |
|---|---|---|
| Male | 75% | 6 km |
| Female | 25% | 4 km |

Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

Table 5 shows that bicycle use varies significantly by gender. Men make up the majority of bicycle trips in the city and on average take longer trips. This disparity is consistent across socioeconomic groups. Reducing the gender gap in bicycle use would increase access to work opportunities, study, and other activities.

## 6.2 Age

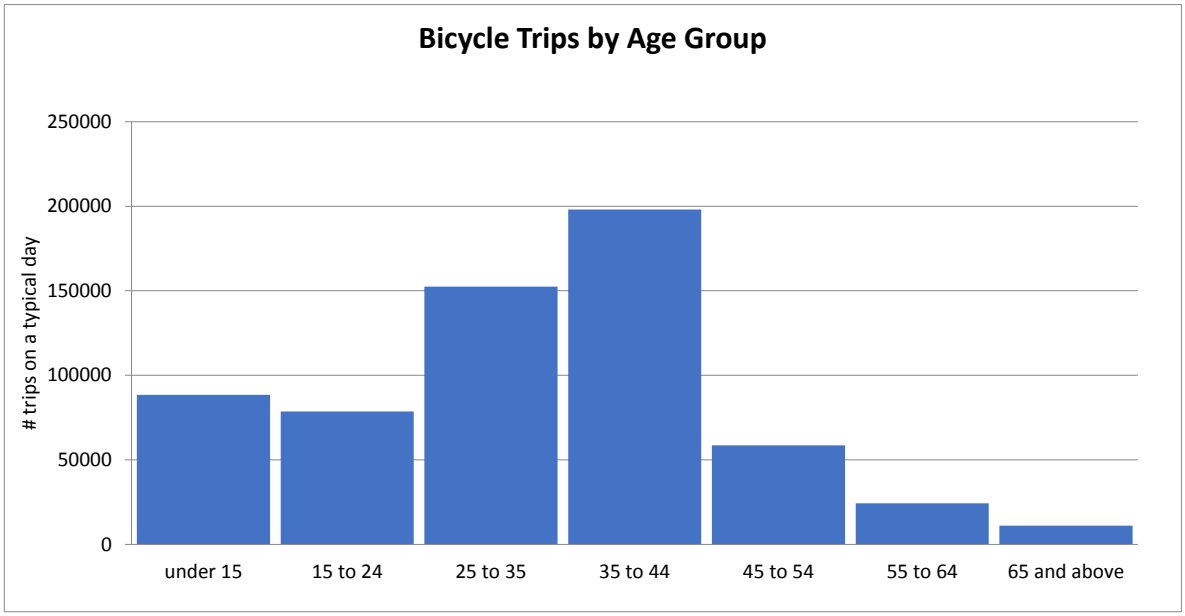


**Figure 14 Bicycle trips by age group**
Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

Figure 14 shows the age distribution of bicycle trips according to the 2011 Mobility Survey. It indicates that the age groups with the highest levels of bicycle use on a typical day were between 25 and 44, comprising around 57% of all bicycle trips. People under 44 make up 85% of all trips. Public actions lowering risks to cyclists, such as enforcing speed limits for car drivers, encouraging respect towards cyclists, and implementing low-speed zones, and changing public perception could reduce this gap (Camara de Comercio de Bogotá, 2014).

## 6.3 Socioeconomic Group

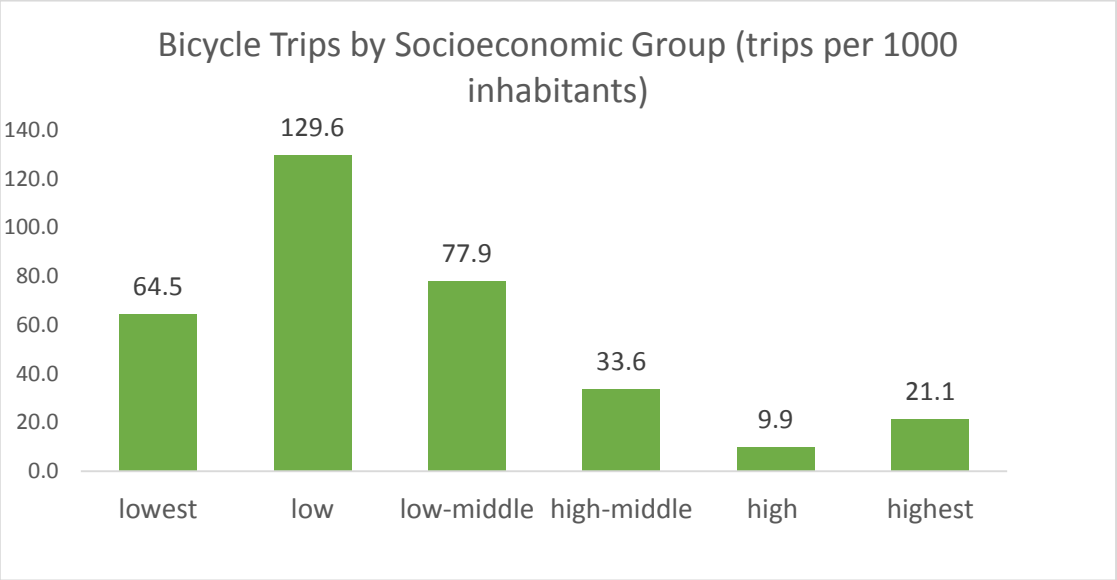


**Figure 15 Bicycle trips by socioeconomic group**
Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

In Colombia, the population is officially divided into six socioeconomic *estratos* (strata) in order to determine household utility costs and subsidies. Per capita, the three lowest socioeconomic groups make the most bicycle trips and comprise around 80% of all bicycle trips in the city, the majority in the lower-middle and lower groups, as seen in Figure 15. There are several possible explanations for the disparities across socioeconomic strata.

Cycling's relatively low cost makes it an attractive transport mode in low-income communities. Use in the lowest socioeconomic group is not as high because the poorest neighborhoods are located on the southern edge of Bogotá and bicycle trips to jobs, for example, are longer than for lower-middle class residents on the west side of the city.

## 6.4 Geography

This section deals with the geographic distribution of bicycle trips in the city. Bogotá is a highly segregated city socioeconomically (see Figure 16 below). The upper three groups are predominantly in the northern parts of the city, and the lowest along the western and southern periphery. Such segregation affects mobility patterns, as the other maps in this section will show.

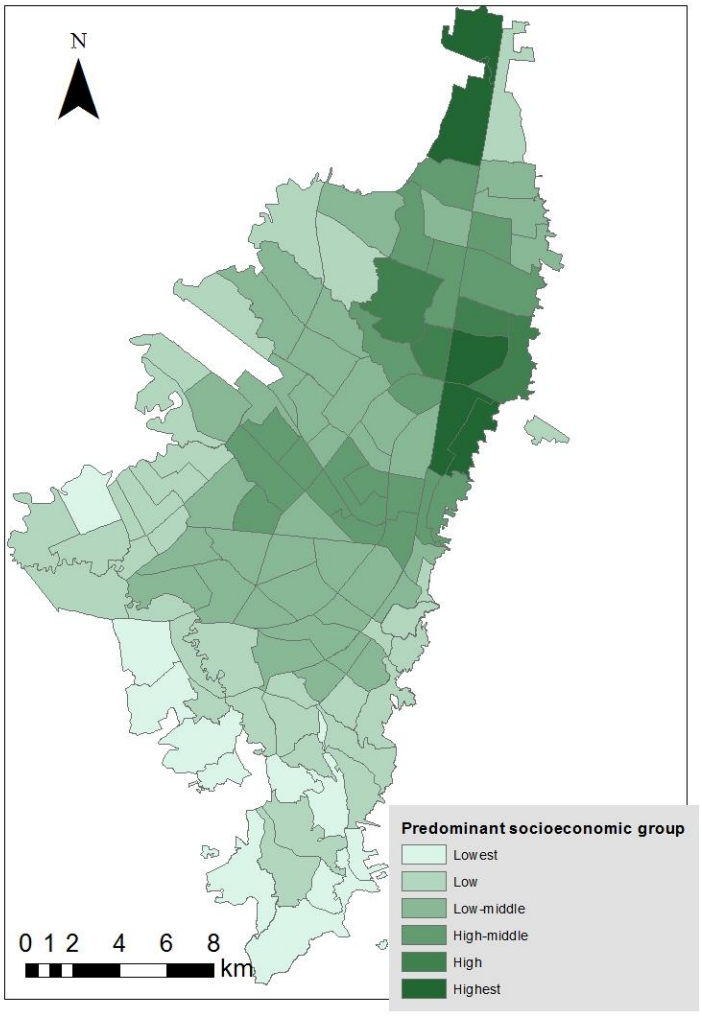


**Figure 16 Predominant socioeconomic group by area**
Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

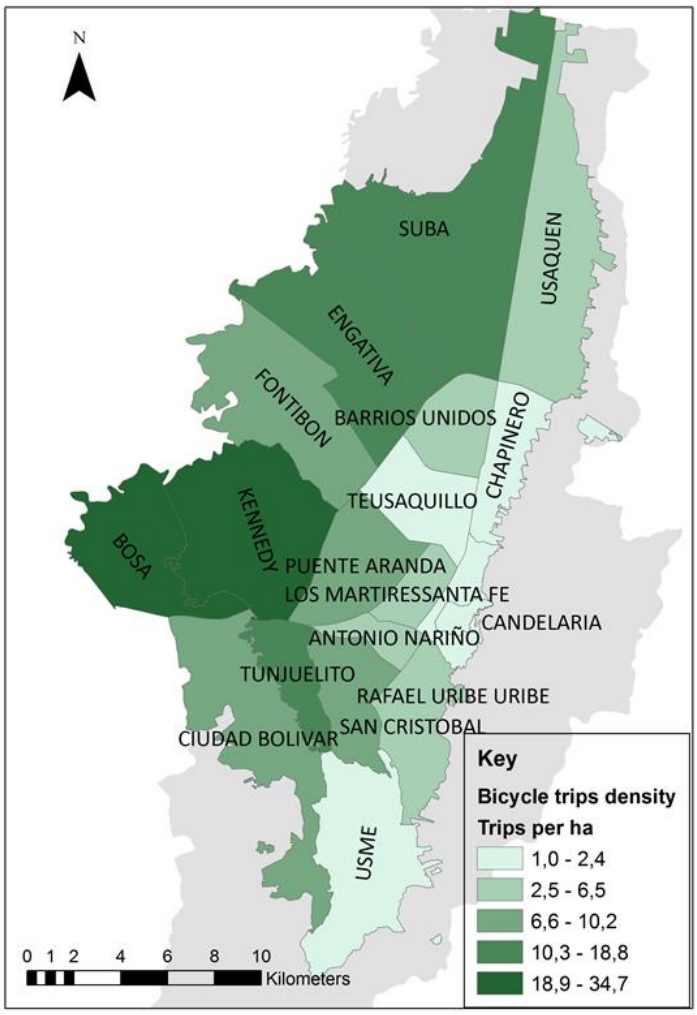


**Figure 17 Bicycle trip density by district**
Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

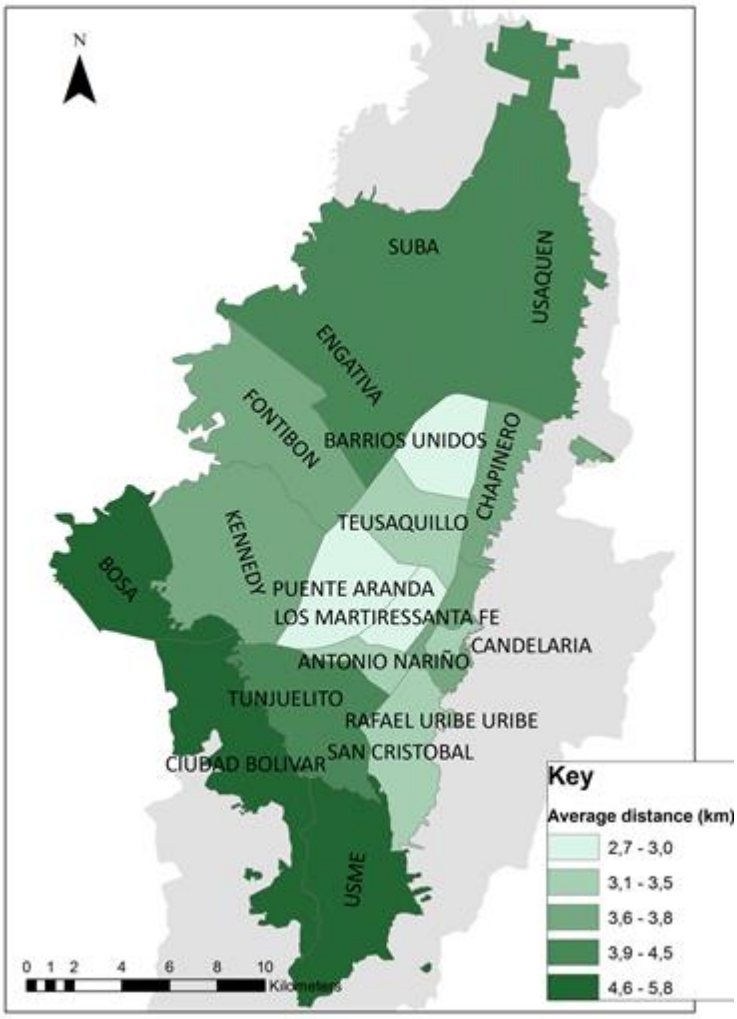


**Figure 18 Average bicycle trip distance by district**
Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

Figure 17 and Figure 18 show the distribution of bicycle use by administrative district (known as *localidades*).[1] Figure 17 displays the density of bicycle trips, that is to say the number of trips per capita in the district while Figure 18 indicates the average trip distance.

[1] Bogotá is divided into 20 districts. However, these maps only show 19, excluding the rural district of Sumapaz and the rural portions of the several other districts.

Bicycle use per capita is much higher in the outer districts on the west and southwest side of the city (Bosa, Kennedy, Engativá, Fontibón, Tunjuelito, Suba) than in the central and southern neighborhoods. However, the longest trips are made by residents in the districts farthest from the center: Bosa, Ciudad Bolivar, and Usme in the south, and Usaquen in the north. Most inhabitants of Bosa, Ciudad Bolivar, and Usme are from the lowest socioeconomic groups. They likely use bicycles for economic reasons and have to travel long distances from origin to destination.

# 7

# What do bogotanos think?

In addition to bicycle infrastructure and use, it is important to consider what people in Bogotá think about bicycles as a mode of transport. Although up to two million people use the Sunday Ciclovía every week for recreation or sport, bicycles are less popular as a mode of transport, especially when measured across socioeconomic groups (Instituto Distrital de Recreación y Deporte, 2014). The 2011 Mobility Survey showed that there are fewer than half a million bicycle trips per day in the city, equaling less than 4% of all trips. Although cycling levels have increased impressively (from under 1% modal share to around 4% in 15 years), they are still far below those of other capital cities like Beijing (32%), Copenhagen, Amsterdam (both around 29%), or Berlin (13%), or the Argentinian provincial capital of Rosario (8.4%) (City of Copenhagen, 2012; Clean Air Institute, 2013; LTA Academy, 2011; Senatsverwaltung fuer Stadtentwicklung und Umwelt, 2013).

To increase bicycle use in the city, we must first understand why bogotanos choose to use (or not to use) bicycles for urban trips. In 2014, Despacio conducted a survey for the IDRD (Bogotá's parks and recreation agency) to address this very issue. For more information on the survey methodology, see Section 0. This section presents reasons why many people in the city use bicycles, why many others do not, and measures that would motivate non-users to start cycling.

## 7.1 Why do bogotanos use bicycles?

**Table 6 Perceived positive factors of cycling**

| Positive Factor | Response % |
|---|---|
| Fitness | 44% |
| Health | 28% |
| Trip duration | 28% |
| Environment | 25% |
| Reliability | 22% |
| Trip cost | 21% |

Data Source: (Despacio, 2014)

First, why do people in Bogotá prefer bicycles to other modes of transport? In Copenhagen, the main reasons—in descending order of importance—are speed, convenience, cost, and health (City of Copenhagen, 2012). As seen in Table 6, the main positive perceptions of bicycling in Bogotá have to do with the ability to get exercise while riding a bicycle (health and fitness), followed by trip duration, a more practical consideration similar to the Danish preference for speed.

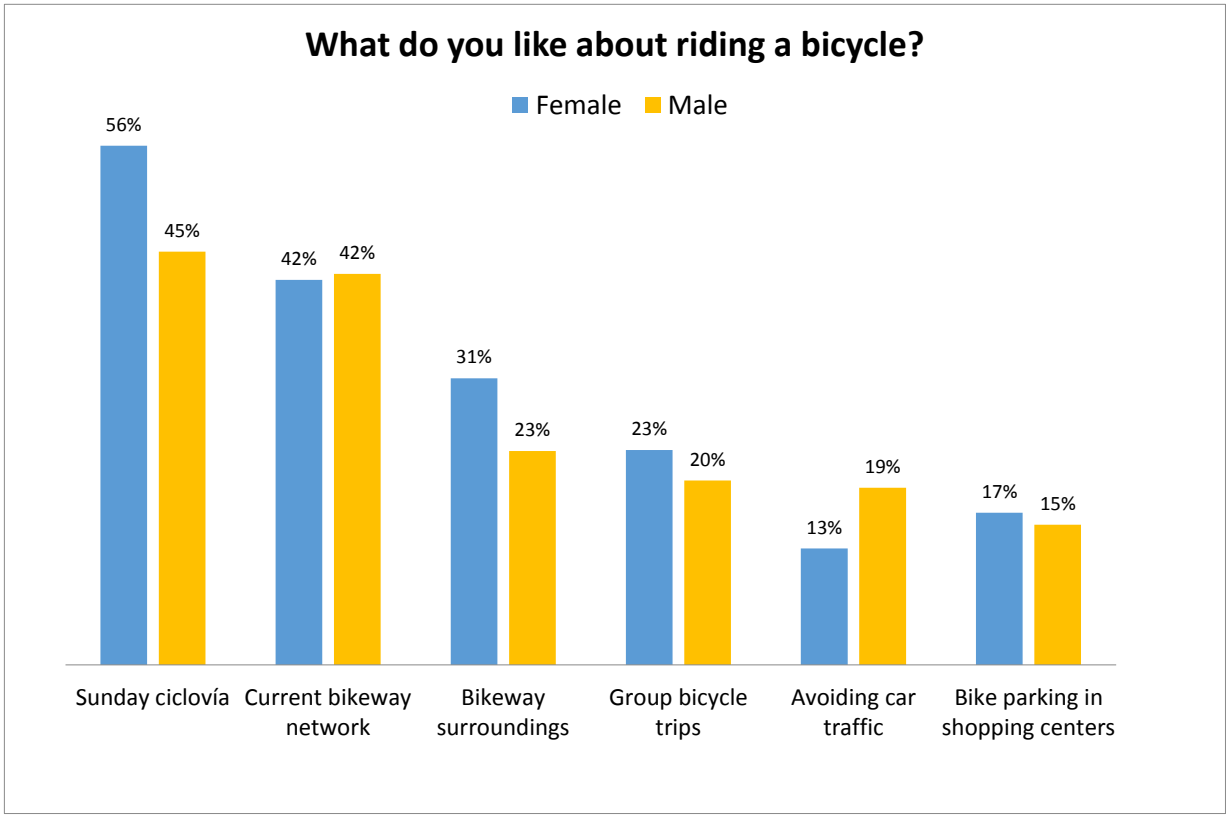


**Figure 19 What do you like about riding a bicycle? (by gender)**
Data Source: (Despacio, 2014)

Figure 19 indicates what respondents liked most about riding a bicycle, dividing responses by gender for purposes of comparison. The most popular element is the **existence of the Sunday Ciclovía** and **current infrastructure**. A notable number of respondents liked riding past car congestion on their bikes. This suggests that **the positive feeling produced by passing a traffic jam could be employed to promote bicycle use**.

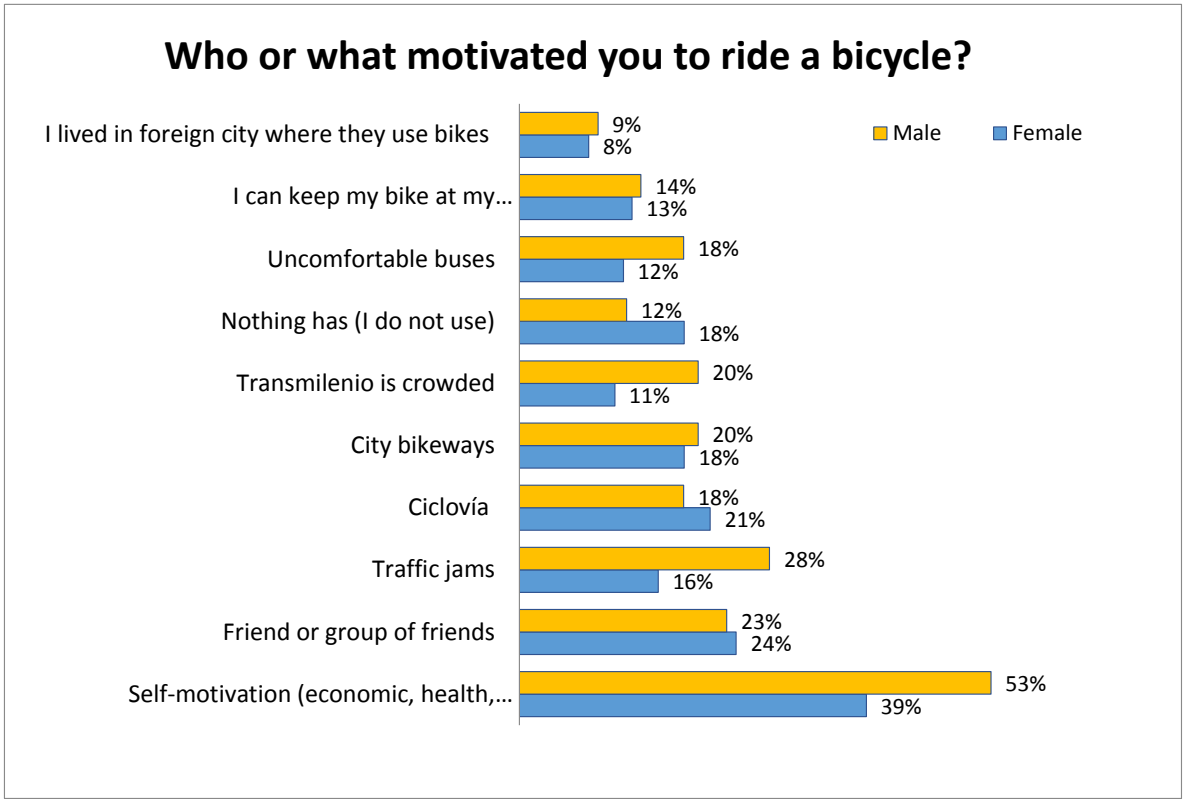


**Figure 20 Who or what motivated you to ride a bike, by gender**
Data Source: (Despacio, 2014)

Figure 20 shows who or what motivated respondents to start riding bikes. The main response by far was self-motivation, which encompasses economic, environmental, and health-related reasons, significantly more so for men (53%) than women (39%). Having groups of friends that bike, passing traffic jams, and using the Sunday Ciclovía were other common reasons (between 16 and 28%).

In Figure 21 one can see the main reasons why those surveyed **increased** their bike use. The primary reason was **being able to exercise while traveling**, followed by taking care of the environment (for surveyed women) and trip length (for surveyed men). Health benefits were the third-most common response for both.

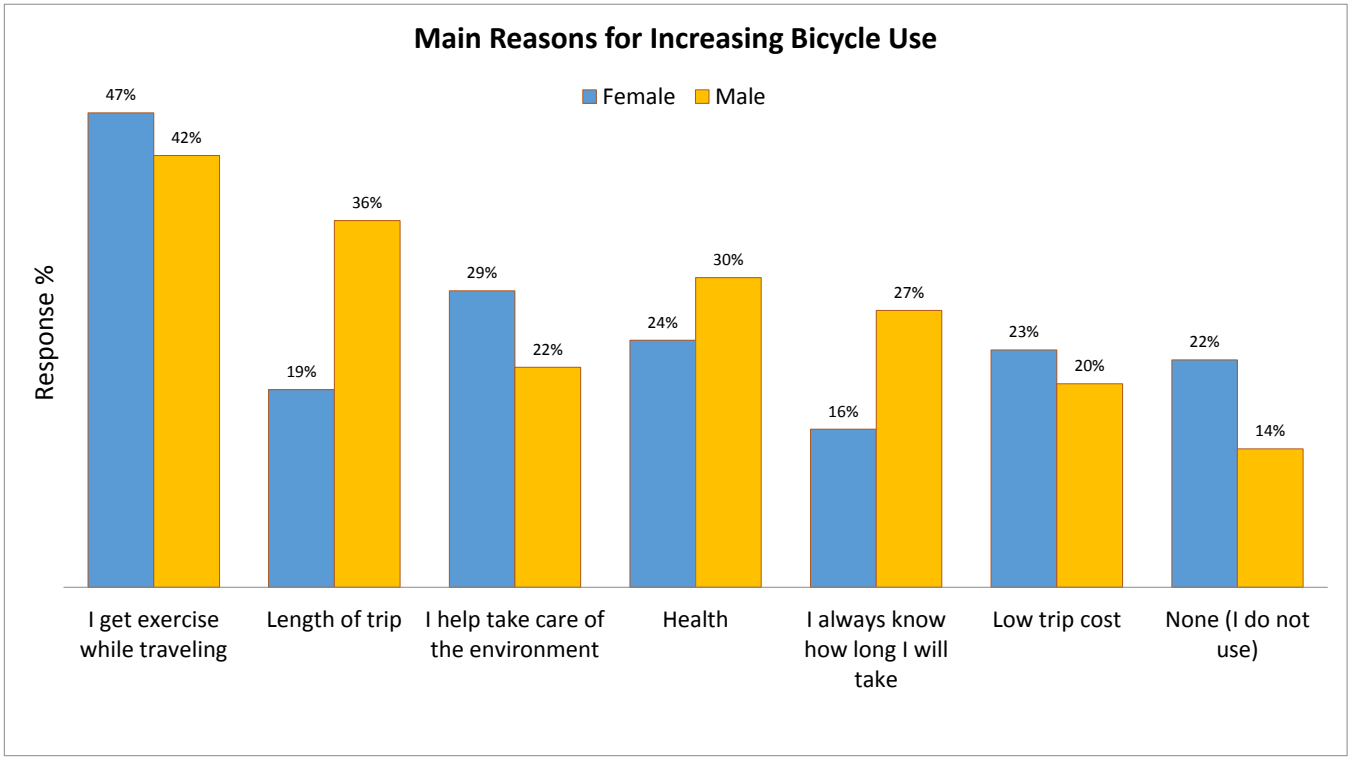


**Figure 21 Main reasons for increasing bicycle use**
Data Source: (Despacio, 2014)

## 7.2 Why do they not use bicycles?

Despite these positive perceptions, the fact remains that the majority of bogotanos (around 94%, according to the BCV survey) do not choose the bicycle as their main mode of transport. The following graphs and charts detail the various reasons for this.

**Table 7 Most adverse factors related to bicycle use**

| Adverse Factor | Response % |
|---|---|
| Being attacked | 56% |
| Being hit | 53% |
| Weather/rain | 46% |
| Car behavior towards cyclists | 42% |
| Pollution from motor vehicles | 39% |
| Bikeway design & obstacles | 37% |
| Finding a place to park bike | 26% |

| | |
|---|---|
| Sweat | 17% |
| Cannot carry what I normally do | 17% |
| Far from school/work | 16% |
| Cannot leave bike anywhere (if I don't return on bike) | 15% |
| Clothes get dirty / have to use athletic wear | 14% |
| Cannot leave bike anywhere (if I get tired, have an accident, etc.) | 11% |

Data Source:(Despacio, 2014)

Table 7 displays the perceived adverse factors associated with cycling. **Personal and road safety** are the most common negative factors ("being attacked" refers to the possibility of being victim to crime, i.e., mugging), followed by the **weather** and **interaction with motor vehicles**. Trip distance is not commonly cited (only 16% responded affirmatively to this option). Figure 23 breaks down these perceived factors by age group. The worst-perceived elements across all age groups are road and personal safety, followed by weather and the behavior of car drivers towards cyclists. For cyclists ages 26 to 35 specifically, pollution from motor vehicles is an especially important factor, while distance from origin to destination is less significant than for other age groups.

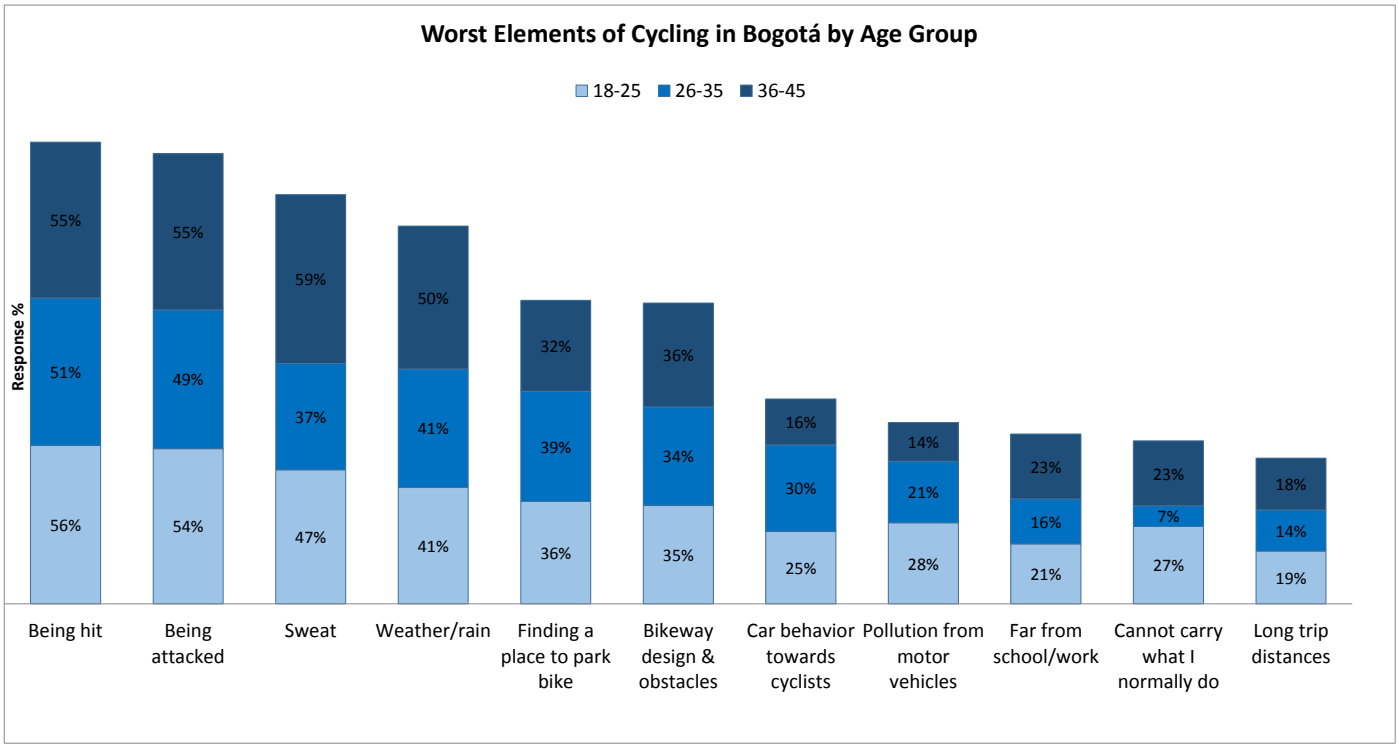


**Figure 22 Worst elements of cycling in Bogotá, broken down by age group**
Data Source:(Despacio, 2014)

Figure 23 measures perception as well, broken down by gender. Unlike the previous figures, which indicated broader obstacles to use, Figure 23 shows specific aspects of cycling that surveyed individuals found unpleasant. There is no notable difference by gender in this metric; the top elements for both are **the behavior of cars, buses, and motorcycles**.

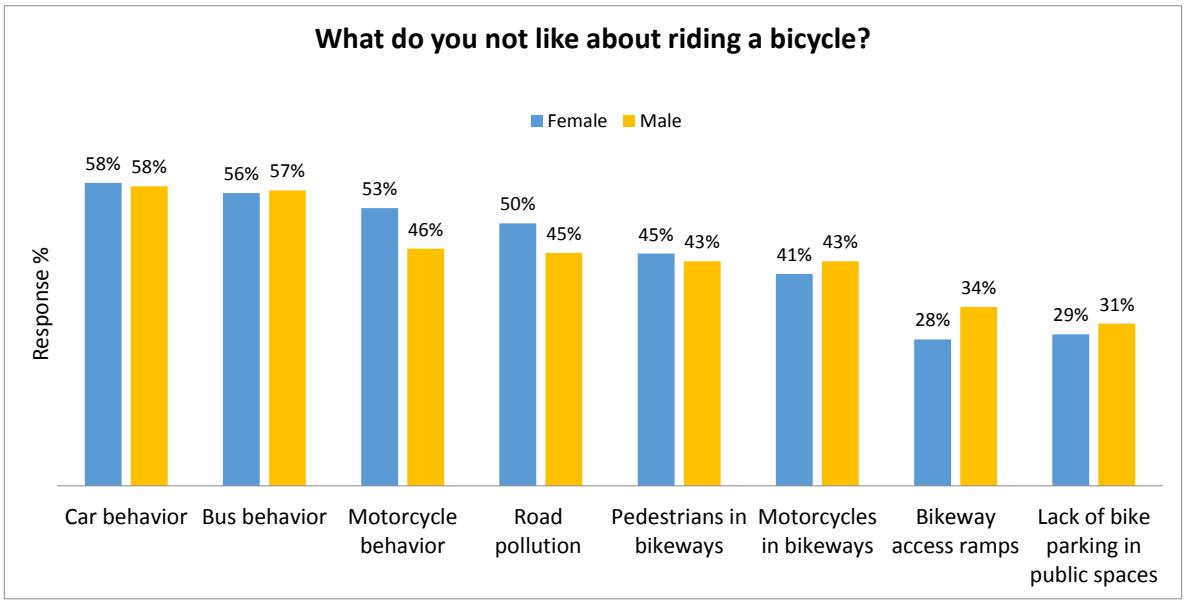


**Figure 23 What do you not like about riding a bicycle? (by gender)**
Data Source:(Despacio, 2014)

## 7.3 What would increase cycling?

The above survey results suggest that to make cycling a mainstream mode of transportation (e.g., with a modal share of above 10%), a number of issues need to be addressed. The following graphs present survey responses to factors that might lead to increased rates of cycling. Figure 24 indicates that an **expanded bike route network** is key to increasing bicycle use in the city, followed by **public bicycle system** and **free bicycle parking** at Transmilenio stations. Improving and integrating infrastructures and transport modes should therefore be a central element of bicycle planning.

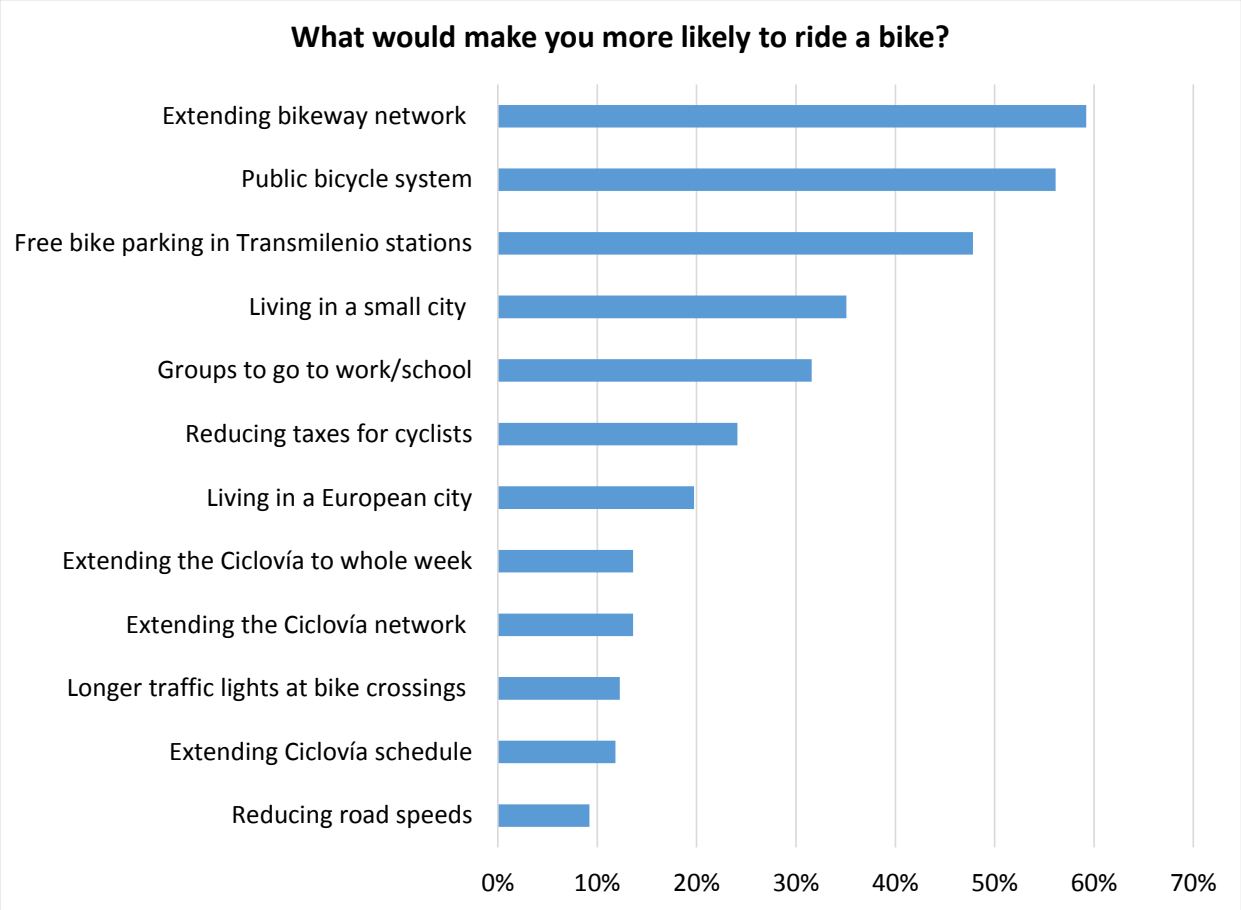


**Figure 24 What would make you more likely to ride a bike?**
Data Source:(Despacio, 2014)

Figure 25 indicates what measures would make people less scared to use a bicycle. **Infrastructural expansion** was the top choice with 55%, closely followed by **public awareness campaigns** to increase motorists' respect for cyclists and pedestrians (54%), and **improvements to existing infrastructure** (51%).

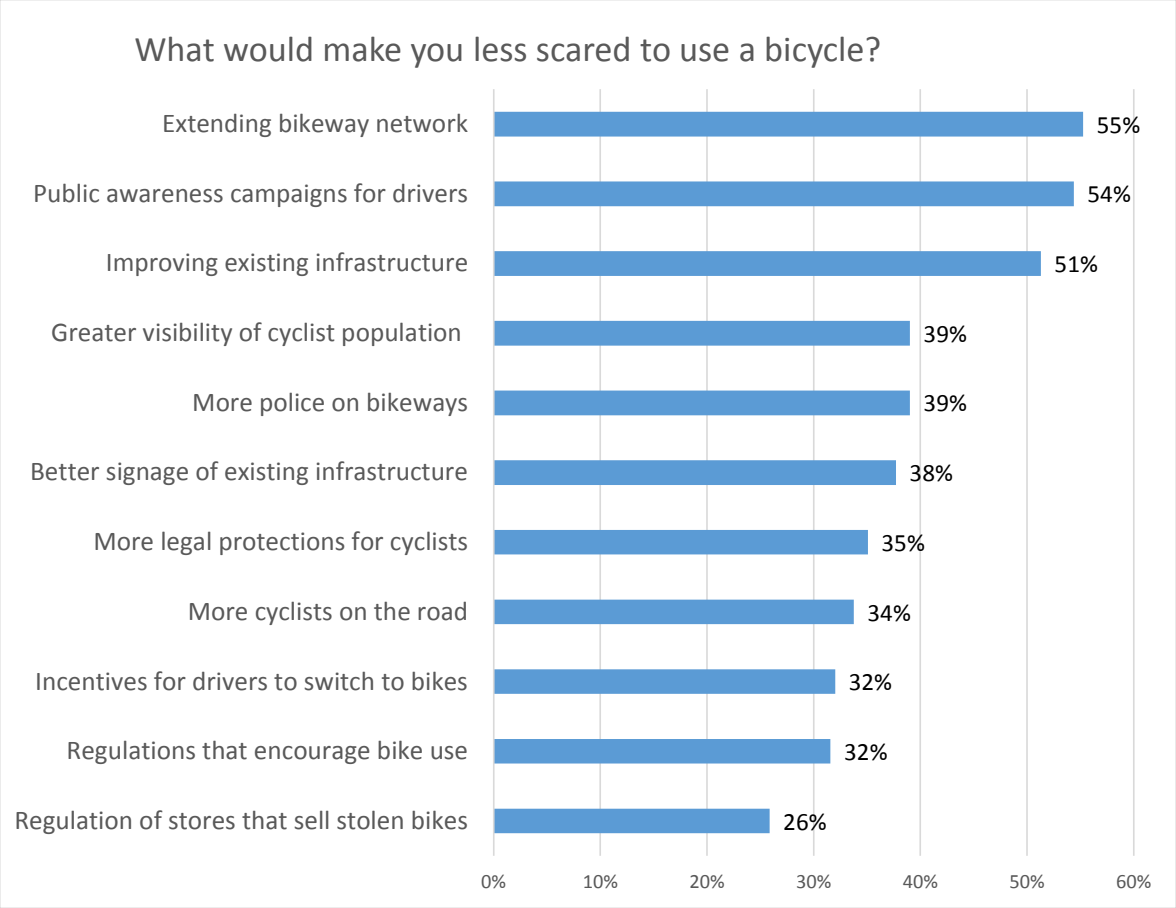


**Figure 25 What would make you less scared to use a bicycle?**
Data Source: (Despacio, 2014)

## 7.4 How do people feel about Bogota's bicycle infrastructure?

The following figures show Bogotá residents' perceptions of bicycle infrastructure, using a 2013 survey of 1,078 individuals. These perceptions affect the likelihood of people choosing a bicycle over other modes. This is especially important in Bogotá because even though the city has the largest network of segregated bicycle infrastructure of Latin America, bicycle use is still not as high as other cities. The graphs below follow the hierarchy of bicycle design requirements: directness, cohesion, comfort, and attractiveness (CROW & Groot, 2007). Road safety, normally considered the principal design requirement, is presented separately in Section 8 of this report.

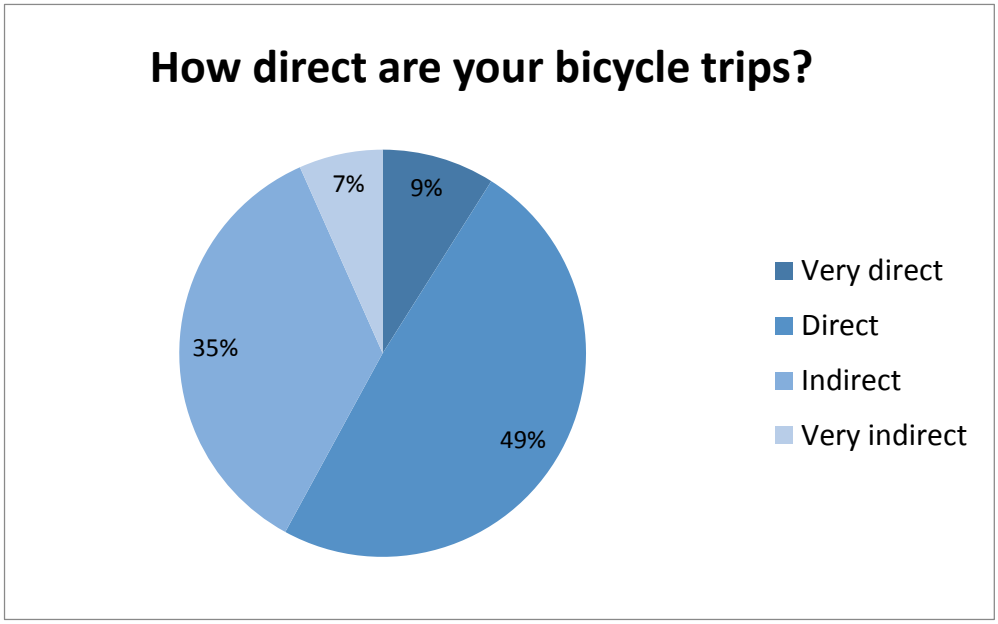


**Figure 26 How direct are your bicycle trips?**
Data Source:(Steer Davies Gleave, 2013)

Figure 26 presents people's perceptions of the **directness** of their usual route. A trip's directness can be measured both in terms of time—considering how often cyclists have to stop for other vehicles—and in terms of distance, which takes detours into account. Directness is one of the most important factors affecting bicycle use; if bicycles can quickly and directly get from origin to destination faster than a car, people are more likely to use their bike for short trips (CROW & Groot, 2007). Significantly, 56% indicated that their route was either direct or very direct. This may demonstrate that having almost 400 kilometers of bikeways generally provides cyclists with useful travel options.

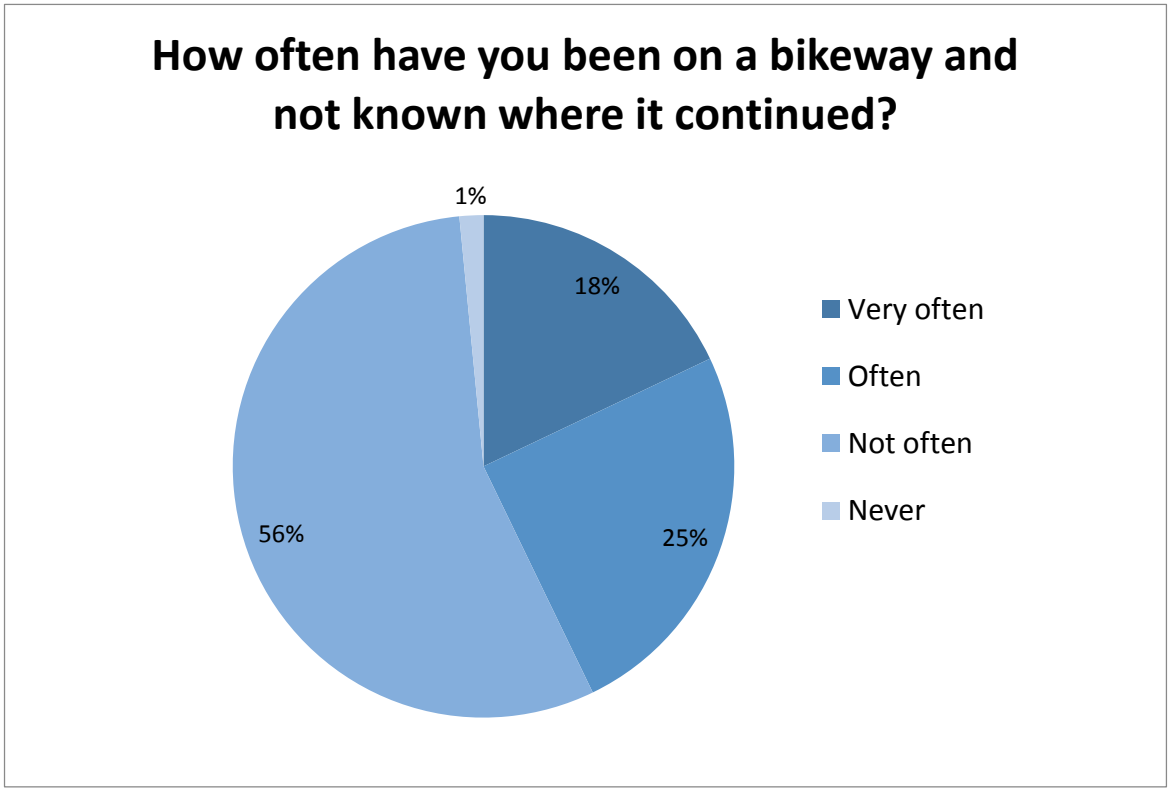


**Figure 27 How often have you been on a bike route and not known where it continued?**
Data source: (Steer Davies Gleave, 2013)

Figure 27 displays bogotanos' perceptions of bicycle route **cohesion**, meaning the continuity, connectivity, and completeness of the network (CROW & Groot, 2007). A cohesive bicycle network facilitates easy and straightforward trips from origin to destination. In this case, the survey measured how often bicycle route users came to a point where they did not know where it continued. Critically, 43% of those surveyed stated this was a regular experience for them and only 1% said it had never happened. **This highly important infrastructural factor affects bicycle use, given that many respondents to the 2014 IDRD survey felt the lack of information about the bikeway network was a primary obstacle to bicycle use** (Despacio, 2014).

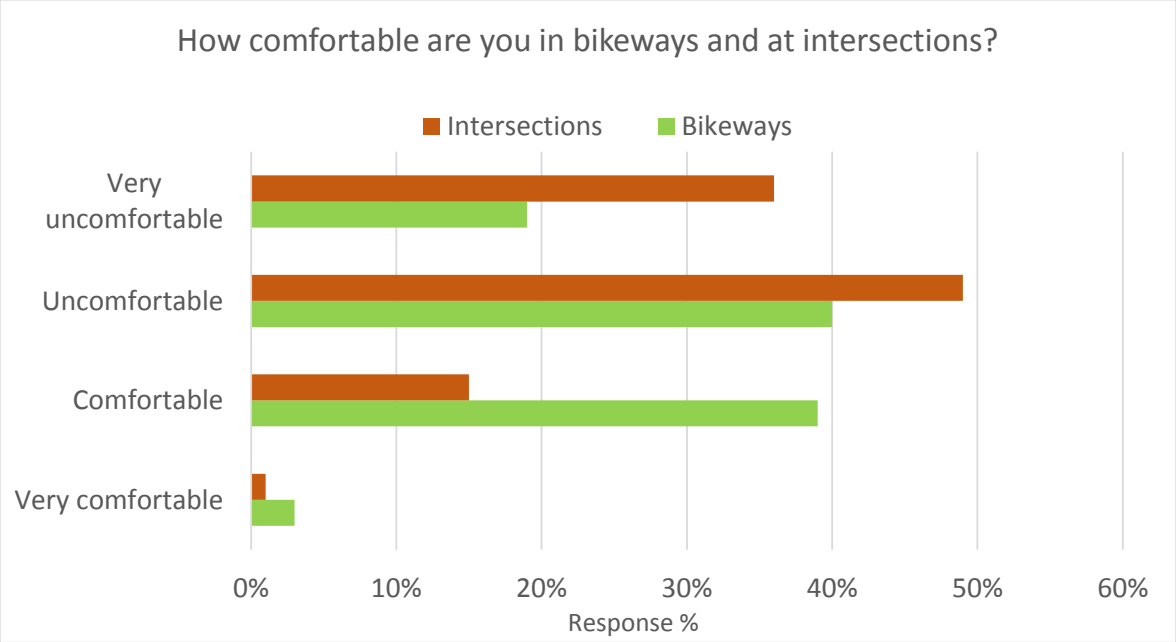


**Figure 28 How comfortable are you in bike routes and at intersections?**
Data Source: (Steer Davies Gleave, 2013)

Figure 28 shows cyclists' perceived **comfort** in bicycle routes and at intersections, encompassing issues of directness and safety. Intersections are the site of most interactions among different road actors and the primary location of bicycle casualties in Bogotá and other world cities (International Transport Forum, 2012). This is due in part to **discontinuous infrastructures** and **inadequate traffic signals** that put cyclists at risk (Steer Davies Gleave, 2013). This area needs improvement, given that 15% feel comfortable and only 1% very comfortable in intersections. Respondents overall perceive bikeways as more comfortable than intersections, with 42% stating that this type of infrastructure is either comfortable or very comfortable. Nevertheless, less than half of respondents feel comfortable in bikeways, indicating that it too needs improvement.

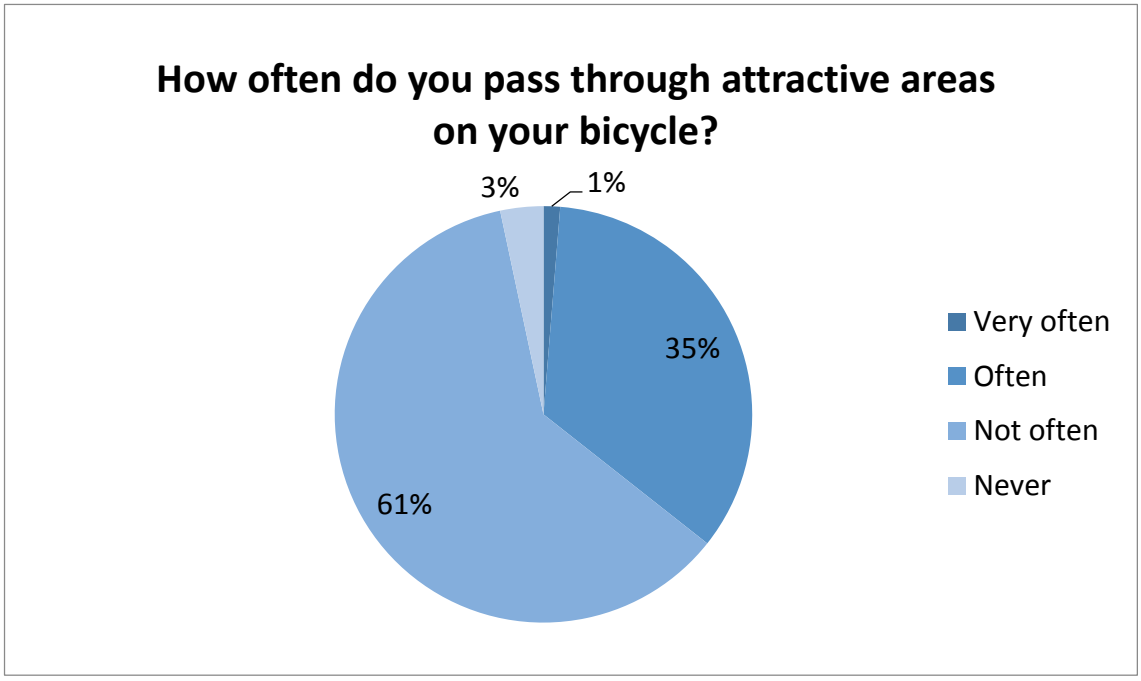


**Figure 29 How often do you pass through attractive areas on your bicycle?**
Data Source: (Steer Davies Gleave, 2013)

Figure 29 shows the perceived attractiveness of surroundings when riding a bicycle in the city. Attractiveness is highly subjective and entails different things for different people but elements include lighting (associated with social safety), greenery, maintenance of public space, and in some cases, separation from busy motor traffic (CROW & Groot, 2007). 64% of respondents said they rarely or never pass an attractive place while riding a bike. This negatively affects bicycle use in that unattractive surroundings make people less likely to ride.

# 8

# Safety in Numbers

Road safety is generally recognized as the most important aspect of cycling policy and the design and development of its infrastructure (CROW & Groot, 2007; NACTO, 2012). Currently in Bogotá, there is a **cyclist casualty (injury or death) for every 656,000 kilometers cycled**. To compare, in Copenhagen there is a cyclist casualty every 4.2 million kilometers (City of Copenhagen, 2012). This figure was calculated by dividing the total number of cyclist injuries or deaths from the Secretariat of Mobility by the total distance traveled on bicycle during a year based on the 2011 Mobility Survey. (Secretaría Distrital de Movilidad, 2014a; Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

Peter Jacobsen famously described a "safety in numbers" effect that links increased bicycle trips with decreased cyclist casualties, a phenomenon he found in various cities in developed and developing countries (Jacobsen, 2003). Reducing the total number of traffic casualties involving cyclists is vital to promoting bicycle use, since injuries and deaths negatively affect people's perception of road safety. To accomplish this, the International Transport Forum has called for a holistic "safe system" approach to traffic planning, rather than piecemeal measures that secure cyclists in an environment that is fundamentally unsafe (International Transport Forum, 2012, p. 10). In Bogotá specifically, the city council has proposed the "Onda Bici" project, which entails police accompaniment for groups of cyclists to ensure road and personal safety (Camara de Comercio de Bogotá, 2014, p. 6).

## 8.1 Cyclist Casualties and Bicycle Use

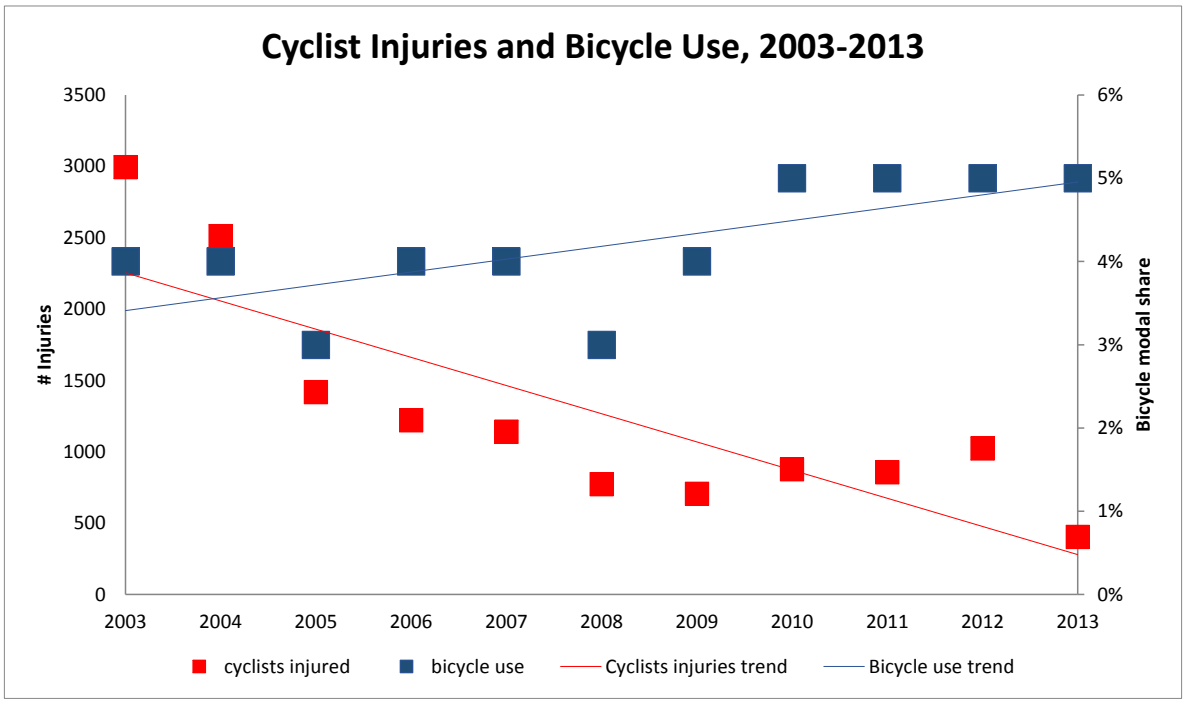


**Figure 30 Cyclist injuries and bicycle use, 2003-2013**
Data Source:(Bogotá Como Vamos, 2014) and (Secretaría Distrital de Movilidad, 2014a)

Figure 30 is a combined graph of bicycle use in the city and cyclist injuries. As bicycle use in the city increased from 2003 to the present, the number of injuries decreased. The results are similar when comparing bicycle modal share and cyclist deaths, as seen in Figure 31. As that graph shows, there was a significant decrease in the number of fatalities between 2003 and 2008 (from 89 to 34, a record low). After 2008, this number increased to a new peak of 60 in 2011; reasons for this are not entirely evident. However, the lack of political will around bicycle issues during that period likely did not help.

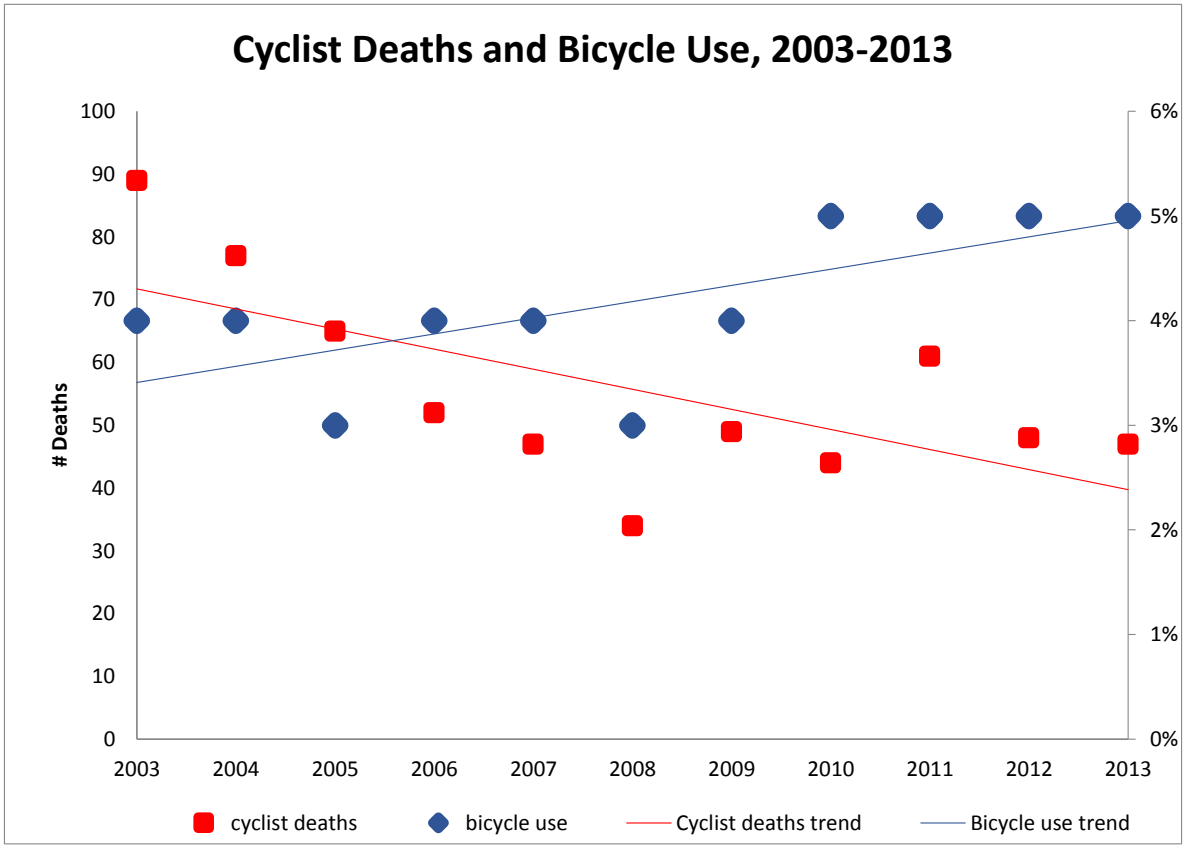


**Figure 31 Cyclist deaths and bicycle use, 2003-2013**
Data Source: (Bogotá Como Vamos, 2014) and (Secretaría Distrital de Movilidad, 2014a)

To compare the changes in casualties over time, we calculated the percentage changes for both. As Table 8 shows, although both injuries and deaths have decreased dramatically (86.5% and 47.2%, respectively), the decrease in injuries was much more pronounced. This suggests that much work remains to reduce the quantity and severity of crashes involving cyclists in Bogotá.

**Table 8 Percent change of cyclist injuries and deaths, 2003-2013**

| | 2003 | 2013 | % Reduction |
|---|---|---|---|
| **Injuries** | 2996 | 404 | 86.5 |
| **Deaths** | 89 | 47 | 47.2 |

Data Source: (Secretaría Distrital de Movilidad, 2014a)

## 8.2 Injuries, Infrastructure, and Use

The previous two graphs showed the relationship between bicycle use and cyclist casualties. The following figures display the relationship between bicycle use, bicycle infrastructure and cyclist injuries in the city.

Figure 32 shows the number of injuries over time compared with the construction of bikeways in the city. There is a negative association between the two; as the government builds more bikeways, the number of cyclists injured per year goes down.

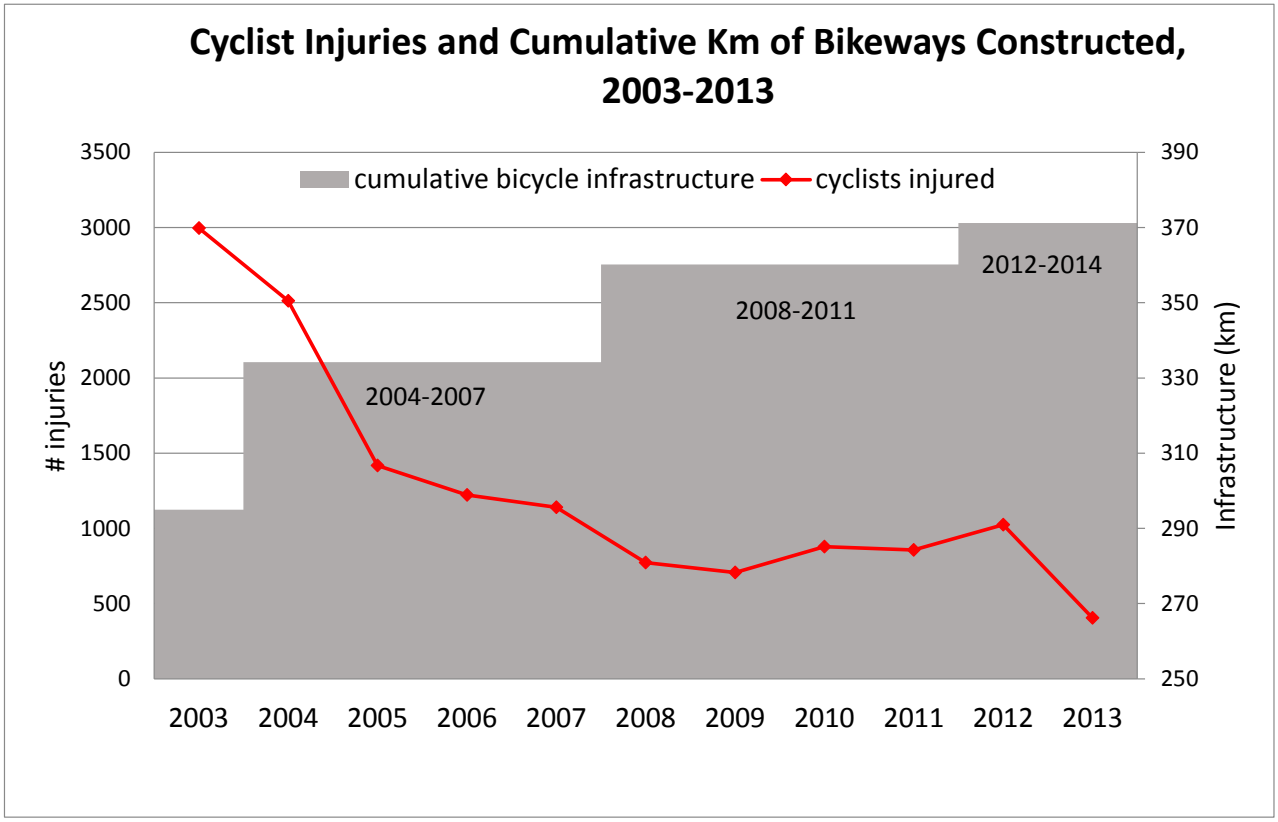


**Figure 32 Cycling injuries and cumulative bikeway construction, 2003-2013**
Data Source: IDU, Secretaría de Movilidad, (Bogotá Como Vamos, 2014)

Figure 33 meanwhile displays the relationship between constructed bikeway and total bicycle use. According to this, increased cycling infrastructure in the city increased bicycle use. Seeing the relationship between these three statistics indicates that increased bicycle infrastructure likely leads to increased use, which in turn appears to make cycling safer. These preliminary calculations indicate the need for a more in-depth analysis to evaluate the statistical significance.

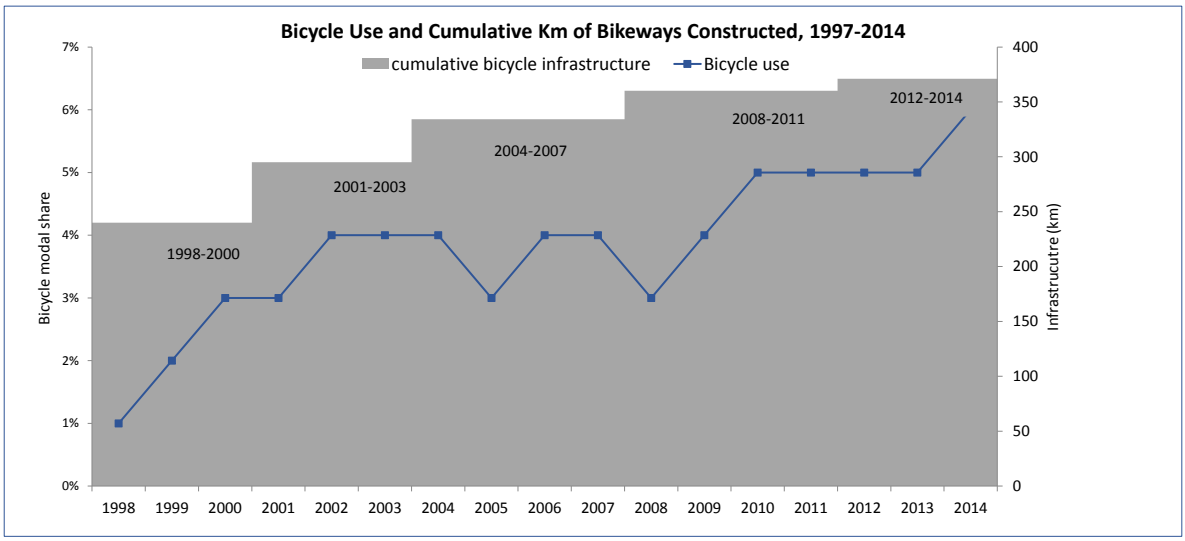


**Figure 33 Bicycle use and cumulative bikeway construction, 1997-2014**
Data Source: (Bogotá Como Vamos, 2014; Secretaría Distrital de Movilidad, 2014a); IDU

# 9

# Estimated Societal Benefits of Bicycle Use

What societal benefits does cycling generate? Below are some preliminary estimates of the positive environmental and economic externalities associated with biking. These are initial approximations meant for purposes of illustration only.

## 9.1 Environmental Benefits

Cycling significantly reduces $CO_2$ emissions by providing a clean mode of transport. This section presents an estimate of the $CO_2$ equivalent avoided as a result of cycling, that is to say the carbon dioxide equivalent emitted had cyclists used other modes. These values were calculated first by approximating the total distance ridden on bicycle in Bogotá, then applying the emission factor of each mode (grams $CO_2$ equivalent per kilometer, taken from Secretaría Distrital de Ambiente (2010)), taking into account the average occupancy of each vehicle.

Applying the 2011 modal share, an estimated **86,431 tons of $CO_2$ equivalent would have been emitted that year if cyclists had opted for other modes**. Figure 34 shows the breakdown of this number by mode; private cars and taxis are clearly the main emitters of carbon dioxide equivalent.

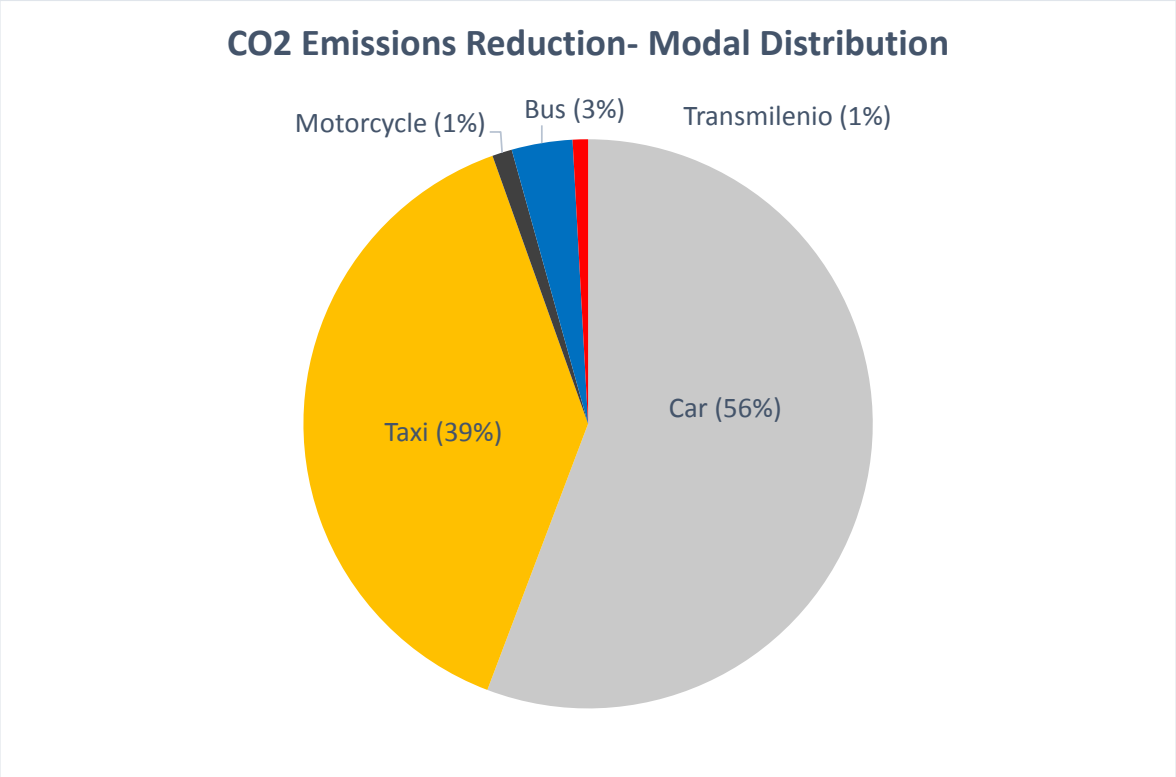

**Figure 34 Modal distribution of $CO_2$ emissions reduction**
Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

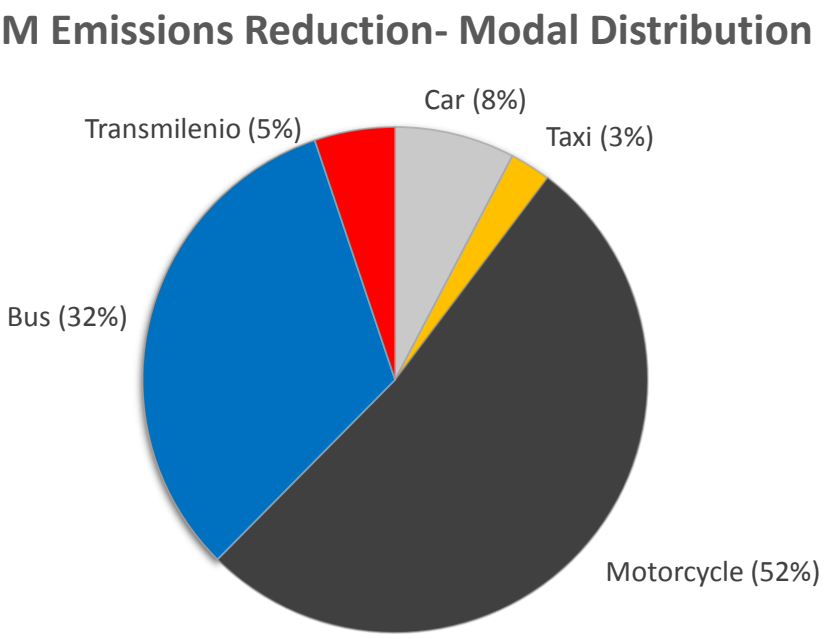


**Figure 35 Modal distribution of PM emissions reduction**

Data Source:(Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

Figure 35 presents a similar estimation, in this case for particulate matter (PM) rather than carbon dioxide equivalent. It shows the total amount of PM (in tons) emitted had cyclists chosen motorized modes. This value uses the same calculation as the $CO_2$ equivalent but applies the PM emission factor instead. Applying the 2011 modal share, approximately **eight tons of PM** would have been emitted had cyclists opted for other modes. Here the primary polluters are motorcycles, due to their low average occupancy, and buses, due to their age and use of diesel. It is worth noting that even though only 3.5% of trips were on bicycle, the emissions reduction was considerable. If the upward trend of cycling continues, greater benefits will be seen.

## 9.2 Economic Benefits

Cycling also generates economic benefits for cities through multiple positive externalities and the avoidance of negative ones. These factors often are not considered in policy analysis or the implementation of active mobility infrastructures. This section provides an estimate of the economic benefits to Bogotá resulting from

bicycle use, utilizing the 2011 Mobility Survey and Todd Litman's methodology for calculating the benefits of active transportation. (Litman, 2014)

Litman's methodology considers the following externalities: congestion reduction, infrastructure and vehicle cost savings, decreased parking costs, less noise, energy savings, and road safety benefits. Litman monetizes these externalities and presents them in dollars per kilometer ridden on bicycle. The methodology assumes that the distance of bicycle trips and that of motorized modes are the same. This estimate may be conservative for Bogotá, given that cyclists on average take 14% more trips per day than non-cyclists (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011).

Using this methodology, the total kilometers traveled by bicycle in 2011, and Litman's economic benefit multiplier of $0.89 per kilometer, **the total benefit is 820 million dollars per year** as a result of bicycle use in Bogotá.

# 10

# From Car to Bicycle

This final section analyzes the potential for a mode shift from cars to bicycles by examining key statistics about bike ownership, length of car and bicycle trips, and barriers to use for non-cyclists. The assumption here is that if a person has a bicycle, travels relatively short distances and faces fewer obstacles in the road, they could potentially switch from car to bicycle. A 2013 study found that 596,441 trips in Bogotá could be shifted to bicycles without great effort, an increase of 131% from 2011 (Steer Davies Gleave, 2013).

## 10.1 Vehicle Ownership

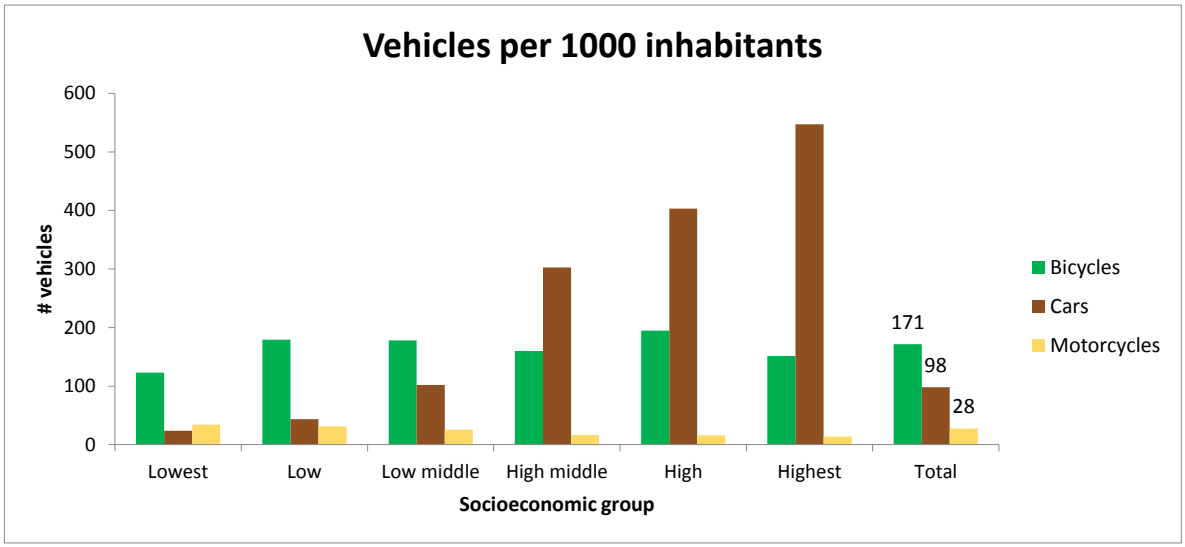


**Figure 36 Number of vehicles per 1000 inhabitants according to socioeconomic group**
Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

Figure 36 displays the number of bicycles, cars, and motorcycles per 1000 inhabitants, broken down by socioeconomic group. There is an even distribution of bicycles per capita across the six socioeconomic groups. However, car ownership is concentrated heavily in the upper three. Combined with relatively low bicycle usage in these groups, this would imply that wealthier people in Bogotá have bicycles but use them less, perhaps only for recreational use on the Ciclovía, and opt for private car instead. Finally, this graph shows that in Bogotá **there are more bicycles available than any motor vehicle and that they are more equally distributed throughout the population**.

## 10.2 Travel Patterns

This section looks at travel patterns in Bogotá to understand the possibilities for mode shift. Table 9 shows the number of trips per person per day and the average distance of those trips across socioeconomic groups. The final column contains the average distance of bicycle trips only. Per capita, higher socioeconomic groups make more trips per day but these trips are relatively short. In lower socioeconomic groups, people take fewer trips but the trips tend to be longer, nearly double the distance of the higher groups. Notably, the difference in average distance is greater for bicycle trips than for all trips.

This is in part because people in the lowest socioeconomic group generally live far from common destinations in high-activity areas like the city center (see Figure 16). People in the higher groups live closer and have greater access to these areas. It is also worth mentioning that people who make at least one trip per day by bicycle make more trips than people who do not. On average, bicycle users make 3.04 trips per day in a typical day, while non-bicycle users average 2.66 trips per day, a difference of 14% (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011).

**Table 9 Number and average distance of trips by socioeconomic group**

| Socioeconomic Group | Number of Daily Trips per person | Average Trip Distance (km) | Average Bicycle Trip Distance (km) |
|---|---|---|---|
| Lowest | 2.06 | 8.0 | 8.3 |
| Low | 2.21 | 6.3 | 5.7 |
| Mid-low | 2.21 | 5.7 | 5.3 |
| Mid-high, high and highest | 2.54 | 5.6 | 4.3 |

Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

**Table 10 Short Car Trips**

| Trip Length | Percent of Car Trips | Percent of Bicycle Trips |
|---|---|---|
| Less than 5 kilometers *(high potential for mode shift)* | 58% | 28% |
| Less than 9 kilometers *(medium potential for mode shift)* | 81% | 45% |

Data Source: (Steer Davies and Gleave & Centro Nacional de Consultoría, 2011)

Table 10 indicates the percentage of short car and bicycle trips in Bogotá, the idea being that for these short distances, a bicycle could be used instead of a car. These distances are ideal for a bicycle because they can be done in less than 45 minutes at a moderate pace (less than 17 km/h) without exertion. This table strikingly shows that, **on average, car trips are *shorter* than bicycle trips**. This is likely because most cyclists are from lower socioeconomic groups and often have to travel longer distances from home to work, compared to wealthier drivers whose origins and destinations are often closer.

## 10.3 Perceived Barriers

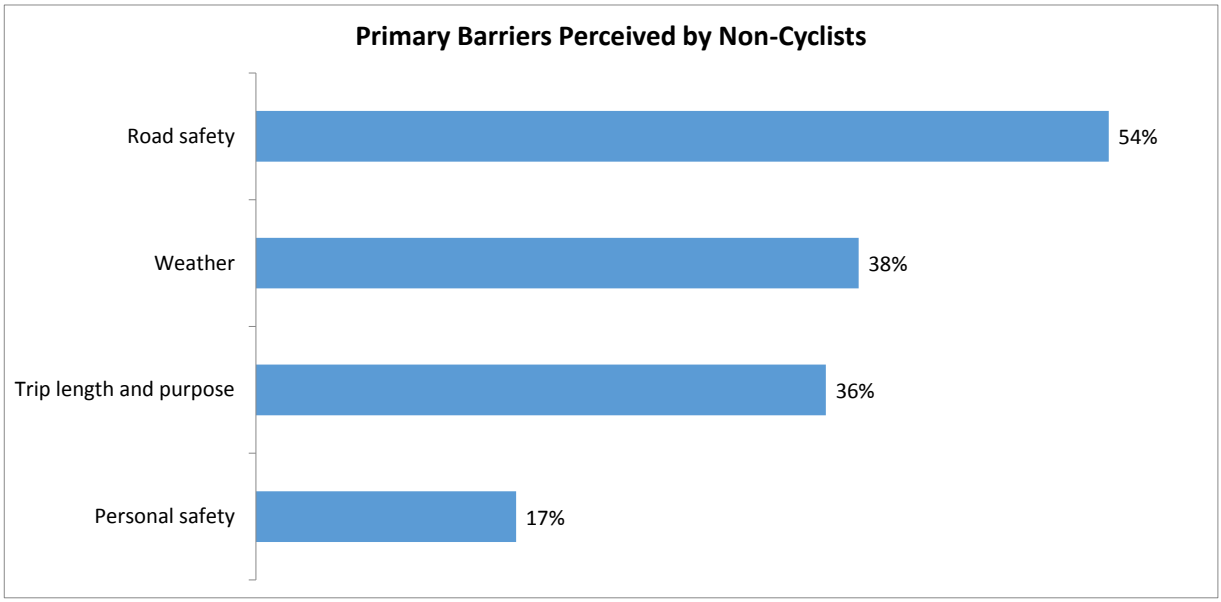


**Figure 37 Primary barriers perceived by non-cyclists**
Data Source: (Steer Davies Gleave, 2013)

Figure 37 indicates barriers to bicycle use perceived by **non-cyclists** in Bogotá. The most important barrier for non-cyclists is road safety, followed by weather and trip characteristics. Notably, (perceived) personal safety is less important to non-cyclists than to cyclists (see Table 7 for comparison) based on a survey of users and non-users both. It is therefore important that bicycle policies in the city improve perceptions of road safety.

# 11

# Conclusions

The *Bogotá 2014 Bicycle Account* provides an initial snapshot of bicycle infrastructure, use, and perceptions in the city. Mobility is undoubtedly a challenge in present-day Bogotá, with overcrowded Transmilenio buses, traffic jams, and uncontrolled urban sprawl. Cycling is a fast, flexible, and inexpensive mode of transportation, and it generates benefits for the environment, economy, and health. Bicycles therefore can play an important role in a range of urban policy solutions, and they have. However, for Bogotá to become a true cycling city, much still needs to be done. As this report has shown, road safety remains a primary barrier to bicycle use, both in the reality of cyclist casualties and in public perceptions. Greater investment in the city's bikeway network with focus on safety by targeted design, better intersections, and less aggressive driving would make the road safer for cyclists and potentially encourage more people to ride. Increased bicycle parking—in public spaces, Transmilenio stations, and private businesses—would also encourage more bicycle use.

This report also identifies major opportunities for mode shift. The demographic disparities in use mean that there are huge sectors of the population that do not use bicycles, even if they own one. In bicycle promotion and infrastructure development, particular attention should be paid to the needs of women, children and older potential cyclists. A concerted effort should also be made to induce drivers from upper socioeconomic groups to shift from car to bicycle for shorter trips, which are often easier to do on bike.

Finally, it is important to annually monitor the indicators presented here in order to properly compare trends in bicycle use and perceptions in Bogota. Such monitoring is necessary to assess the effectiveness of bicycle and transportation planning goals and initiatives, to understand what is being done correctly and what is not.

# 12

# Future Bicycle Accounts? We need your support

This document was produced by Despacio, a Colombian non-profit that conducts research to promote quality of life in all stages of the life cycle. It works in the productive, reproductive and educational sectors, seeking to "challenge the intuitive" in each field of knowledge by performing applied research to improve the general welfare of the community. Producing this report without funding has required considerable effort on our part. We therefore would be grateful to any institution or person who would be interested in donating their time or financial resources to support future editions of the *Bogotá Bicycle Account*, printed versions of this document with greater scope and outreach, as well as a more comprehensive analytical framework and data collection.

# 13

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# bicycle account
## Bogotá 2014

All photos by Carlosfelipe Pardo
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