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# Chapter 9

## Cycling in Bogotá During a Pandemic. The Influence of Tactical Urbanism and Perceived Insecurity on Bicycle Usage



Maëlle Lucas , Vincent Gouëset , and Florent Demoraes 

**Abstract** This chapter first analyses the impacts of the 2020 health crisis on bicycle policies, and second, the adaptations and reactions of the city's bicycle users, in Bogotá. The capital of Colombia has been the first city in the world to create a network of pop-up bikeways to encourage citizens to avoid public transportation. These were inspired by tactical urbanism, which enabled its quick installation and adaptation. They were set up on main avenues, to serve low-income neighbourhoods, where remote working could not be implemented. This new policy has been used as a tool by Bogotá's Mayor's office to show its capacity to handle the health crisis and its commitment for more sustainable mobility. The chapter is based on a field investigation (interviews and mobile ethnography with daily cyclists), an online survey, interviews with mobility experts (academics, institutional agents, activists), and public data on urban mobility. It draws the chronological evolution of public policy, the cartography of its impact for bicycle use, and a detailed analysis of what is at stake. It also sheds light on the limits of tactical urbanism that was implemented during the health crisis.

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This research draws on a geography Ph.D. by M. Lucas, jointly supervised by V. Gouëset and F. Demoraes, about experiences, behaviours, and representations surrounding bicycle usage in Bogotá. Fieldwork in Bogotá throughout 2021 applied dedicated research methods to gauge how the pandemic of Covid-19 affected bicycle practices. The ANR Vélotactique project ANR20-COV7-0007 was central to devising this methodology, and guided the research design to ensure findings were comparable with the other fields under study (cf. Chaps. 3, 4, 8 and 10). The findings presented also feed into the ANR Modural project ANR CE22, about sustainable mobility in the deprived outskirts of Lima and Bogotá (<https://modural.hypotheses.org/le-projet>).

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## 9.1 Introduction

With the onset of the Covid-19 pandemic in March 2020, Bogotá—the eight million people capital of Colombia—attracted the global limelight for the speed with which it implemented an ambitious provisional bikeway policy. This was not due to chance. It was part of a pro-bicycle context built up over several decades, with the pandemic only accelerating pre-existing trends. Thus the title of a 2019 report by the Bogotá municipality, the *Bogotá Capital mundial de la bici, una visión de ciudad*,<sup>1</sup> encapsulated an ambitious target to turn Bogotá into a “bicycle-friendly” city, an internationally recognised distinction (Secretaría Distrital de Movilidad 2019). Evidence of success came when the city broke into the 2019 Copenhagenize Index top twenty, which served as a marketing tool for both Bogotá and the company that implements that ranking.<sup>2</sup> With nearly 600 km of bikeways and a modal share of 6.2% in 2019, the Colombian capital is a leader on the subcontinent, but admittedly some way off the records held by Amsterdam, where the modal share of cycling stood at 36% in 2016, and by Xuzhou in China (43%) (Buehler and Pucher 2021).<sup>3</sup> The health crisis provided a way of building up this international recognition, for in March 2020 Bogotá was the first city in the world to set up a network of pop-up bikeways to reduce the risk of contagion on public transport (Ademe 2020). Before examining the details of this quick transformation and its consequences in public space, it is important to go over recent changes in public policy, which have led to growing bicycle usage over the past twenty or so years.

Bicycle culture is firmly anchored in the history of Colombia, a country with champion cyclists including older figures such as Cochise and Lucho Herrera in the 1970s and 1980s, and Nairo Quintana and Egan Bernal today. In Bogotá, bicycles are traditionally used for recreation and sports, in part thanks to the *Ciclovía*, a weekly event held since the 1970s in which several of the city’s main avenues are reserved for cycling and sport on Sundays and bank holidays (Montero 2017; Gomescásseres 2003).

Furthermore, there has been a real expansion in bicycle usage for daily trips, as evidenced in the urban mobility surveys (UMS) published in 2011 and 2019. These show a substantial increase in bicycle usage, with bicycle trips per year going from 441,135 in 2011, to 880,367 in 2019. Starting in the late 1990s, when Enrique Peñalosa was mayor, urban transport services were overhauled. This saw

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<sup>1</sup> Bogotá, world bicycle capital, a city’s vision.

<sup>2</sup> The Copenhagenize Index (<https://copenhagenizeindex.eu>) ranks cities around the world for how bicycle-friendly they are. It is conducted by a consultancy of the same name, which advocates greater integration of pro-bicycle policies by local authorities.

<sup>3</sup> Modal share is the proportion of trips carried out using a given means of transport in comparison to the total number of trips. Cycling modal share is thus the proportion of bicycle journeys divided by the overall number of trips.

the commissioning of the *Transmilenio*, a bus rapid transit system (BRT), along with an initial network of bikeways, mainly on pavements. This marked the first stage of local authorities promoting bicycle usage in public space. After a decade of neglecting bicycles—which counterintuitively boosted the emergence of local pro-bicycle activism—the public authorities once again placed cycling centre stage, resulting, for example, in the setting up of a bicycle directorate (*Gerencia de la bicicleta*), as part of the city mobility department in 2016, tasked with linking up various municipal bodies in charge of developing and promoting bicycle usage (the *Secretaría de Movilidad*, *Secretaría de Educación*, *Instituto Distrital de Recreación y Deporte*, *Instituto de Desarrollo Urbano*, *Unidad de Mantenimiento Vial*, *Secretaría de Seguridad*, and *Secretaría de la Mujer*<sup>4</sup>).

The expansion and progressive improvement of the cycling network since 2012 partakes in the same dynamic, also evidenced by the adoption of a “Public Policy for Bicycles” in 2021, setting out the bicycle-usage targets for the city and the means to encourage cycling. These various measures have progressively placed bicycles at the heart of urban mobility policies, recognising cyclists as public space actors, and taking them into account in decisions about street infrastructure planning. These measures have been accompanied by a few nationwide flagship projects, such as law 1811 passed in 2016, mandating a safe distance of 1.5 m between cyclists and motor vehicles, and allowing bicycles to occupy the entire roadway. These policies have helped highlighting and strengthening the recent spontaneous expansion in bicycle usage observed in Bogotá over the past fifteen years (Rosas Satizabal and Rodríguez Valencia 2019), encouraged by pro-bicycle activism.

Nevertheless, various divides persist in the take-up of bicycles by the city’s inhabitants. Thus the urban mobility survey (UMS) conducted in Bogotá in 2019 found that only 24% of bicycle trips were by women. Equally, there were a larger number of low-income cyclists than those from the higher classes, and they were fairly young on average<sup>5</sup>: 82% of cyclists came from socio-economic strata 1, 2, and 3,<sup>6</sup> and 59% were aged between 15 and 39. The most common category of cyclists is thus a young worker from the south-west deprived districts of the city, who makes daily bicycle trips often over long distances (23% of trips are 10 km or more). Nevertheless, the 2019 UMS also revealed the diverse user profile of people frequently travelling short distances, particularly among women and children.

The purpose of this chapter is to go over the changes to public policy and bicycle usage observed during the pandemic and to understand how the pre-pandemic context provided favourable ground for measures implemented in record time in 2020. It starts

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<sup>4</sup> Mobility Department, Education Department, Recreation and Sport Institute, Urban Development Institute, Road Maintenance Institute, Security Department, and Women Department.

<sup>5</sup> Maëlle Lucas. “Cycling as a necessity or as a choice? Evolution of the cyclists’ profiles and the mobility’s social imaginaries in Bogotá”. T2M Annual Conference—Mobilities in Transition, Nov 2021, Lisbon, Portugal.

<sup>6</sup> The strata categorise housing stock on the basis of the characteristics of dwellings and the surrounding public spaces. They are used to fix progressive tariffs for public services. Their value runs from 1 (precarious dwellings and poor-quality public space) to 6 (better standards of accommodation and wealthy neighbourhoods).

by looking at the stakes involved in public policies, echoing Chap. 3 addressing such matters in several cities. Starting from the early days of the pandemic, it goes over the evolution of the measures hurriedly put in place, emphasising what changed and what did not. It then focuses on cyclists, their practices, and the changes or potential hindrances they encountered as of March 2020, looking especially at how they responded to the temporary cycle infrastructure.

## 9.2 Methodology

The argument set out here is based on data collected using a set of complementary investigative techniques, used as part of an ongoing thesis, stemming from the *Vélotactique* and *Modural* projects. It also draws on data from official sources (UMSs, road accident statistics, bicycle-traffic counts, etc.). The first part of this chapter draws on a corpus of twenty-nine semi-directive interviews conducted with mobility experts in Bogotá (consultancies, local authorities, and academics). The purpose of these interviews was to reconstitute the pre-pandemic context and so better apprehend the scale of current transformations. During a second phase of fieldwork, an online questionnaire was developed, to which 397 cyclists responded.

Our questionnaire was disseminated online from June to December 2021. The sample group was representative in terms of gender, since 24% of respondents were women, as was the case in the 2019 UMS. However, young respondents and graduates were overrepresented. This was due to the first phase of dissemination having been conducted over social media and via academic and institutional contacts. To correct this bias, the questionnaire was disseminated to groups connected to biking, and flyers with a QR code to access the questionnaire were handed out in the streets. This enabled us to reach a different population, targeting in particular the low-income districts to the south-west of the city, where most urban cyclists live (cf. Map 9.1).

The questionnaire was designed to make it possible to compare findings from the various cities under study. It was adapted to Bogotá's context by reducing the place accorded to the impact of public policies, since there were fewer pro-bicycle initiatives during the health crisis in Bogotá than in France. For instance, there was no bicycle repair subsidy scheme; conversely, initiatives in Bogotá to get people "back into the saddle" predated the crisis.

The purpose of the questionnaire was to learn about changes in bicycle practices, focusing on before/after the pandemic, and on the various levers for potentially changing this practice. Part of the questionnaire thus measured bicycle usage practices (bicycle maintenance, purchasing equipment, and knowledge of the relevant public policies).

In order to supplement this information with qualitative data *in situ*, a ride-along interview method was used with fourteen cyclists, eight of them who used the pop-up bikeways between June and November 2021. They were conducted in consultation with the *Vélotactique* research team (see Chap. 10) and aimed at getting to learn the routine of cyclists by providing them with a microphone to describe their routes,

and by cycling along behind them with a camera. These recordings provide a way of observing the context in which cyclists travel, and their interaction with the environment and other public space users. This approach provides a way of illustrating the choices and alterations to routes flagged by the online questionnaire. Lastly, it provides a detailed insight into cyclists' representations relating to bicycle usage and to the places crossed, via in-situ description during the trip.

In addition, forty-six interviews were conducted for the thesis with bicycle users in Bogotá. The purpose of the interviews was to capture cyclists' practices and representations. While the issue of the pandemic and its impacts was not central to these interviews, it was addressed via recent changes to bicycle practices, and factors encouraging or hindering cycling. The questionnaire, ride-along interviews, and semi-structured interviews are examined in the second part of this chapter.

### 9.3 The 2020 Health Crisis and Its Impact on Bicycle Policies: Changes and Continuities

#### 9.3.1 *The Opportunity to Confirm an Already Strong Impetus*

The first impacts of the Covid-19 pandemic were felt in Bogotá on 16 March 2020, the first day of “preventative isolation,”<sup>7</sup> before the entire country entered a strict lockdown a few days later. On March 17th, the city introduced the first kilometres of pop-up bikeways. These itineraries were progressively adjusted until late April 2020, according to what local authorities observed on the field. The network of pop-up bikeways stabilised then at 84 km, before decreasing as of August 2020. Parts of the network progressively became a permanent fixture (28 km in May 2022), while other parts were dismantled (38 km in May 2022) (Robert et al. 2022). In May 2022, the municipality announced that, in all, it had 593 km of permanent and 18 km of pop-up bikeways. As a comparison, Mexico—9 million city—had a bicycle share of 1% in 2017 and built 54 km of new bicycle lanes during summer 2020, which made the number of cyclists double on main avenues (Nikitas et al. 2021).

The existence of the *Ciclovía*, dating from well before the pandemic, considerably assisted the city's speedy reaction. Bogotá had lengthy experience in transforming certain major thoroughfares into pop-up bikeways for recreational purposes, from 7 AM to 2 PM on Sundays and bank holidays. Motorists and cyclists were well used to this practice, generating a favourable context for establishing pop-up bikeways, initially marked out using orange cones. In the early days, these cones were removed each evening. This transpires in the vocabulary used to refer to these pop-up bikeways, initially called “temporary *ciclovías*” in reference to the Sunday *Ciclovía*, before then being referred to as “temporary *ciclorrutas*,” the word used in Bogotá to refer to bikeways. In turn, the *Ciclovía* cannot be considered as tactical urbanism

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<sup>7</sup> “Simulacro de cuarentena” or “aislamiento preventivo” in Spanish.

as it does not aim to change permanently public space organisation (see p. 4 of this chapter). However, the fact remains that the municipality has some experience implementing tactical urbanism to reduce traffic speed in residential neighbourhoods. Tactical urbanism in Bogotá used to refer to one-off interventions with a small-scale impact (Lydon and Garcia 2015; Brenner 2016). The implementation of pop-up bikeways is the first experiment at the city's scale and the first one to remain temporary for that long. Pop-up bikeways are often presented in interviews as a top-down trial that was mainly successful.

The past decade has seen cycling accorded an ever-larger place in municipal policy. Thus, the “Public Bicycle Policy”—a framework document placing cycling at the heart of issues relating to mobility policy and public space—was devised and drawn up during Enrique Peñalosa's final term as mayor (2016–2019), and published in February 2021.<sup>8</sup> Concerning cycle infrastructure, upgrades and new bikeway construction have accelerated over the past decade. An important recent change concerns bikeways, now built on roadways and not pavements as previously. Several interviews bring out how certain pro-bicycle policies have continued despite changes in the city's political leadership. Thus Gustavo Petro, the left-wing mayor whose term ended in 2016, speaking about his successor and political adversary Enrique Peñalosa, said the only thing they had in common was bicycles.<sup>9</sup> Consensus about bicycles has grown over time, thanks to increasing bicycle usage in the city, as well as to the return of Colombian racing cyclists to international podiums.

It was in this context that Claudia López assumed office as mayor of Bogotá in early 2020, just before the pandemic broke, after having conducted a very pro-bicycle campaign. The beginning of the new pro-bicycle mayoralty virtually coincided with the onset of the pandemic. Two interviews with agents for the *Secretaría de Movilidad* (the municipality's mobility department) bring out the key role Claudia López played in the decision to introduce pop-up bikeways.<sup>10</sup> The current mayor was thus behind calls for a solution that included bicycles to make up for the drop in public transport usage and the reduction in capacity decided during the health crisis. A small team from the *Secretaría de Movilidad* set to work and within a few days suggested an initial network of pop-up bikeways.<sup>11</sup> This first proposal espoused the BRT network, the idea being to anticipate the large-scale shift from public transport to bicycles. The pop-up bikeways were thus initially conceived for commuting along the main thoroughfares. This initial temporary network was subsequently adapted to better meet demand, and also due to conflicts in public space usage, particularly with bus routes and refuse lorries. The orange cones used to mark out pop-up bikeways were soon swiftly replaced by modular plastic barriers, most of which were orange too.

<sup>8</sup> [http://www.sdp.gov.co/sites/default/files/doc\\_conpes\\_dc\\_pp\\_bicicleta\\_-20210224\\_vconpes\\_0.pdf](http://www.sdp.gov.co/sites/default/files/doc_conpes_dc_pp_bicicleta_-20210224_vconpes_0.pdf).

<sup>9</sup> <https://www.eltiempo.com/archivo/documento/CMS-16418073>, El Tiempo, October 2015.

<sup>10</sup> Interviews with Andrea María Navarrete, in charge of gender issues for the *Secretaría de Movilidad* (30/04/2021), and with Deyanira Ávila, the former director of the sub-department for pedestrians and bicycles at the *Secretaría de Movilidad* (16/09/2021).

<sup>11</sup> See online map: [https://umap.openstreetmap.fr/fr/map/usages-des-amenagements-cyclables-temporaires-a-bo\\_667850#12/4.6420/-74.0369](https://umap.openstreetmap.fr/fr/map/usages-des-amenagements-cyclables-temporaires-a-bo_667850#12/4.6420/-74.0369)



**Fig. 9.1** Pop-up bikeway on Carrera 68, April 2021 (M. Lucas)

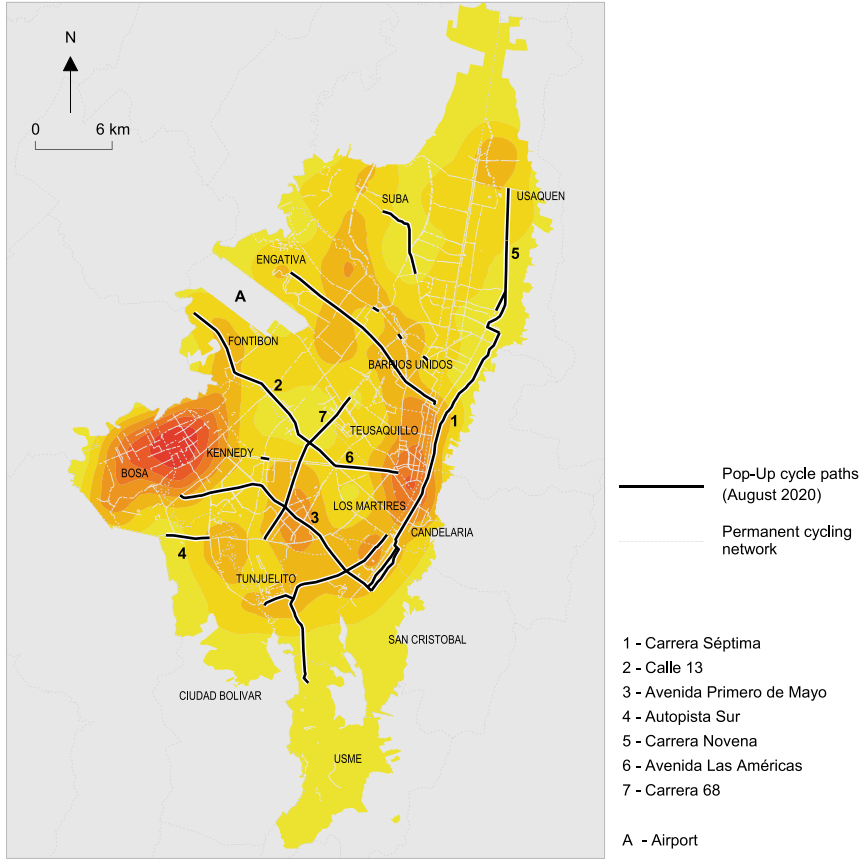
The use of movable barriers illustrates the temporary nature of these bikeways while making them visible in public space. Like the permanent cycleway network, most of the pop-up bikeways were two-way (cf. Fig. 9.1).

### ***9.3.2 From Conflict to Permanent Fixtures, the Expansion and Limits to Pop-Up Bikeways***

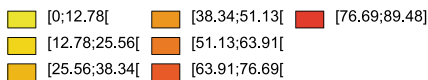
The decision to introduce pop-up bikeways was taken in Bogotá by a small group of people who worked for the *Secretaría de Movilidad* or the IDRDR (the Recreation and Sport Institute), two municipal service. The network was designed over a single weekend, and reworked in the space of a few days, given the urgent need to respond to an unprecedented situation experienced as an immediate threat (cf. Chap. 8). However, the fact that the decision was made without discussion subsequently fed the argument that the pop-up bikeways lacked legitimacy. Nevertheless, the conflict only really developed within public opinion when the economy was “fired up again” after a long period of lockdown from March to August 2020. Motorists and bus and lorry drivers reacted strongly, goaded on by the abrupt return of traffic jams, made worse by the space taken up on the roads by the pop-up bikeways. Several interviews bring out how this phenomenon and discontent among some of the public attracted excessive media coverage. Two corridors along *Carrera Séptima* and *Calle*



### Place of residence of cyclists - Bogotá DC - 2019



Number of cyclist's place of residence in a radius of 2 km (based on blocks where they live)



Source: Secretaría Distrital de Movilidad - EMU2019 - Author of the maps: Florent Demoraes - UMR ESO 6590 CNRS - Université Rennes 2 / IFEA - 18/02/2022  
 Data processing: Maëlle Lucas (Pop-Up cycling paths) and Florent Demoraes (Kernel density estimation)  
 Mapping technique: spatial smoothing (Kernel density estimation: triangular function, operation: sum, radius: 2 km, pixel size: 100 m<sup>2</sup>) - Software SavGIS - Discretization: equal intervals  
 Number of cyclists surveyed in the EMU2019 : 3241

**Map 9.1** Place of residence of cyclists in Bogotá. See the interactive version of this map here: [https://rpubs.com/corona\\_lanes/Bogota\\_Residence\\_Cyclists](https://rpubs.com/corona_lanes/Bogota_Residence_Cyclists)

13 came in for particular criticism, which was extensively covered in the press (cf. Map 9.1). The strength of feeling concerning the first corridor was largely because it provided access to the city centre for elites living to the north of the city. As for the second corridor, disapproval stemmed from the fact that *Calle 13* is the main route by which goods enter the city, and an industrial thoroughfare of national significance.

The economic interests of some of Bogotá's elite and industrialists were thus partly affected by the installation of these temporary and subsequently permanent corridors.

However, after an initial phase of discontent, the inhabitants seemed to have accepted these cycleways, and some were almost entirely established as permanent fixtures at the end of the lockdown in August 2020. Some conflicts remained, focusing on the still temporary bikeways once economic activity resumed, and they started to disappear, at least in parts. Two factors were at work. First, some of the modular barriers marking pop-up bikeways were stolen (particularly along Avenue *Primera de Mayo*), exposing cyclists to motor traffic without any protected corridor. In most cases, these modular separators were not replaced by the municipality. Second, some of the pop-up bikeways were voluntarily dismantled by the municipality. In an interview, this decision was justified by conflicts with shopkeepers and the priority given to public transport on routes with particularly heavy traffic, such as the *Autopista Sur*.

Bus traffic is a very present problem, bicycles too, of course, but the bus routes were so affected that there was something very clear in cost/benefit terms, which was that public transport had a greater impact than bicycles on the population as a whole. Therefore, so as not to penalise public transport times, the pop-up bikeways had to be dismantled, especially as along certain sections people continued to ride on the pavement. (Interview with Sebastián Posada, *Secretaría de Movilidad* agent, November 2021)

Bringing the economy out of a lockdown thus placed great pressure on pop-up bikeways and gave priority to public-transport efficiency and the shops' accessibility.

After this phase of adapting usages, sticking points were progressively overcome. In June 2021, the pop-up bikeways were withdrawn due to acts of vandalism, which broke out on the margins of the *Paro Nacional*,<sup>12</sup> a movement of strikes and demonstrations that lasted from late April to July 2021. Nevertheless, during this critical phase when pop-up cycle infrastructure suddenly disappeared, car drivers did initially respect the dedicated cycle lanes, despite the removal of modular barriers, unlike motorbicycles which had become used to encroaching onto the pop-up bikeways. Another example of attempts to defuse the conflict, this time at the initiative of the municipality, is the bikeway along part of *Calle 13*. Its implementation was so polemical that an article in the *El Tiempo* newspaper described it as "The war against cars."<sup>13</sup> The pop-up bikeway on the *Calle 13* had become a permanent fixture on one lane before being withdrawn to allow motor vehicles to use all four lanes once again. The bikeway was moved to the roadside, or else a broad pedestrian and cycle strip was created in places where there had previously been no pavement (cf. Fig. 9.2). This example illustrates how compromise was sought in negotiations between the various institutional and other stakeholders working to organise mobility in the city (cf. Chap. 3).

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<sup>12</sup> *Paro Nacional* is the name given in Colombia to the demonstrations that took place from April to July 2021. The conflict was triggered by opposition to a tax reform, before demands then expanded to issues relating to social inequality and failure to respect human rights. *Transmilenio* infrastructure was particularly targeted by demonstrators, especially in deprived districts, where the service was seriously disrupted for more than two months, encouraging the shift towards bicycles.

<sup>13</sup> <https://www.eltiempo.com/bogota/bogota-la-guerra-contra-el-carro-opinion-555649>.

Criticisms from cyclists themselves also emerged. They decried a lack of connect- edness between the pop-up lanes and the permanent cycling network. They also emphasised the dangers to which they were exposed on certain portions of bike- ways, where these were too narrow, poorly signalled, or insufficiently separated from road traffic. The progressive removal of some of the pop-up bikeways also attracted widespread criticism. The municipality had stimulated strong demand thanks to a better layout of cycle routes in the city, shortening bicycle trip times and making cyclists more visible to drivers. However, the municipality was sometimes accused of failing in its role by suddenly ceasing to meet this demand when it removed certain temporary segments. This argument was one of the most sensitive issues when pop- up bikeways were withdrawn in June 2021, since the decision caught off-guard most of the cyclists using these itineraries on a daily basis. Initiatives by pro-bicycle groups sought to make up for the disappearance of pop-up bikeways, painting them directly onto the roadway, or placing brightly coloured tyres to replace the barriers which had been removed. It is interesting to note that this marked, in a way, a return to the early days of tactical urbanism, taking up its original modes of action once again (Lydon and Garcia 2015), since it was a bottom-up dynamic giving rise to demands issuing directly from citizens. By doing so, these activist groups evidenced that the municipality interventions were less tactical urbanism than trial and error experiments.

The interviews conducted with experts made it possible to reconstitute the chronology in the deployment of pop-up bikeways, which may be divided into five phases. The first, from March to April 2020, was characterised by the rapid intro- duction of a network to meet mobility needs during a pandemic. The second saw this temporary network stabilised, through to August 2020 when the initial pop-up bikeways started to be removed. The third, from August 2020 to June 2021, was characterised by the deterioration of the pop-up bikeways due to a lack of mainte- nance by the local authorities, and the progressive disappearance of certain segments due to the theft of modular barriers. In the fourth phase, in June 2021, the remaining modular barriers were withdrawn due to the *Paro Nacional*, fuelling cyclists' discon- tent. Lastly, during the final phase, since July 2021, some of the bikeways, which had been removed, have been reinstalled, while others have completely disappeared. The objective has been to maintain only the corridors with the most users, which have become long-term features. These various stages in managing and planning the temporary network have brought out the contrast between the marketing for pop- up bikeways and their piecemeal management by the municipal authorities. This contrast is emphasised by bicycle users and cycling groups, also denouncing the fast and unplanned transformations, but the phase of conflict seems to have largely come to an end in the second half of 2021. After a period of desynchronisation stemming from those rapid transformations, public space users seem to have ended up adapting their habits, practices, and behaviours to the new arrangements.

### ***9.3.3 From Exiting the Crisis to Future Prospects, Changes to the Place of Bicycles in Public Policy***

In terms of infrastructure, two major changes have issued directly from the introduction of pop-up bikeways. The first is the establishment of 28 km of cycleways as permanent features, mainly along the corridor of Carrera Séptima and that of Carrera Novena and Calle 13 (cf. Map 9.1). Other segments have become permanent fixtures here and there, such as the road bridge at the intersection between Avenue Las Américas and Carrera 68. Pop-up bikeways have provided a way of making several points safer, particularly at gaps in the cycle network such as road bridges.

Looking at changes in bicycle usage caused by opening pop-up bikeways, from the first months following the lockdown there has been a marked increase in cycle traffic (cf. Fig. 9.3). The graphic shows the increase during the first months under Covid-19, which has been even greater between September and December 2020.

This increase stabilised in 2021 at levels slightly below the peaks that were reached in the second half of 2020. Although there are few reliable measurements of these changes, the Secretaría de Movilidad estimate the cycling modal share stood at around 10% in late 2020 (6.6% in late 2019). The challenge currently facing the municipality is not just to motivate new cyclists, but to retain those who chose to travel by bicycle during the pandemic, as a “windfall effect.” The creation of bikeways did indeed attract new users. It also absorbed pre-existing flows for example those spreading out across roads without cycle infrastructure. This can be observed in particular along Carrera Séptima and Carrera 68. Demand created by the crisis was also taken into account, for example, in adapting the bikeway along Calle 13 (Fig. 9.3). The pandemic thus pushed the authorities to establish this (very unpleasant) corridor (cf. Fig. 9.2) to reduce the cyclists’ exposure to the high volume of trucks and traffic pollution. According to Sebastián Posada, who works for the sub-directorate for bicycles and pedestrians at the Secretaría de Movilidad, this bikeway caused a significant drop in accidents along this thoroughfare. Lastly, the health crisis and pop-up bikeways have altered bicycle usage due to changes in the competing interests of cyclists and drivers. The balance of power has shifted towards cyclists—even though they are still highly vulnerable—for bicycles became even more useful given the danger of being exposed to the virus on public transport, and also demonstrated how effective cycling is against traffic jams. Equally, these changes have enabled bicycles to become more visible while shedding light on how vulnerable cyclists are on the road.

#### **9.3.3.1 A New Policy Approach to Bicycles**

The purpose of this section is to put in perspective the pandemic’s impact on devising bicycle-related public policy. One of the main changes was to objectives in constructing cycle infrastructure. Pop-up bikeways were a response to strong demand in the low-income outskirts to the south, home to many bicycle users, where there

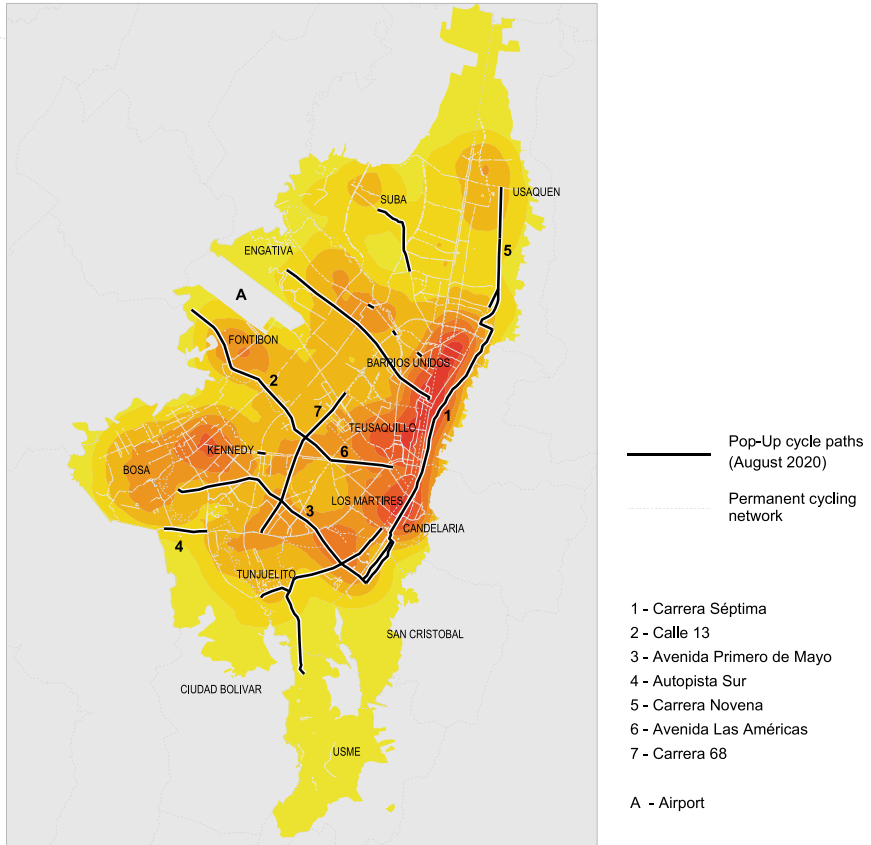
is less bicycle infrastructure (cf. Map 9.1) and of lesser quality. The target populations were thus not solely the wealthy classes in the centre and north, who have greater political influence than the less affluent classes in the south and west. One idea guiding the planning of pop-up bikeways was to follow the main thoroughfares and connect the outskirts to places where cyclists worked (cf. Map 9.2) making commutes easier for people who could not work from home. The drawback to this was a legitimate criticism of a new way of doing low-cost bikeways. One criticism levelled against the authorities was their failure to accelerate the transformation of pop-up bikeways into lasting infrastructure and to envisage so doing, even though the modular barriers were being stolen, placing cyclists at risk.

Let's say that's why the [pop-up bikeway] barriers didn't work, as they were very easy to remove. [...] Because [municipal workers] said [...] that each barrier was worth 50,000 pesos [about 15 euros]. Imagine how many they put up across the city as a whole. If something has a value, thieves are going to be scouting for it. And we ended up looking like fools. Whereas buying paint, and [the material needed to paint a bikeway] is something a financial[ly rigorous] government capable of carrying out projects has the know-how to do more economically. (Interview with Johanna Gómez, member of the local bicycle council of the district of Suba, Bogotá, April 2021)

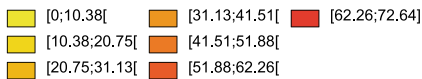
The lack of investment in infrastructure to make cyclists genuinely safer and the removal of some corridors without prior warning were perceived as a failing on the part of the authorities, who, despite having created the demand, were incapable of responding satisfactorily to the deterioration of pop-up infrastructure.

Nevertheless, the introduction of pop-up bikeways is making mobility policies more flexible, as this new way of building cycling network is being integrated into a long-term policy. Pop-up bikeways supplemented the strategy to anticipate major future public works, such as the building of the underground and new BRT corridors. They are now also designed to be used as the basis for shifting drivers and public transport users over to bicycles, given the foreseeable increase in traffic jams and trip times. This is especially justified in Bogotá given that bicycles are as fast or faster than cars for getting around the city at rush hour. Retrospectively, the health crisis fitted into a broader strategy to promote cycling as a mode of urban travel in its own right. The pop-up bikeways that proved their worth were retained. This often resulted from negotiation between the various bodies of the local administration, as was the case for the pop-up bikeway along Carrera 68, initially destined to be removed due to works for the BRT. Negotiations between the Secretaría de Movilidad and the Institute for Urban Development, the body in charge of roadworks, resulted in the pop-up bikeway being retained, despite the avenue's reduced capacity during roadworks. This made it possible to absorb much of the flow of cyclists travelling between the north and south of the city. As explained by various Secretaría de Movilidad agents during interviews, infrastructure projects are now more likely to integrate a cycleway, also thanks to the pop-up bikeways. Finally, this crisis brought into focus the experience and expertise of urban planning institutions and agents in such matters. Certain of the interviewees from the Secretaría de Movilidad agreed that the crisis had demonstrated the strength of expertise and solid anchoring of pro-bicycle policies.

First destination of cyclists from home - Bogotá DC - 2019



Number of cyclist's first destination in a radius of 2 km (based on ZAT where they go to for their first trip from home)



Source: Secretaría Distrital de Movilidad - EMU2019 - Author of the maps: Florent Demoraes - UMR ESO 6590 CNRS - Université Rennes 2 / IFEA - 18/02/2022  
 Data processing: Maëlle Lucas (Pop-Up cycling paths) and Florent Demoraes (Kernel density estimation)  
 Mapping technique: spatial smoothing (Kernel density estimation: triangular function, operation: sum, radius: 2 km, pixel size: 100 m<sup>2</sup>) - Software SavGIS - Discretization: equal intervals  
 Number of cyclists surveyed in the EMU2019 - 3241

**Map 9.2** First destination of cyclists from home in Bogotá. See the interactive version of this map here: [https://rpubs.com/corona\\_lanes/Bogota\\_Destinations\\_Cyclists](https://rpubs.com/corona_lanes/Bogota_Destinations_Cyclists)



Fig. 9.2 Bicycle and pedestrian strip along Calle 13, August 2021 (M. Lucas)

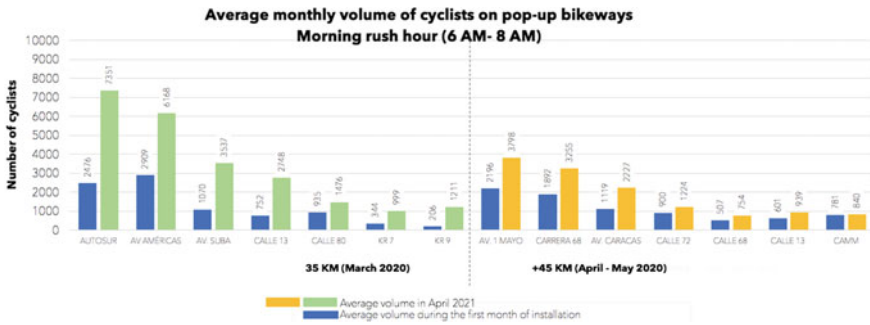


Fig. 9.3 Changes in cycle traffic on pop-up bikeways (March 2020–April 2021). Data provided by the Secretaría de Movilidad de Bogotá

## 9.4 What the Health Crisis Did to Cyclists: Adaptations and Reactions of the City’s Bicycle Users

### 9.4.1 A Passing Upheaval in Routines and Practices

The outbreak of the health crisis and its practical consequences for Bogotá’s inhabitants (lockdown, strict restrictions on mobility and access to public transport, the generalisation of working from home, and school closures) acted as a strong curb on

a.	Utilitarian use	Recreation or sports use
Did not change	20,00%	24,62%
Increased	35,38%	37,69%
Decreased	33,08%	18,46%
Started again	11,54%	19,23%

**Fig. 9.4** Evolution of utilitarian and recreational use of bicycle—Results from the online questionnaire, December 2021

cycling, be it for recreation, sports, or practical reasons. Unable to work from home, many inhabitants continued to get around by bicycle. During the second phase of lockdown, the easing of restrictions progressively meant people could go out cycling for sport or leisure (Robert et al. 2022). Interviews conducted with cyclists brought out how important this stage was in developing non-utilitarian cycling practices.

Initial findings from the online questionnaire confirm the increase in non-utilitarian usage, with 57% of respondents saying they had increased or resumed using their bicycle for recreation or sport between March 2020 and December 2021 (cf. Fig. 9.4). After a period of immobility during the lockdown, many cyclists got back in the saddle. Respondents reported using their bicycles very frequently at the moment of the survey, predominantly for sport and leisure (more than three times per week). Hence both the intensity and frequency of bicycle usage increased. Between 82 and 85% of these regular cyclists reckoned their recreational or sports use had increased or increased a lot in comparison to the period prior to March 2020. Furthermore, the development of the—initially temporary then permanent—cycleway network exclusively on roadways or on comfortably wide strips was appreciated by those cycling as a sport. In addition to the questionnaire, interviews with cyclists revealed relief at once again being able to enjoy the freedom procured by a bicycle after the period of strict lockdown. As one interviewee said: “during [lockdown], it was one of the really good things, because you knew that if the police saw you in a car, they were going to stop you and ask questions, but if they saw you on a bicycle, you were free to go around Bogotá and to move, especially as we were shut in all the time” (interview 573,<sup>14</sup> 09/21). Equally, cyclists referred to the importance of recreational and sports usage in their weekly routines, and how much they were looking forward to enjoying once again the *Ciclovía*, which was suspended for nearly a year. But what they said was tinged with frustration at having lost collective bicycle practices—many cycling groups had reduced or lastingly suspended their activities due to the pandemic—and by wariness about being amidst the crowds flocking to the city centre on *Ciclovía* days. Several cyclists explained they had adapted their practice, changing the time of day when they went out on their bicycles, for example, or avoiding the city centre and places along their route where there were many other cyclists.

<sup>14</sup> 33-year-old man, *estrato* 4.



#### 9.4.1.1 Upheavals to Utilitarian Bicycle Usage

Utilitarian bicycle usage also gathered pace with the pandemic, particularly with restrictions on using public transport (less frequent bus services and lower capacity). For twenty-odd years, the municipality had been trying to encourage the population to use public transport, but the pandemic put a halt to these ambitions and triggered a dislike of buses. Some bus users switched to travelling by bicycle, while others opted for individual motor vehicles, and 58% of the respondents to the online questionnaire reckoned they had increased their utilitarian bicycle usage since the beginning of the pandemic. Yet the question did not make it possible to ascertain the role played by the pandemic in this increase, making it difficult to establish any causal link. Nevertheless, the creation of pop-up bikeways encouraged people to use bicycles. In addition to expanding the cycle network, these pop-up bikeways offered an alternative where people felt safe on thoroughfares where there had previously been no cycling infrastructure, 69% of respondents who had already used pop-up bikeways reckoned that these improved their feeling of safety when travelling by bicycle, and 79% of women reported feeling safer thanks to these pop-up bikeways against 67% of men. It may be hypothesised that infrastructure shaped bicycle usage for a larger proportion of women than men. It is additionally known that women are generally more alert to safety issues, and that a larger proportion of them prefer infrastructure separating bicycles from motorised traffic, even though a majority of men also do (Aldred et al. 2017; Garrard et al. 2008; Dill et al. 2014). Additionally, 81% of respondents felt that pop-up bikeways made it easier to travel by bicycle, with 44% reckoning they used their bicycle more as a result. The pop-up cycleways were thus favourably received, despite the criticisms mentioned earlier. Furthermore, while the creation of pop-up cycleways encouraged bicycle usage, it may also be hypothesised that the general increase in the number of cyclists was a self-fuelling phenomenon, for larger numbers of cyclists led to an enhanced feeling of safety, acting in turn as an incentive as documented in the literature (Vandenbulcke et al. 2011; Jacobsen 2015; Elvik 2021). Lastly, as explained earlier, the temporary network was designed to make up for gaps in cycling infrastructure, particularly along two major thoroughfares, Carrera Séptima and Calle 13. These transformations resulted in some of the cycle flow moving over to these thoroughfares: 31% of respondents altered their route when the pop-up bikeways were created.

In addition to the interviews and online questionnaire, the ride-along interview method was used, especially to observe how pop-up bikeways were used. Ride-along interviews provide a way of illustrating how cycle flows shifted towards the thoroughfares. This may be illustrated by the example of two cyclists, a 23-year-old employee of a supermarket in the north of the city, in the district of Usaquén (cf. Map 9.1), who lived in Soacha, on the far south-western edge of Bogotá, and a 55-year-old sports teacher in a primary school who went from his home in Suba (cf. Map 9.1) in the north-west to his place of work in the centre west of the city. These two cyclists took the same pop-up bikeways along Carrera 68, every day for the

supermarket employee and several times a week for the sports teacher. Both reported changing their route with the opening of this new bikeway, which cut down their trip time, for it was more direct and enabled them to ride more comfortably on the roadway, rather than on the pavement.

#### ***9.4.2 The Lasting Consolidation of Practices that Predated the Pandemic***

The onset of the health crisis led us to hypothesise a recent change in the profile of cyclists in Bogotá. While the 2019 UMS had already indicated an increase in the number of female cyclists, the online questionnaire seems to confirm this trend, even though we are aware that the findings are not representative of the population of Bogotá as a whole. A higher proportion of women stated they had resumed cycling since the beginning of the pandemic: 20%, as against 11% of men. It thus seems that the pandemic amplified the feminisation of bicycle usage, bearing in mind that there are larger “reserves” of potential new cyclists among women. This is what the “Public Bicycle Policy” is counting on, with the target of driving up the cycling modal share for women, to reach gender parity in the use of bicycle in 2038.

Conversely, and unlike what is observed in France (Héran 2015), cycling was confirmed to be a low-income class means of transport. On the basis of the questionnaire findings, and differentiating between cyclists by revenue and level of education, a larger increase in bicycle usage was observed among the deprived classes. Some 74% of respondents with the lowest income said they had increased or resumed utilitarian cycling, whereas this was a case for only 47% of the wealthiest respondents.<sup>15</sup> Cycling by the affluent classes admittedly increased, but not sufficiently to confirm a hypothesis formulated before the fieldwork began, which posited that the pandemic attenuated the gap in bicycle usage between social classes. One of the key explanations for this difference is the fact that the poorest classes had to continue working in person, whereas the affluent classes acquired a “right to immobility.” The other major factor explaining this increase in bicycle usage among the deprived classes relates to the pandemic’s economic impact on households, whose revenues dropped during the crisis, leading them to reduce their expenditure on transport. The fact that cycling is cheaper than other modes was already a determining factor in modal choice in studies prior to 2020, something our study confirms. Thus, rather than an alteration in the socio-economic profile of cyclists, we observe a strengthening of the profile of the low-income labourer cycling “as a matter of economy.”

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<sup>15</sup> The lowest income threshold is 1,500,000 Colombian pesos per month per person (around €350), and the highest income threshold is a little over 5 million Colombian pesos (around 1160€).

### 9.4.2.1 The Omnipresence of Safety Issues in Public Space

Cyclists in Bogotá are constantly preoccupied by bicycle theft, the possibility of suffering an aggression, and road crashes. In Bogotá, a distinction is made between physical safety and personal safety. The first relates to the risk of a crash, while the second refers to acts of voluntary violence against cyclists, principally bicycle theft. Cyclists in Bogotá are thus exposed to two types of threat: traffic crashes and assaults. Among the users, the perception of this exposure in public space varies, but certain places deemed to be particularly unsafe frequently crop up in the discourses. These threats guide cyclists' decisions when choosing a route. The pandemic made these issues even more prevalent and added a third type of unsafety: the risk of contagion to the Covid-19 virus. Unlike in France, where it seems to have had little impact on individuals' mobility choices (cf. Chap. 6), this last fear played a major role in the shift from public transport to bicycle. Moreover, some cyclists adapted their behaviour to the density of cyclists' flows, voicing a fear of contagion even when cycling.

With the pandemic [...], my reasoning was that if you're on a bicycle and there are lots of people, and the person in front of you has the virus, which is transmitted through the air, and you cycle behind breathing the air. I don't know how strong the virus is, but I say that if you cycle behind 20 or 25 people, I reckon you're more easily exposed to contagion by the coronavirus, because people spit, people breathe, cough, take their mask off to drink, and you take your mask off too. So you're better off being on your own when cycling. (Interview 226,<sup>16</sup> 08/2021)

Most cyclists wore a mask throughout 2021, even though it was not mandatory. The ride-along interviews also illustrated this, since 9 out of the 14 people followed wore a mask (whether they did so correctly or not).

Concerning crash rates, public data published by the Bogotá municipality shows a constant rise in the number of injuries involving at least one cyclist between 2015 and 2019. Men were slightly overrepresented (they represent 76% of cyclists but 80% of those in a crash). Crashes are more likely to occur when large vehicles are present, no cycling infrastructure, and in hilly zones. There are also more crashes at night (Carvajal et al. 2020). Additionally, most of the crashes take place in the southern and western zones of the city,<sup>17</sup> because these districts present the factors mentioned above and are the main place of residence of cyclists in Bogotá.

The Secretaría de Seguridad (the city of Bogotá's security department) publishes monthly data about offences and crimes. Bicycle thefts jumped at the end of the first strict lockdown. The increase between 2019 and 2021 is of 18.4%. Looking at the figures in more detail, there was a peak in the number of thefts in 2020, particularly between May and July, where over 1100 bicycle thefts per month were recorded, as opposed to 560 to 680 over the same period in 2019.<sup>18</sup> Independently of these figures, assaults on cyclists receive an extensive coverage in the local press (Torres-Barragán

<sup>16</sup> 46-year-old man, *estrato* 5.

<sup>17</sup> See map [https://rpubs.com/corona\\_lanes/Bogota\\_Cyclist\\_Accidents](https://rpubs.com/corona_lanes/Bogota_Cyclist_Accidents).

<sup>18</sup> Source: <https://analitica.scj.gov.co/analytics/saw.dll?Portal>.

et al. 2020), which the mobility experts interviewed blame for amplifying cyclists' feeling of unsafety. "It's the most frequently reported news about bicycles, and any armed bicycle theft is very serious, I'm not saying it doesn't matter, but it is echoed and reported so widely that people feel terrorised. [... They say] it's dangerous, it's terrible, and they don't ride a bicycle because of that" (Interview with Ana Puentes, a journalist specialising in mobility, *El Tiempo*, March 2021). Media coverage is not the only thing influencing cyclists' perceptions. Many have experienced bicycle theft or aggressions, or know someone who has, adding to their wariness. Among the respondents to the online questionnaire, 42.4% said they had already had at least one bicycle stolen. Interviews bring out of these negative experiences, showing their impact on daily practice, as in the case of a young cyclist compelled to alter his mobility routine after his bicycle was stolen.

Did the theft force you to stop cycling?

Yes, because I didn't have any other option, let's say I didn't have any money [...] And I preferred to wait a bit.

Do you plan on buying another?

Ah yes, of course, I'm still planning on it. In fact today, someone lent me one.

[...]

So how do you currently travel?

By bus or by foot. (Interview 57,<sup>19</sup> 06/2021).

For women, perceived unsafety seems to be bound up with sexist behaviour—sexual harassment even—by male users of public space, especially drivers (Montoya-Robledo et al. 2020). For instance, a female cyclist had noted that male drivers behaved differently and more aggressively towards women.

I use the lane shared with motor vehicles, and I've noticed that [drivers] are fairly violent with cyclists, and especially with women. What I've seen is that they don't say anything to men, but they do to women. Perversity, "get out of the way," vulgarities, "use the cycle lane" [...]. They try to block you with their car, honk their horns, shout at us vulgarities. There have also been drivers, especially of motorbicycles, who touch my arse, and cyclists and pedestrians who make obscene gestures to me. (Interview 31,<sup>20</sup> 06/2021)

Other cyclists made the same observation. It emphasises the presence of a fourth form of insecurity, concerning almost exclusively women, harassment in public space, something also reported by cycling activists with whom semi-directive interviews were conducted. Groups of women cyclists were set up in response to this observed inequality in bicycle access to public space and to the harassment of women, such as *Paradas en los pedales* (literally: "stand up on your pedals"). One of the founders explained that the origin of the group was self-exclusion by women during mixed-group outings, and the physical and verbal abuse many women reported.

More generally, what emerges from the interviews is the impression that the pandemic saw an increase in incivilities, tensions, and assaults—whether gender-based or not—towards cyclists in public space. Certain interviewees attributed this

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<sup>19</sup> 25-year-old woman, *estrato* 3.

<sup>20</sup> 35-year-old woman, *estrato* 1.

to the recent increase in the number of cyclists, particularly since the health crisis, and their influx into already saturated public space. We may thus observe a dual phenomenon of increasing bicycle usage in Bogotá and increasing violence towards cyclists. This raises the question of whether insecurity acts as a limiting factor on bicycle use. On the one hand, most cyclists who responded to the questionnaire reckoned that real or perceived increases in security could limit their bicycle trips. On the other, the parallel increase in insecurity and in the number of users tends to minimise the causal relation between the two.

#### 9.4.2.2 Relaunching the Bicycle-Related Economy

In addition to individual bicycle usage, the relaunch of the bicycle-related economy, another trend predating the pandemic, has been confirmed as the city exited from successive lockdowns. An interview with the owner of a bicycle repair workshop provided an insight into how his business had evolved, one and a half years after the onset of the health crisis. He had opened his workshop in 2016. Business had peaked shortly before the health crisis, but he had been forced to go into debt due to the long period of closure. Despite this financial difficulty, by August 2021 he was unable to meet demand. Ethnographic observation confirms this: small repair and maintenance workshops have sprung up (cf. Fig. 9.5), informally providing services along the cycleways, and major bicycle chains offering sales and repairs have boosted their strength in this sector. The questionnaire findings offer a few pointers to changes in cyclists' viewpoint through questions about consumption. Somewhat surprisingly, it was respondents with the lowest income who had bought the newest bicycles or safety equipment (helmets, lights, etc.) and spent money on bicycle repairs (parts or service). This apparent contradiction is due to the fact that the poorer classes make greater use of bicycles. To get to work and avoid using public transport, it is cheaper to buy a bicycle than a car or a motorbicycle, and it costs virtually nothing to use.

## 9.5 Conclusion

Bogotá was the first city in the world to implement pop-up bikeways in March 2020 and that is not due to chance. The weekly *Ciclovía* helped design the pop-up network and served as a reference for local authorities. Having this precedent was useful to justify such transformations of public space to Bogotá's citizens. If we go back to the *Ciclovía's* origins, bicycle activists claiming more space for cyclists, organised the first event in 1974. It was then progressively institutionalised during the 1970s and has now become a kind of weekly time-limited tactical urbanism. Although the *Ciclovía* is meant to be temporary, and would lose its purpose by becoming permanent, it created a habit of seeing public space changing, and it certainly helped people accepting the Covid-19 pop-up bikeways.



**Fig. 9.5** Informal bicycle repair shop alongside a cycleway, Bogotá, November 2021 (M. Lucas)

However, pop-up bikeways in Bogotá have neither been consulted nor co-designed with citizens. They are the result of top-down decisions taken in a few days by some of the *Secretaría de Movilidad* agents (echoing London's example in Chap. 2). Local authorities do not talk much of tactical urbanism to describe pop-up bikeways, and the interviews we conducted seem to show that they were not meant to be made permanent when they were first settled. Only after the economic reactivation had they started to be questioned and to be thought of as permanent solutions to extend cycling network. Pop-up bikeways were more of a successful trial—both locally and internationally recognised—than a well-thought out tactical urbanism, and turned out to be concrete answers to spatial planning issues (Vallance and Edwards 2021).

Bicycle usage in Bogotá has been booming since the onset of the pandemic in March 2020. This is a consequence of recent upheavals in the policy approach to bicycles, with the installation of pop-up bikeways and the election of a pro-bicycle mayor. It was also made possible by a longer-term trend, characterised by the increasing visibility of active mobility, including cycling. Rather than disrupting this situation, the health crisis highlighted and strengthened these dynamics.

The pandemic shed light on the level of insecurity that reached peaks in 2020 and 2021. Although bicycle thefts have long been identified as an obstacle for non-cyclists to start using their bicycle, they increased in such high proportions that it became a major concern for the municipality. A few measures were taken to fight that wave of aggressions and thefts, like setting police officers on bikeways. Pop-up bikeways have also been criticised for exposing cyclists to high-speed motorised traffic and for its lack of connection with the permanent bikeways network. However,

one of the features of tactical urbanism is to be reversible and adjustable, and the chronology of the pop-up bikeways' installation evidences the flexibility of that kind of process. The ability to find quick and efficient solutions, despite of their limits, is also a quality of tactical urbanism, on which the *Secretaría de Movilidad* has been relying in the past two years to build their permanent cycling infrastructure.

The pandemic also accentuated a paradox in representations about cyclists, which was already strong before the health crisis. The pandemic played on cyclists' feeling of moral legitimacy and their use of public space. The classic arguments of protecting the environment, traffic-calming, reducing traffic jams, and health benefits are well rehearsed. In Bogotá, bicycle usage was also presented as a response to the risk of being exposed to the virus on public transport, and as a prime alternative to avoid crowds, thereby strengthening the favourable collective imaginary of cyclists. Nevertheless, cyclists continue to be described, particularly in newspapers, as irresponsible and dangerous users of public space, and associated with the supposedly less educated and poorer classes, as opposed to the affluent classes, who travel more by car. This deeply rooted stereotype is linked to the social status conferred by the car, thereby deprecating those who travel by bicycle.

Confronted with this opposition, pro-cycling activist movements have worked to improve the bicycle's status, prizing bicycles as aesthetical objects (Pelgrims 2021), and deconstructing their low-income image. Although one cannot currently speak of a reversal in the modal hierarchy in favour of bicycles—cyclists are still very vulnerable in public space—there is a manifest public will to move in this direction, backed up by robust activism (Jensen 2017). The accelerating change of bicycle usage during the pandemic confirms this trend.

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