

Convergent Agenda for Sustainable **Mobility and** Health



Convergent Agenda for Sustainable Mobility and Health

REFERENCE DOCUMENT



Convergent Agenda for Sustainable Mobility and Health - Reference Document

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List of Acronyms

ANTP – Brazilian National Association of Public Transportation

ATT – Land Transport Accidents

BDTD – Brazilian Digital Library of Theses and Dissertations

BVS – Virtual Health Library

CNCD – Chronic Noncommunicable Diseases

GHG – Greenhouse Gases

BMI – Body Mass Index

IPEA – Institute for Applied Economic Research

SDG – Sustainable Development Goals

WHO – World Health Organization

UN – United Nations

PAHO – Pan American Health Organization

PEC – Constitutional Amendment Bill

Proconve – Program for Control of Air Pollution Caused by Motor Vehicles

SUS – Unified Health System

UT-NMH – Technical Unit of Health Determinants, Chronic Noncommunicable Diseases and Mental Health



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FOREWORD

In 2019, the Pan American Health Organization in Brazil identified the need for the themes covered by it to be worked on in a more synergistic and integrated manner in the territories, given the way in which they intertwine and influence each other.

Based on this understanding, a more specific approach to the topics of traffic safety, air quality and physical activity was chosen as a first step. This integrated approach was called "Convergent Agenda: Sustainable Mobility and Health".

Along these lines, and with the support of academics, government managers, NGOs, non-state entities and specialists in related areas, several activities were carried out between 2019 and 2020, with the purpose of justifying, developing and supporting this agenda.

After literature review exercises, systematizations, workshops and technical meetings, this document was produced with the purpose of understanding the Agenda's fundamental narrative. The idea is that, by providing for the pillars, guiding principles and proposals for the implementation of actions, it will serve as a framework that facilitates the introjection, proposition and development of policies, programs and projects, as well as a theoretical basis for other initiatives.

Socorro Gross Galiano Representative of PAHO/WHO Brazil



PRESENTATION

The Pan American Health Organization/World Health Organization (PAHO/WHO) is dedicated, among other actions, to cooperating with Member States in the implementation of public policies and programs in favor of health, with a view to guaranteeing economic, social and environmental sustainability, through initiatives that promote healthy communities and spaces. PAHO/WHO Brazil, with the aim of accelerating the implementation of inter-sector actions that can have a synergistic impact on municipalities, has been organizing discussions and reflections on convergent policies and actions that enable the provision of shared and cumulative benefits of great relevance to public health.

The coordination and convergence of work agendas for the implementation of coherent public policies are presented as one of the strategic innovations for promoting the well-being of populations, enabling the optimization of resources, the leveraging of planning processes and the sharing of results by different sectors, expanding its reach and effectiveness at the same time.

It should be noted, however, that, unlike an administrative or bureaucratic decision to join areas or merge the governmental departments, the convergence of agendas starts from the understanding of the daily reality, in which a given public service interferes, for better or worse, in the effectiveness of other(s), bringing cumulative benefits or losses in people's daily lives. In our sector-based management model, problems are almost always addressed separately, and the impacts of this are more evidently expressed in the lives of those who live in cities, where so-ciocultural, socioeconomic, physical-spatial and socio-environmental relations are more complex and intertwined.

Based on this understanding, PAHO/WHO Brazil started to work in collaboration with governmental and non-governmental institutions and experts, seeking to promote a convergent cross-sector view towards three agendas of great relevance to public health and to urban populations: urban mobility, physical activity and air quality. The confluence and articulation among these three dimensions are being called the Convergent Agenda for Sustainable Mobility and Health.

Until now, the evidence and solutions for these three dimensions have normally been produced in an individual, uncoordinated way, with little synergy in the planning and implementation of actions. Therefore, the Convergent Agenda for Sustainable Mobility and Health seeks convergence in identifying and solving problems related to situations or conditions that occur in the same time and space, and that share impacts on health.

By promoting a convergent view, it is possible to promote the planning and implementation of integrated actions that adjust directions, solve problems and optimize resources capable of producing synergistic effects on health and, consequently, on the population's well-being.

We understand that this convergence becomes even more urgent given the impacts and challenges posed by the pandemic-scale health crisis caused by SARS-CoV-2 (Covid-19). More than ever, the integrated vision and understanding of the mobility and health agendas are now strategic and necessary.

While personal, collective and environmental protection and hygiene measures must be gua-

ranteed, it is also necessary to guarantee safe and accessible ways to move around the city. If, in order to face the urban challenges that were posed, the convergence of the health and mobility agendas was already urgent, the new reality conditioned by the pandemic deepened and highlighted old dilemmas and exposed new problems, demanding, at the same time, a sense of urgency for short-term responses and new strategies for medium- and long-term measures. In this scenario, the convergence of health and mobility agendas assumes a leading role in defining safer and more equitable ways to use and live in cities.

Thus, the purpose of this document is to present the results of a first collaborative effort to gather evidence, reflect on implications and propose Lines of Action that facilitate the understanding and guide municipal public managers to act on the Convergent Agenda for Sustainable Mobility and Health, by planning and implementing actions with shared inter-sector benefits.



INTRODUCTION

The globalized contemporary urbanization, driven by different patterns of socioeconomic consumption, poses new challenges to the political sphere and, also, to planners and managers of the territorial space regarding the qualification of ways and conditions of life. From the industrial society, which boosted the means of production throughout the 20th century, to the present day, driven by the expansion of technology, automation, dissemination of information in real time, the breakdown of economic frontiers, the high levels of overpopulation in several global metropolises, among others, one of the main issues to be faced concerns the perspective of healthy cities.

In this 21st century, the significant increase in the number of people traveling from one place to another on a global scale has led, on the one hand, to the strengthening of socioeconomic and sociocultural ties and, on the other, countless impacts on everyday life, making it more complex in terms of urban health. On this issue, a lot of attention has been given to insurgent diseases and epidemics, which also spread at an accelerated and globalized pace, causing environmental problems and social inequality to stand out, for example. The main causes of illnesses and health inequities are related to living conditions and specificities and conditions of the physical-spatial environment where people are born, grow, work and age.1 These factors, which shape the way societies live, are called social determinants of health.2

Global health challenges are related to these conditions and environments that have resulted in premature deaths from chronic non-communicable diseases (NCDs), mental health issues and head injuries resulting from accidents and violence.

CNCDs (Chronic Non-Communicable Diseases) and mental disorders tend to be long-lasting and are the result of a combination of genetic, physiological, environmental and behavioral factors.

Deaths from cancer, diabetes, lung and cardiovascular diseases reach 41 million people each year, accounting for 71% of all deaths worldwide. Of that number, 15 million deaths are of individuals between the ages 30 and 69.3

Regarding environmental factors, in 2016, worldwide, 4.2 million premature deaths occurred in cities and rural areas due to air pollution. This mortality is due to exposure to small particles with a diameter of 2.5 microns or less (PM_{2.5}), which cause cardiovascular and respiratory diseases and cancers4. People living in predominantly low- and middle-income countries disproportionately bear the burden of outdoor air pollution, with 91% of the 4.2 million deaths occurring prematurely.

Regarding behavioral factors, it is important to highlight that physical inactivity, according to the WHO, represents an overall cost of INT\$a 54 54 billion per year in direct health care, with an additional INT\$ 14 billion attributable to the loss of productivity. Physical inactivity accounts for 1-3% of the national health care cost, although this excludes costs associated with mental health and musculoskeletal conditions.⁵

Regarding injuries resulting from accidents and violence, it is worth highlighting the data on de-

a The Geary-Khamis dollar, or international dollar (INT\$), is a unit of currency that has the same purchasing power, in a given country, as the US dollar in the United States at any given time..

aths from traffic accidents in the world, which are in the order of 1.35 million per year, with the number of injuries estimated at up to 50 million/year.⁶

One of the structural causes of this set of negative externalities is disorderly urbanization, accompanied by the increase in the high rates of motorization in cities. Traffic-related trauma injuries, physical inactivity due to lack of adequate infrastructure for active commuting and CNCDs resulting from air contamination, caused mainly by motorized transport, are aggravating the health problems of urban populations.

From this base framework, there have been calls for the development of new health agendas in the municipalities and the overhaul of the old ones, with alternative and/or innovative and convergent approaches, aiming at the prevention of diseases and their risk factors. It involves, therefore, the establishment of mechanisms aimed at promoting a healthy life, especially in the urban context.

The challenge is: how to make cities contribute positively to the well-being of their inhabitants, with economic, social and environmental sustainability? Due to the increasing complexity of its functionalities and the limitations imposed by the existing uncoordinated structures, poorly integrated to design and manage urban systems, cities face scarcity of resources, institutional barriers, restricted accounting structures, restrictions on access and use by part of populations to city services, inequalities, traffic congestion, crime and violence and, last but not least, disease.⁷

There are many interferences in urban space; however, one way to intervene in cities so that they contribute positively to the environment and the health of their inhabitants is to promote sustainable mobility. In the context of this

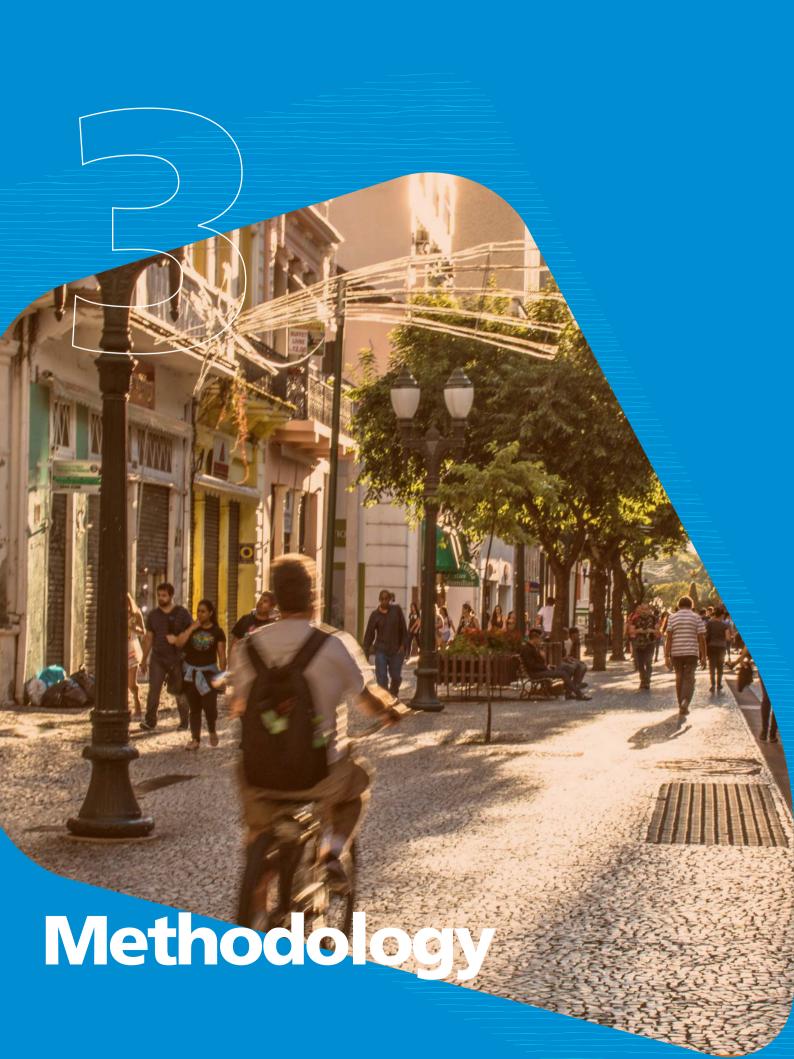
document, sustainable mobility comprises: the dimensions of urban mobility (urban infrastructure, road safety, time and mode of commuting); physical activity (active commuting, leisure-time physical activity in public spaces); and air quality. This implies, notably, structural and behavioral changes. For example, sustainable mobility encourages citizens to reduce or abandon the use of individual motorized transport, prioritizing commuting in efficient public transport and active commuting, by cycling and walking, for example. At the same time, in this current pandemic scenario, resulting from Covid-19, it is urgent and necessary to incorporate public policies and consciously responsible behavior so that commuting through the city occurs in a safe way, reducing the risk of contamination as much as possible, without the measures taken causing an increase in the use of individual motorized transport and in the rejection of collective transport.

Sustainable mobility has a direct impact on health, whether through the prevention of morbidity and mortality from injuries resulting from traffic accidents, or through measures that include the promotion of physical activities and improvements in air quality. Thus, more than preventing accidents, this Agenda proposes promoting health in other spheres, based on strategies aimed at the adequate and qualified structuring of the physical-spatial environment.

The work presented here begins with a brief description of the applied methodology. Then, there is the presentation of the guiding principles and axes that calibrated the lens of analysis and proposition of the central elements of the Convergent Agenda for Sustainable Mobility and Health: In the subsequent content, there is the contextualization and presentation of data and information about the three dimensions of the Agenda's convergence: mobility, air quality

and physical activity. Finally, after the theoretical foundations are laid, the Objectives and Lines of Action are presented, in a way that is in direct connection with the government's demands, making it possible to reflect on strategies for implementing the Convergent Agenda at the municipal scale. Subsequently, there is the presentation of the intersections of each Line of Action with the dimensions of convergence, and then the interrelationship between the Convergent Agenda and the Sustainable Development Goals (SDGs).

In order to provide technical assistance to readers that will come into contact with themes and terminology related to health, urban planning and traffic engineering, a glossary was included in this document. Further on, in the Appendix, there is the compilation of normative instruments related to health and mobility, as well as the map of the systematic review of scientific and gray literature on the topics covered.



METHODOLOGY

For the preparation of this document, the Technical Unit of Health Determinants, Chronic Non-Communicable Diseases and Mental Health (UT-NMH), of PAHO/WHO in Brazil, asked the academic teams to carry out a review of scientific and gray literature related to the themes of traffic safety, time and mode of commuting, air quality and physical activity, and to do an analytical systematization of institutional rules (public policies, guidelines and laws in force) in the country, in relation to the same themes.

The result of this review served as a basis for discussion during the First Workshop for the Development of the Convergent Agenda for Sustainable Mobility and Health, organized by PAHO/WHO, which brought together experts, municipal and federal managers, non-governmental organizations (NGOs) and academics from various thematic areas of the Convergent Agenda. This Workshop provided important supporting information, including the Objectives and Lines of Action to work on the Convergent Agenda (Table 1).

3.1. SCIENTIFIC AND GRAY LITERATURE

The review of the scientific and gray literature related to the Agenda confirms the urgent need to integrate the three dimensions presented here (urban mobility, physical activity and air quality) and their respective policies and programs. It is common for these three dimensions to produce their evidence and solutions separately. However, at the local level, the impact of these dimensions, when thought of in a synergistic and integrated manner, has the potential to provide shared benefits in terms of health and the environment.

3.1.1. LITERATURE REVIEW METHODOLOGY

A search of the database of the following journals was carried out: Virtual Health Library (VHL), PubMed, Cochrane, CINAHL, Scopus, Web of Science, in addition to the transport research laboratory database, Trid. Only papers written in English, Spanish and Portuguese were included. The year 2000 was established as the starting date for the search to begin, and the year 2019 as the end date. A total of 272 papers were identified, incorporated into the software Mendeley, to process the exclusion of duplicates and check for the availability of the complete articles. In the end, 233 eligible papers were found to be eligible for assessment of whether or not they would be included after their abstracts were read. Of these, 173 (73.8%) were excluded for not addressing the synergy between sustainable mobility and population health. The review included studies with an ecological, cross-sectional, case-control and longitudinal design. Of the 60 documents read in full, 22 papers that addressed the criteria of interest were considered eligible (see Figure 3, in the Appendix).

Gray literature was obtained through digital files, available online, such as reports, manuals, theses and dissertations, newspaper reports and blogs. The criterion used to carry out a search in gray literature, like in the case of scientific literature, was to find documents that addressed the synergy between sustainable mobility and population health. In addition, documents that offered some guidelines and recommendations or even mentioned experiences related to the listed themes were included. 86 documents were found, 51 were excluded and 35 were considered eligible. With respect to theses and

dissertations, there was the inclusion of only Brazilian documents available on the BDTD (Brazilian Digital Library of Theses and Dissertations) platform. Initially, 22 documents (five theses and 17 dissertations) were selected through descriptors. Eighteen (81.8%) were excluded after the abstracts were read and the eligibility criteria were applied. Thus, four documents were elected, including one thesis and three dissertations. The search for blogs and articles was part of the free search on websites available on the internet or recommended by specialists in the subject. Initially, 14 national and international documents were found, and 12 were selected. Out of the 122 documents initially pre-selected according to the gray literature criterion, 51 made up the selection for subsequent analysis.

3.2. INSTITUTIONAL LITERATURE

The review of institutional literature related to the Converging Agenda for Sustainable Mobility and Health addressed relevant aspects of the National Health Promotion Policy in relation to mobility, investigating institutionalized spaces for participation and social control linked to the two national policies and their interfaces. The review also addressed Brazilian national actions and programs. In these, it included relevant aspects of health actions in relation to mobility and relevant aspects of mobility actions in relation to health.

In the end, the systematization generated a summary table of points of convergence, potentials and gaps with an emphasis on time and mode of commuting, traffic safety, air quality and physical activity (Table 2).

3.3. SUMMARY AND ANALYSIS

The summary of the scientific and gray literature is presented in tables 1 to 6, in the Appendix, according to themes or categories and characterization of papers, authors and year of publication.



GUIDING PRINCIPLES AND AXES FOR THE IMPLEMENTATION OF THE CONVERGENT AGENDA

The Convergent Agenda for Sustainable Mobility and Health is developed from the perspective of the "right to the city", based on which the government has to make choices and prioritize actions on a daily basis. In this sense, with the purpose of ensuring that the decisions will promote equity in access to the opportunities that the city can offer, this work defined the guiding principles and axes to be observed for the convergences between sustainable mobility and health. It is worth highlighting that, when dealing with integrated policies and coordinated management, many variables must be considered, from individual and collective behavioral issues to social, environmental and economic issues. Thus, the guiding principles and axes presented here play an important role, by calibrating the analyses and establishing proposition paths that, considering such variables, focus on the budgetary, institutional and operational complexities of municipal governments, while at the same time they interface with and are committed to guaranteeing social rights, listening to the various voices of the city.

Based on this understanding, PAHO/WHO Brazil worked, as mentioned above, in the collaboration with governmental, non-governmental institutions and experts, among others, seeking to promote a convergent inter-sector view that allowed defining the guiding principles and axes presented below, which were adopted as the filter by which, later on, the Objectives and Lines of Action were defined in the convergence of the three dimensions of this Agenda: urban mobility, physical activity and air quality.

4.1. PRINCIPLES

- Equity in sustainable urban mobility;
- Safe and comfortable urban travel;
- Efficient and quality public transport;
- Air quality in cities;
- Priority to active commuting and public transport;
- Convergence between strategies and between health planning instruments and urban and environmental planning;
- Social participation in decision and governance spaces of the Convergent Agenda.

4.2. GUIDING AXES

- i. Advocacy for engagement;
- ii. Communication for raising awareness;
- iii. Strengthening of the municipal management;
- iv. Governance for synergy of actions;
- v. Innovation for financial viability;
- vi. Dialogues with the Federal Government

For each of these six axes, the implementation of strategic actions was suggested, both within the municipal governments and by the different actors who, by profession, by demand or by engagement, are involved in the convergence themes.

4.2.1. "ADVOCACY FOR ENGAGEMENT" AXIS

- a. Map the interest groups and their purposes;
- b. Support the narratives based on evidence;
- c. Strengthen the dialogue, especially with veto actors;
- d. Mobilize key actors to ensure the continuity of plans, projects and actions during changes in management;
- e. Atuar para que as legislações e os planos existentes, que tenham potencial alinhado com a Agenda Convergente, saiam do papel e tornem-se realidade;
- f. Act to ensure that existing laws and plans, whose potential is aligned with the Convergent Agenda, are put into practice and become a reality;
- g. Defend and support the implementation of demonstrative tactical actions (tactical urban planning) to raise awareness and enable experiences concerning the effectiveness of interventions;
- h. Act to guarantee public safety for women, children, the elderly, homosexuals, blacks and indigenous people, in public transport;
- Mobilize legislators and opinion makers to make the Convergent Agenda viable;
- j. Seek to guide government plans and electoral debates with the propositions of the Convergent Agenda;
- k. Act with advocacy not only with the Executive and Legislative Branches, but also with the Judiciary.

4.2.2. THE "COMMUNICATION FOR RAISING AWARENESS" AXIS

a. Establish evidence-based communication and awareness-raising strategies, demonstrating the gain from synergistic actions to the following actors:

- ° Internal staff of the municipal government;
- Decision-makers in the municipal government;
- Local leaders from the areas to be affected by the actions;
- Interest groups in the areas to be affected by the actions;
- ° Press;
- ° Universities.
- b. Training in the topics with the press;
- c. Communication plans for projects prepared by the city;
- d. Ensure that campaigns have data and evidence that cut across the different areas of the Convergent Agenda;
- e. Brief the press before launching projects/ program;
- f. Create and consolidate a Brazilian network for convergent mobility for the permanent exchange of experiences and information in the country;
- g. Create and consolidate a permanent Brazilian network for the exchange of experiences among municipal technicians, universities and civil society representatives;
- h. Conduct social marketing campaigns against the main risk factors for injuries and deaths in traffic (speeding, drinking and driving, not wearing a helmet, not using restraint devices).

4.2.3. THE "STRENGTHENING MUNICIPAL PUBLIC MANAGEMENT" AXIS

- a. Define indicators, targets and metrics to guide and monitor the implementation of the Convergent Agenda;
- b. Train and equip managers and technicians for the planning, management and implementation of the Convergent Agenda;

- c. Establish and strengthen partnerships between the municipal public administration, academia and non-governmental institutions with expertise in research, planning and monitoring of the actions of the Convergent Agenda;
- d. Ensuring the coordination between municipal health plans and urban, mobility and environmental plans from the perspective of territorial sustainability and the right to the city, from the perspective of implementing the Convergent Agenda;
- e. Ensuring the coordination between the plans that address the Convergent Agenda and the budgetary instruments (Multi-Year Plan (PPA, in Portuguese); Budget Guidelines Law (LDO, in Portuguese); and Annual Budget Law (LOA, in Portuguese).

4.2.4. AXIS "GOVERNANCE FOR SYNERGY OF ACTIONS"

- a. Create governance bodies with decisionmaking power for the Convergent Agenda that integrate the different areas of the government and civil society;
- b. Include the themes of the Convergent Agenda on the agenda of councils, working groups, committees and existing networks;
- c. Promote coordination among different sectors in municipal governance spaces that deal with issues related to the Convergent Agenda;
- d. Promote synergistic actions for planning, decision-making and implementation of the Convergent Agenda in these governance spaces;
- e. Provide institutionalized spaces for meetings among high governance administrators, for the exchange of experiences and for the search for efficient management in Brazil;

- f. Institute metropolitan governance for integrated management, avoiding inefficiency with predatory competition and a single service for passengers in the public transport system;
- g. Enable the exchange of experiences among those that will implement the actions of the Convergent Agenda in the states and municipalities, through a Synergistic Communicative Network.

4.2.5. AXIS "INNOVATION FOR FINANCIAL VIABILITY"

- a. Search for transfer and/or financing lines in national and international institutions for the implementation of the Convergent Agenda (planning, execution and monitoring);
- b. Identify legal instruments for raising and applying non-budgetary resources in the implementation of the Convergent Agenda;
- c. Establish efficiency parameters for the management and operation of public transport, in order to reduce the operating costs of the system;
- d. Coordinate with other federal entities (Executive, Legislative and Judicial Branches) the definition of subsidy policies for public transport and active commuting;
- e. Make a commitment, by mutual agreement with municipal managers, to follow this Convergent Agenda with a focus on effective results;
- f. Define indicators and goals for monitoring the actions of the Convergent Agenda, with a view to delimiting the release of financial and human resources;
- g. Adopt measures that put a price tag on the negative externalities of car and motorcycle use (such as increased taxes, urban tolls, congestion charge, etc.);

h. Adopt equity policies in the cost of tariffs, ensuring that the public service of public transport is affordable to the lower-income population or those in extremely vulnerable social conditions.

4.2.6. AXIS "DIALOGUES WITH THE FEDERAL GOVERNMENT"

- a. Implement measures for economic recovery in the automotive sector, encouraging the use of renewable energies and cleaner fuel technologies, in addition to encouraging electrification;
- b. Ensure the rapid implementation of the Air Pollution Control Program for Motor Vehicles (Proconve), phase P8;
- c. Create the technical and institutional conditions for the federal government areas for the environment and health to work in synergy to guarantee air quality;
- d. Define policies and public investments that guarantee the installation and operation of integrated air quality monitoring stations, operating in a network, in a monitoring system that involves states and municipalities;
- e. Guarantee the collection, systematic updating and dissemination of information about air quality across the country;
- f. Develop and implement technical and financial support programs for municipalities in the inclusion of the Convergent Agenda in existing plans (Master Plan, Mobility Plan, environmental management plans, etc.);
- g. Provide technical and financial support for municipal initiatives aimed at monitoring accidents and other health problems, and qualify information to guide the intervention.



THE THREE DIMENSIONS OF THE CONVERGENT AGENDA FOR SUSTAINABLE MOBILITY AND HEALTH

5.1. URBAN MOBILITY

5.1.1. URBAN MOBILITY IN THE CONTEXT OF PUBLIC HEALTH

The urbanization of Brazilian cities occurs predominantly in a diffuse or dispersed way, as described by many authors, which is contrary to the very notion of territoriality historically fixed by human action. This city model establishes complex parameters of spatial regulation and rapidly changes the behavior patterns of populations over the territory, challenging territorial planning and bringing major socioeconomic, socio-environmental and sociocultural impacts, seen, for example, in the costs of urban mobility and in public health and safety issues.

Dispersed urbanization not only shapes physical-spatial networks in the territory of cities, requiring daily commuting between central spaces and urban outskirts, but also expands commuting between cities in metropolitan territories. In these contexts, there has been an increase in the distances to be traveled by populations in their daily commutes and, consequently, the time of exposure of these populations to traffic.

Road traffic injuries are the eighth leading cause of disability-adjusted life years (DALYS) worldwide, and in some low- and middle-income countries road traffic injuries are the second leading cause of DALYS, with young people being the most affected.

In view of the "tip-of-the-iceberg" condition of traffic deaths, in 2018, Brazil recorded 183,400 hospital admissions resul``ting from road transport accidents (RTAs), with costs for the Unified Health System (SUS) in the order of R\$ 265 million, and eight out of ten people that received care at SUS hospitals for RTAs were motorcyclists.8

The Institute for Applied Economic Research (Ipea)⁹ estimated at R\$ 50 billion per year the amount spent by Brazilian society on traffic accidents. This amount includes the costs of damage to public and private property, the rehabilitation of victims and the economic impact felt by the family, social security, police and legal proceeding costs, in addition to the diseconomies generated by traffic jams and production losses. The younger the victim, the greater the cost to society. The World Bank, on the other hand, using different calculations, suggests that the costs of accidents in Brazil would be between R\$170 billion and R\$258 billion for the year 2013.¹⁰

Even so, the motorization rate in Brazil has been increasing. According to a report published by the Observatório das Metrópoles in 2019,¹¹ the number of cars increased by 77% in ten years (2008 to 2018), and the number of motorcycles increased by more than 100%, from 13 million to 26.7 million vehicles. While metropolitan regions concentrated the largest percentage of the car fleet, municipalities with the smallest population had the greatest proportional and relative increase in the number of motorcycles. Also, on

the outskirts of metropolitan regions, there was a significant growth in the motorcycle fleet.11 Factors such as the increase in the purchasing power of the population, tax incentives and modernization of the automobile sector contributed to this growth.

The increase in the motorization rate, associated with the growth of app-based transport services, is directly related to the drop in the number of passengers in public transport, which has been increasing since 2014.12 According to the National Association of Public Transport (ANTP), 13 trips made by individual motorized transport account for 29% of total urban trips (or 26.9% in cities with more than 1 million inhabitants). Even so, investments in infrastructure for this individual motorized transport mode account for 78% of public resources invested against 22% of the investment geared towards public transport in Brazil. This inversion of values results in poor quality of infrastructure and urban equipment for the majority of the population that does not use a car, even though public transport is the mode of transport that gives the poorest populations access to city services.

It is also worth noting that the increase in the rate of motorization and the movement of cars at incompatible speeds on urban roads increase the risk of serious injuries or death. When hit by a vehicle at 30 km/h, a pedestrian has less than 20% probability of dying from being run over, while if the speed is 50 km/h, this probability increases to about 80%, and at 60 km/h, the chances of survival are almost nil.¹⁴

Therefore, it is concluded that traffic in cities involves significant risks to the health of populations. The city's automobile-oriented logic makes it increasingly hostile to people and the environment, adversely affecting air quality and increasing the vulnerability of road users, especially pedestrians

and cyclists, who together represent, in Brazil, 42.9% of trips in cities. 12

5.1.2. URBAN MOBILITY IN THE CONTEXT OF THE CONVERGENT AGENDA

In high- and middle-income countries, efforts to improve road safety have focused primarily on safe road design, trauma resistance, and driver behavior (e.g., risk factors related to speed and driving under the effect of alcohol).¹⁵ But land use and transport planning, which reduces dependence on cars and the mileage traveled by vehicles, can also reduce morbidity and mortality from road traffic injuries.¹⁶

The exposure of users is more noticeable in cases where it is possible to identify the following: the increase in car traffic; the lack of separation between non-motorized and motorized traffic; the precariousness or even the absence of a pedestrian commuting network; the encroachment of automotive traffic into pedestrian space; and policies that increase the speed of vehicular traffic.¹⁷ In this sense, the recommendations is to adopt urban "smart growth" policies, such as the promotion of compact development and mixed use of land and easy access for pedestrians or cyclists to the main activity centers, discouraging private vehicles from entering urban centers and other areas where vulnerable segments may be more exposed.

Evidence shows that, as much as possible, motorized traffic should be channeled away from pedestrian and bicycle routes. In addition, traffic moderation measures should be considered to force the reduction of the driving speed when the traffic is mixed. The set of recommendations shall also include the use of vehicular technologies (such as seat belts in vehicles), policing and education of the population, but, in effect, it is important to highlight the use of safer modes

of travel: overall, in this example, collective passenger transport is generally the safest mode per person/kilometer. In the European scenario, the external costs of injuries in rail traffic are estimated to be one-tenth of that of cars per passenger-kilometer.¹⁸

5.2. AIR QUALITY

5.2.1. AIR QUALITY IN THE CONTEXT OF PUBLIC HEALTH

The WHO considered, in 2019, that air pollution is the greatest environmental risk to health and that nine out of ten people breathe polluted air every day as a result, above all, of voluminous emissions from industry, agriculture and transport, but also from the use of polluting fuels within many environments of varied social interaction.¹⁹

When verifying the fact that pollution plays an important role in the burden of CNCDs, especially in relation to chronic respiratory diseases and cardiovascular diseases, it is important to stress that, in the urban space, the traffic of motor vehicles is an important source of air pollution. People living within 300 meters of busy streets are exposed to higher levels of pollutants from this type of transport, including particulate matter, carbon monoxide and nitrogen oxide, among others.

Typically, older vehicles, particularly diesel-powered ones, produce more pollutant emissions, and cars in low- and middle-income countries produce higher emissions than cars in high-income countries. This demonstrates the need to adopt public policies based on governance systems, in which the planning of land use and mobility by motor vehicles is anchored in the inspection of specific laws and regulations, with greater rigor and permanence to ensure reduction in

emissions and ensure the promotion of healthier environments.

The greater the number of pollutants, the greater the impact on overall and child mortality, and the greater the impact on the increased incidence of respiratory diseases, cancer and reduced life expectancy rates. This environmental impact is directly felt in health services, through hospital admissions, mainly as a result of chronic respiratory and cardiovascular conditions. It is necessary to emphasize that the low-income population, because they need to travel longer, is more exposed to the risks of pollution.

It was estimated that the sustained reduction in annual concentrations of these pollutants could prevent approximately 21,000 premature deaths per year. In Brazil, deaths due to air pollution increased by 14% in ten years. During this period, the number of deaths from CNCDs rose from 38,782 in 2006 to 44,228 deaths in 2016.²⁰ The number of premature deaths from these diseases grew, as did exposure to air pollutants across the country, especially in large urban centers and states adversely affected by fires. In 2018 alone, the cost of hospitalizations due to respiratory problems exceeded R\$1.3 billion. The Ministry of Health estimates that, between 2008 and 2019, this expenditure will reach R\$ 14 billion.

Small particles, less than 10 microns in diameter (PM10), and fine particles, less than 2.5 microns in diameter (PM2.5), produced by vehicle traffic, are more closely linked to quantifiable impacts on public health. Such particles are not recognized by the body's usual defenses, penetrating and lodging deep in the respiratory system. Small particles emitted by road vehicles can be composed of elemental carbon or carbon compounds, heavy metals, sulfur and carcinogens such as benzene derivatives. Visual assessments of "black smoke" emissions from trucks and buses can be a quick

and cheap proxy indicator of excess exhaust particulate emissions.

In the long term, cumulative exposure to elevated levels of small and fine particles is associated with reduced lung function, increased incidence of respiratory disease, and quantifiable rates of reduced life expectancy.

Exposure to CO levels normally found in air pollution can aggravate angina symptoms during exercise and impair exercise performance. The health impacts of NOx exposure include reduced lung function and increased likelihood of respiratory symptoms.²¹

Occupational exposure to diesel and gasoline engine exhaust has been associated with an increased risk of cancer.^{22,23} An association between childhood leukemia and housing near busy streets has been observed in several population-based case-control studies.²⁴

Short-term overexposure to ozone can have adverse effects on lung function and increase pulmonary inflammatory reactions, adverse respiratory symptoms, medication use, hospital admissions, and daily mortality.

Children are at greater risk of feeling the adverse effects of air pollution. Their bodies are more vulnerable due to the growth and development processes they go through. Some studies have indicated a link between air pollution and infant mortality, as well as between air pollution and birth weight, preterm birth, and intrauterine growth restriction.²²

Studies of lung function in children suggest that living in areas of high air pollution is associated with reduced lung function. The level of lung function is one of the strongest predictors of adult mortality. Exposure to air pollution is also

associated with an increased frequency and severity of upper and lower respiratory tract illnesses in childhood.²²

A systematic review of air pollution and health impact studies in Asia found that daily mortality increased, on average, from 0.4% to 0.5% for every 10 pg/m³ increase in PM10 concentrations, on a subset of the examined data. The Boston-based Health Effects Institute's analysis was conducted under the Asian Cities Clean Air Initiative (CAI-Asia), a partnership between the Asian Development Bank and the World Bank. While other representative settings in Asia still require examination, the observed increase in mortality was similar, in scale, to the results of large American and European multicenter studies using comparable statistical methods.

A WHO-sponsored health impact assessment of air pollution in eight major Italian cities found about 4.7% of all mortality (excluding accidental causes) attributable to PM10 concentrations above 30 pg/m³. Average annual levels of PM10 over the two-year study period ranged from 44.4 to 53.8 pg/m³ – lower than reported concentrations in many developing cities.²⁵

A study sponsored by the European Commission, involving 39 million residents of 23 cities in 12 countries, found mean annual levels of PM10 ranging from 17 pg/m³ to 85 pg/m³ in the cities studied. It has been estimated that sustained reduction of annual PM10 concentrations to an average of 20 pg/m³ could prevent approximately 21,000 premature deaths per year.²6

In a comprehensive review of studies on health impacts related to urban planning and transport in cities,²⁷ the authors report that emissions from land traffic may account for about one-fifth of the mortality attributable to environmental concentrations of PM 2. 5 and O3 in Germany, the

United Kingdom and the United States, while accounting globally for about 5% of the 3.3 million premature deaths annually due to pollution present in the outdoors.

Estimates of the global burden of the disease, the Dalys, attributable to the environmental stressors of benzene, dioxins, secondhand smoke, formaldehyde, lead, traffic noise, ozone, particulate matter (PM2.5) and radon, in six European countries, noting that 3 to 7% of the annual global burden in these countries is associated with the environmental stressors considered.²⁸

In a review of urban and transport planning, environmental exposures and health,²⁹ there are gaps in knowledge about urban vehicle fleets; fuel quality; and the performance of vehicles under local driving conditions greatly complicating any assessment of pollution emissions. Despite the uncertainties, emission inventories provide at least a tentative indicator of the degree to which transport can contribute to air pollution and, by inference, to health impacts.

The greatest impacts on air pollution are greatest in developing cities. In these, the dependence on trucks, buses and motorcycles using older technology and lower quality fuels, accompanied by densely-populated urban environments, with very fast motorization with private vehicles and stagnation of public transport, tends to "amplify" the impacts on the public health from pollution related to transport emissions.

In addition to the health hazards caused by air pollution, exhaustively demonstrated by evidence over the past few decades, current studies conducted at Harvard University have presented the first clear link between long-term exposure to pollution and Covid-19 mortality rates.³⁰

In China, recent studies demonstrate the increase in the number of new daily cases of Covid-19 in relation to the concentration of PM2.5 and PM10, NO2 and O3 in the air.³¹ Research carried out in different institutions confirms that viruses are released during exhalation, speech and cough, in microparticles, which remain in the air and represent a risk of exposure. Thus, one must consider the possibility of transmitting Covid-19 through the air, in public places, especially in crowded and closed places.

5.2.3. AIR QUALITY IN THE CONTEXT OF THE CONVERGENT AGENDA

In the "air quality" dimension, the solutions involve a change in the mode of travel, prioritizing non-motorized travel and a change in technology in motor vehicles to reduce emissions. It is scientifically known that most carbon monoxide emissions in urban areas are produced by motor vehicles and, once the supply of and demand for motorized and polluting transport prevails at the expense of so-called active commuting, there will be greater emissions and exposure to air contaminants that have negative impacts on the health of individuals and public health.

With the definition of standards of particulate emissions for diesel cars, increased active commuting and the introduction of electric vehicles, it is estimated that the first measure would result in a reduction of premature mortality by 3%, the second would have little effect and the third would have the greatest effect, as electricity would come from renewable resources.³²

A study comparing emissions (CO₂, PM2,5, NOX, HC) and impacts on environmental health (primary PM2.5) resulting from the use of conventional vehicles (CVs), electric vehicles (EVs) and electric bicycles (E- bikes) in 34 large cities in China shows that electric bicycles had less impact

on the environmental health per passenger-km than gasoline cars (2x), diesel cars (10x) and diesel buses (5x).³³

When quantifying the cost and health benefits of a subset of air pollution control measures (renewal of taxi fleets, subway expansion, and use of new hybrid buses to replace diesel buses) in Mexico City, it turned out that the measures reduced air pollution by approximately 1% for PM10 and 3% for O3. The associated health benefits were substantial, and their sum in the three measures was greater than the investment costs of the measures (the benefit/cost ratio was 3.3 for the taxi renewal measure; 0.7 for the subway expansion measure; and 1.3 for the new measure of hybrid buses).³⁴

In another review of urban and transport planning, environmental exposures and health, 35 the authors concluded that traffic indicators - such as distance to main roads, length of surrounding road and traffic density, domestic density, industry and natural and green space - explain a large proportion of the variability of air pollution in urban areas. It is further inferred that the average concentrations of air pollutants are considerably higher on the streets, compared to the urban environment, with average proportions of 1.63 for NO2 and 1.93 for NOX, and 1.14, 1.38, 1.23 and 1.42, respectively, for absorbance of PM2.5, PM2.5 (soot), PM10 and PMcoarse in Europe, resulting in considerable variation in air pollution levels in cities.

A reduction in personal exposure to air pollution was also observed in areas with more green spaces. While vegetation has been suggested to reduce air pollution levels, temperature, vegetation (trees, plants) and soil can all have an impact on the noise level. In this sense, the Health and Environment Linkages Initiative³⁶ suggests some urban policies, such as encouraging programs

for the conversion of vehicles into newer fuel technologies. Improving fuel quality and enforcing emission standards and vehicle inspection routines appear to have helped to contain the rise in ambient air pollution in some developing cities and improve air quality, as well as new government policies, which have removed two-stroke engines from roads and began upgrading or converting diesel trucks and buses to run on cleaner fuels, such as compressed natural gas.

It is further suggested that, for gasoline powered vehicles, catalytic converters can significantly reduce CO emissions as well as reduce NOx.

It is also worth noting that the possible relationships between exposure to pollution and Covid-19 mortality rates, associated with data on the reduction of air pollution during the pandemic, have brought to the center of discussions agendas that, although already existed, gained greater political traction and led to more engagement for the necessary reduction of air pollutants in Brazil. In this sense, there are growing movements in favor of the rapid adoption of renewable energies and cleaner fuel technologies, especially in public transport fleets. The following measures are also recommended: the effective expansion of the air quality monitoring network and the updating of standards in accordance with those established by the World Health Organization (WHO); the proposal to implement a policy for clear and up-to-date communication with the population about air quality and the impacts on their health; the improvement and approval of Bill number 10521/2018, which establishes the Brazilian National Air Quality Policy.

5.3. PHYSICAL ACTIVITY

5.3.1. PHYSICAL ACTIVITY IN THE HEALTH CONTEXT

Most developed or developing regions face an epidemic of CNCDs. Many cases are associated with increasingly less active lifestyles and inadequate nutrition, culminating in obesity. Currently, in most of these regions, about 65-80% of adults are physically inactive - they do not follow the recommendation of at least 150 minutes of moderate-intensity physical activity per week. This problem can be particularly greater in urban areas.

Studies have shown that physical inactivity increases the risk of cardiovascular disease, type 2 diabetes, colon and breast cancer, and is associated with obesity, high blood pressure, lipid disorders, osteoporosis, depression and anxiety.

In Barcelona, it was estimated that 3,000 deaths, nearly 20% of the annual mortality, could be avoided if international recommendations for physical activity, less exposure to air pollution, noise, heat and access to green spaces were followed.³⁷

A study in Shanghai reported that the risk of colon cancer was significantly reduced in proportion to the longer time individuals spent on active commuting.³⁸

Physical inactivity and ambient air pollution are estimated to cause more than 5 million premature deaths globally each year.³⁹

Such data tend to be even more critical considering the current context of the pandemic caused by SARS-CoV-2 (Covid-19). The sanitary procedures of social distancing and prolonged stay at home, recommended to reduce contamination

rates, tend to result in a reduction in physical activity. An article published by the Faculty of Health Sciences, University of the Fraser Valley, Canada, indicates that 40.5% of inactive individuals became less active and 22.4% of active individuals became less active.40 Due to the impact that this decrease in physical activity can have on the population's physical and mental health, researchers recommended that, during periods of isolation, physical activity should be promoted as strongly as social distancing itself.⁴¹

In addition to this issue, there are also the infrastructure problems already mentioned. There is an urgent need for the improvement of sidewalks and other areas for pedestrians and cyclists, in order to increase the opportunity for physical activity.

In addition to ensuring the accessibility of these spaces for active commuting, it also becomes an alternative to avoid crowding in public transport and reduce contamination rates.

5.3.2. PHYSICAL ACTIVITY IN THE CONTEXT OF THE CONVERGENT AGENDA

Some characteristics of the built environment have been associated with greater physical activity, lower body weight, better health and the impacts of motorized transport, as well as greater mixed use of land, intersection density, ratio of usable area for retail, residential density, stopping/collective transportation station density and density of food stores.⁴²

In general, the solutions to promote physical activity in the context of the Convergent Agenda involve, mainly, intervention in the design, construction and improvement of sidewalks, squares, parks and cycle paths, making them safer and more accessible, comfortable and attractive. As individuals opt for active commuting, in addition to the positive

effect on their physical and mental health, benefits will be gained with the reduction of noise and air pollutant emissions.⁴³

In this way, it can be said that federal, state and, mainly, municipal public policies, centered on active commuting, are a medium-term and long-term investment whose economic rationality is doubly effective: its effects affect both urban mobility and collective health.

In Brazil, the competences of federated entities are different and complementary in relation to public mobility policies. With regard to active commuting, it will be up to the municipality to take action on the urban territory, making it more attractive, safer and friendlier for pedestrians and cyclists.

The opportunity to access parks and trails is associated with physical hiking activities. Greater coverage of sidewalk area (total length of sidewalks divided by total length of streets) and access to shared bicycle stations were associated with more walking or using bicycles for commuting, confirming the expectation that the provision of adequate infrastructure and spaces for active commuting and use becomes an important inducer of ways of commuting that were previously non-existent or underutilized.⁴⁴

In Toronto (Canada), the modeled health benefits of changes to active commuting modes and increased leisure-time physical activity following the implementation of the Precinct Planb were: decreased projected Body Mass Index (BMI) and reduced mean BMI, lower probability and reduced prevalence of hypertension.⁴⁵

Several studies employ health impact assessments to explore tradeoffs between physical activity and air pollution in urban environments that facilitate or hinder this practice. The authors found that the health benefits of shifting to more active modes of commuting outweigh the possible risks involved. 46,47,48,48 Thus, even increased exposure to air pollution on the road and the risk of injury does not cancel out the gains resulting from the increase in the recommended levels of physical activity.

It is noted, in several studies, that countries that established certain combinations of land use and transport services exerted a quantifiable influence on the modal split - defined as the share of public transport, private vehicles and non-motorized trips. In this sense, the commuting and land-use patterns that contribute to higher levels of trips on foot, by bicycle or by public transport generally include compact and mixed-use urban development – low environmental impact housing and economic activities. They include high-quality services with good connectivity for pedestrians and cyclists, good public transport networks that indirectly encourage walking and cycling (e.g., to and from pickup and drop-off stations).⁵⁰

More compact cities allowed for better accessibility between neighborhoods, more trips on foot and by bicycle and, consequently, shorter trips and less emission of greenhouse gases (GHGs).⁴⁵

There was also a higher frequency of physical activities in cases where the local establishments for the purchase of food were closer.⁵¹

The practice of active commuting, compared to any other mode of commuting, has the greatest potential to favor familiarization with the place and the relationship between different people. This "repopulation" of common spaces has the power to restore these spaces to the condition of public places, propelling elements of urban

b Precinct Urban Planning is a consulting town planning practice offering specialist services in statutory and strategic planning and development facilitation and management. Based in Toowoomba, it serves public and private sector clients in the south east, west, central and north of Queensland. More information at: https://www.precinctplan.com.au. Accessed on: September 29 2020.

prosperity52 and space for the exercise of citizenship.53 In addition to the direct beneficial role of physical activity during daily commuting, it is necessary to consider the indirect benefits of active commuting in the context of urban mobility.⁵⁴

perception of public administrations and populations of the feasibility and positive impact of these interventions.

In addition to the access to resources and activities, using public transport, cycling and commuting on foot are activities understood as promoters of health at different levels: they enable physical activity, reduce fatal accidents, increase integration and social contact and reduce air pollution.55 On the other hand, reduced access to transport, characteristic of suburban and peripheral or peri-urban areas, increases social exclusion and exposure to violence and decreases access to jobs, hindering income opportunities.⁵⁶

Therefore, it is necessary to promote the conditions and urban redesign and land use for active commuting, considering, in addition to central areas, the peripheral areas, in order to consolidate a broad and connected network, so that the active community is done with accessibility, safety and comfort

In this sense, it is worth paying attention to the results achieved from interventions that took place in different cities around the world that, in order to quickly respond to the risks of contamination by Covid-19, widened areas of sidewalks, implemented or extended bike paths, setting up routes that were signposted and safe for active mobility, such as Paris, Bogotá and Toronto. The prompt implementation and the quick connection between different sectors of the city, with the simple redefinition of the use of existing urban spaces, changed the proportion and prioritization of active modes over motorized commuting. With the adoption of tactical town-planning practices, it was possible to make major changes in the short term and with low investment, increasing the



CONVERGENT AGENDA: OBJECTIVES AND LINES OF ACTION

Based on the review of scientific and gray literature and on the review of institutional normative aspects, an initial set of Objectives to be achieved by the Convergent Agenda was established. These objectives were presented and debated with specialists from different institutions.^c In a participatory and construction process^d, the specialists contributed to the revision of the Objectives initially listed and to the proposal of lines of action for the Convergent Agenda for Sustainable Mobility (urban infrastructure, road safety, time and mode of commuting; physical activity and air quality) and Health.

There is still room for improvement in this content, but it presupposes a direct impact on the health of individuals and the community, as it enables safety and comfort in the road systems through which they travel, as well as improvement in the quality of the air they breathe and attractiveness of urban environments for walkability and cyclomobility, whether for everyday or occasional commuting.

Thus, they are directed to the search for the convergence of the three dimensions of agendas to overcome important barriers to the implemen-

tation of integrated health and mobility policies, organized into five **Objectives**, with 18 **Lines of Action**, for which **possible strategies and expected results** are presented. It is a set of reflections and inspirations so that each municipal government can, based on the physical-spatial, social and economic characteristics of its city, plan and implement actions to converge the agendas. This makes it possible to reduce social costs, leverage public investments and accelerate the promotion of healthy living.

c Representatives/exponents of BR Cidades Núcleo DF, UFMG (School of Medicine/OSUBH); FAU/UnB; Ministry of Health (CGDANT/DASNT/ SVS); Saps/Depro; SVS/Disaster; Ministry of Regional Development/ Semob; Ministry of the Environment; Ministry of Infrastructure - CGVS/ Denatran; Ipea; Alto Paraíso City Government; BHTRANS/Belo Horizonte City Government; Conservation and Public Services Secretariat/Fortaleza; Fiocruz/Salvador-BA; Federal University of Alagoas (Ufal); Documentation Center in Healthy Cities (Cepedoc); Network of Cities by Complete Streets (UnB; FAU/Ufal, UCDB); Gepaf/USP; WRI Brazil; Institute of Energy and Environment; TJDFT; Vital Strategies Brazil; Vital Strategies; The b factor; Federal University of Pelotas (UFPel); University of São Paulo (USP); PAHO/ WHO Brazil.

d First Workshop for the Development of the Convergent Agenda for Sustainable Mobility and Health, held on October 23 and 24, 2019.

Figure 1 – Convergent Agenda for Sustainable Mobility and Health



Table 1 – Objectives and Lines of Action of the Convergent Agenda: Objective 1

OBJECTIVE 1

Improve public health and mobility, with equitable and sustainable urban development measures

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Scenario
1.1 Sustainable occupation and densification of	Apply urban, legal and tax instruments provided for in the City Statute and other territorial planning laws to:	Reduction in the distances between the place of origin and destination in the commuting of populations.	ALERTS: Promote urban densification without taking measures that
densification of urban areas - compact city Normative and planning references: City Statute (Law 10257/2001); Municipal Organic Law; Municipal Master Plan; Urban Perimeter Law; Urban Zoning Law; Land Use and Occupation Law; Urban Parceling Law; Tax Code			without taking measures that lead to crowding. BENEFITS: Reduce risk factors for contamination and harm, such as: i. Improvement in physical-spatial conditions for active commuting; ii. Reduction of vehicle emissions; iii. Reduction in time of exposure to polluted air;

LINES OF ACTION Possible strategies **Expected results** Covid-19 Scenario Reduction in the need for ALERTS: Apply city-planning instruments 1.2 Physical-spatial that favor and encourage the populations to face a long decentralization Expand access to public commute to go to work or for mixed use and densification community facilities and of economic of neighborhood centers, other economic activities. economic activities without reconciling the function of activities and Reduction in the need for users causing the crowding of people. housing with commerce, public services to travel long distances to access services and urban and public services (education, - polynucleated community public facilities. health, leisure, culture, social **BENEFITS:** Adopt fiscal strategies to attract work and security). investments and create jobs, Reduce risk factors for Possibility and encouragement aiming at the formation of new contamination and harm, such Normative and planning of non-motorized commuting, economic centralities in the references: City Statute since people will be closer to the micro and macro-regional urban (Law number 10257/2001); reasons that cause them to go i. Improvement in physical-Municipal Master Plan (PPA, spatial conditions for active to a given place. in Portuguese); Urban Zoning Project the number and location commuting; Law; Land Use and Occupation Better distribution of of public facilities necessary to Law; Sector Plans for Health, opportunities in the city (leisure, ii. Reduction of vehicle ensure the equitable distribution Education, Social Work, Culture culture, education, work, emissions; of services (education, health, and Public Safety; Economic housing, etc.). leisure, culture, social assistance iii. Reduction in time of Development Plan; Tax Code and security) in the different Reduction in the exposure time exposure to polluted air; regions of the municipality. of people in traffic. iv. Reduction of exposure time Form partnerships for the Reduction in people's time of in public transport; implementation/overhaul/ exposure to air pollution. expansion and management of v. Favor the operational conditions of public transport urban and community public Reduction in the number and facilities necessary to meet time of individual motorized with lower passenger density. demand equitably. vehicles in traffic. Improve individual and collective Reduction of traffic jams. health conditions, with increased physical activity due to Reduction in emissions of air active commuting. pollutants and automotive noise. Reduction in the number, frequency and severity of collisions and runovers (traffic accidents). Reduction in the number of hospitalizations and deaths from traffic accidents. Reduction in the number of CNCDs resulting from air pollution. Reduction in environmental and socioeconomic costs resulting

from motorized commuting...

Covid-19 Scenario **LINES OF ACTION** Possible strategies **Expected results** Apply city-planning instruments Productivity in the public ALERTS: 1.3 Intensification to sustainably increase the transport system, increasing and Adopt measures to accelerate utilization rate (densification) in the attractiveness points along the adoption of fleet renewal diversification the blocks adjacent to the main the line and, consequently, the policies aimed at the use of public transport corridors. renewal of passengers on the of land use and clean and/or low emission Guarantee, in the revisions to the Zoning and Land Use Laws, technologies, to prevent the occupation in Increased offer and frequency concentration of particulate blocks adjacent to the adoption of mechanisms of transport service along these matter, carbon monoxide public transport and nitrogen oxide in these to stimulate the development corridors. of multifamily housing along corridors. corridors -Increased attractiveness for the main public transport connected city the use of public transport corridors, including housing compared to individual of social interest, in mixed-**BENEFITS:** motorized transport for use buildings, reconciling the Normative and planning accessing areas adjacent to the function of housing with retail Reduce risk factors for references: corridors commerce and urban and public contamination and harm, such City Statute (Law number community services or facilities. Reduction in the number and 10257/2001); Municipal Master Plan (PPA, in time of individual motorized i. Improvement in physical-Adopt fiscal/tax strategies that vehicles in traffic in these areas. spatial conditions for active attract investments and create Portuguese); Urban Zoning Law; Land Use and new jobs in these areas. commuting: Reduction of traffic jams. Occupation Law; Urban Land ii. Reduction of vehicle Reduction in emissions of air Parceling Law; Building Code; emissions; pollutants and automotive noise. Economic Development Plan; iii. Reduction in time of Reduction in the number, Tax Code Apply city-planning exposure to polluted air; frequency and severity of instruments to sustainably collisions and runovers (traffic increase the utilization rate iv. Reduction of exposure time accidents). (densification) in the blocks in public transport; adjacent to the main public Reduction in the number of v. Favor the operational hospitalizations and deaths from conditions of public transport traffic accidents. with lower passenger density. Reduction in the number of CNCDs resulting from air pollution. Reduction in environmental and socioeconomic costs resulting from motorized commuting. Reduction in the operational cost of public transport and, consequently, allow the adoption of public transport fares that are more affordable for users. Favor strategies to change the model of compensation for the public transport service, moving from remuneration per transported passenger to remuneration per kilometer traveled. Optimization of investment and use of road infrastructure.

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Scenario
1.4 Adoption of active facades in economic centers and in blocks adjacent to public transport corridors - active	Define, in the Building Code, parameters for commercial units to have, in their facades, elements that enable visual permeability, such as regular windows, shop windows, translucent doors and others. Define, in the Building Code, parameters so that regidential	Reduction in self-segregation and abandonment of the public space. Qualification of the relationship/ transition between the built environment and transit spaces, integrating public and private spaces.	ALERTS: Ensure adequate physical conditions for active commuting, with proper social distancing (tactical city planning and/or interventions in infrastructure and signaling).
Corridors - active city Normative and planning references: Municipal Master Plan; Urban Zoning Law; Land Use and Occupation Law; Building Code; Posture Code; Tax Code	parameters so that residential buildings do not have "blind facades", with continuous walls, and so that there is the guarantee of a percentage of visual permeability in the form of railings, trusses and other elements. Include, in the Code of Postures, the multiple use of sidewalks that encourage interaction and enhance the social capital (tables, chairs, umbrellas, parklets), favoring meetings, conversations, rest and contemplation, without blocking the movement of pedestrians and bicycle paths. Apply urban planning instruments that enable and encourage, in strategic stretches of the road, the integration of the frontage area with the sidewalk area and the sidewalk area with stretches of the road. Adopt tax incentives that favor the installation of services and businesses that encourage living in the neighborhood, such as snack bars, cafes, beauty services, mini-markets, bakeries, etc.	Increased attractiveness and public security for active commuting in these areas. Greater social interaction among people in public spaces. Expand pedestrians' access to, use of and time of stay in the streets and spaces that surround them. Reduction in the reliance on individual motor vehicles to travel in these areas. Reduction in the occupation of public spaces with parking lots. Reduction of traffic jams. Reduction in emissions of air pollutants and automotive noise. Reduction in the number, frequency and severity of collisions and runovers (traffic accidents). Reduction in the number of hospitalizations and deaths from traffic accidents. Reduction in the number of CNCDs resulting from air pollution. Reduction in environmental and socioeconomic costs resulting from motorized commuting. Stimulation of the local economy.	BENEFITS: Reduce risk factors for contamination and harm, such as: i. Improvement in physical-spatial conditions for active commuting; ii. Reduction of vehicle emissions. Improve individual and collective health conditions, with the increase in physical activity resulting from the increase in active commuting.

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Scenario
1.5 Formation of a system of urban green areas connected by active mobility routes - connected and walkable city Normative and planning references: Municipal Master Plan; Urban Zoning Law; Land Use and Occupation Law; Municipal Plans for the Environment, Tourism, Mobility, Afforestation, Sidewalks	Map and categorize the use of existing green areas (backwaters, squares, parks, spaces for leisure, physical activity and entertainment). Project the number and location of strategic green areas to be added to form the "knots" of an active mobility network that connects the different centralities of the municipality, including the neighborhood center and public transport terminals. Develop afforestation and landscaping projects that make connection routes more pleasant for active mobility and form ecological corridors that benefit the human scale and urban fauna. Form partnerships for the implementation/overhauling/ expansion and management of units in the green area system connected by active mobility routes.	Increased attractiveness and safety of roads for active commuting. Expand pedestrians' and bicyclists' access to, use of and time of stay in public spaces and streets. Reduction of reliance on individual motor vehicles to travel between regions of the city. Reduction in the number of traffic accidents. Reduction in the number, frequency and severity of collisions and runovers (traffic accidents). Improved air quality in the city. Reduction in the number of CNCDs resulting from air pollution and physical inactivity. Reduction in environmental and socioeconomic costs resulting from motorized commuting.	ALERTS: Apply the rules for the occupation and use of green areas that prevent the gathering of crowds. Ensure adequate physical conditions for active commuting, with proper social distancing (tactical city planning and/or interventions in infrastructure and signaling). BENEFITS: Reduce risk factors for contamination and harm, such as: i. Improvement in physical-spatial conditions for active commuting; ii. Reduction of vehicle emissions. Improve individual and collective health conditions, with increased physical activity due to active commuting.

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Scenario
1.6 Compatibility	Review, in a coordinated	Enhancement of the use and	ALERTS:
between the Municipal Master	the Mobility Plan, correlating and reconciling the use and occupation of urban land, in order to reduce travel times and prioritize non-motorized transport over motorized transport and collective transport over individual	appropriation of urban spaces and services with less travel time.	Enhance the use of non- motorized modes, ensuring adequate physical-spatial
Plan and the Urban Mobility Plan		Improvement in road safety and public security during urban commuting.	conditions for active commuting, with proper social distancing.
Normative and planning references: City Statute		Prioritization of non-motorized transport over motorized transport (active commuting)	Enhance the use of public transport over individual transport, adopting clean and/
(Lawnumber 10257/2001); Urban Mobility Law (Law number 12587/2012);		Prioritization of public transport over individual transport.	or low-emission technologies in bus fleets; implementing strict sanitary measures, both for
Municipal Master Plan; Urban Mobility Plan; Urban		Promotion of equity in access to opportunities in the city.	vehicle and passenger hygiene; and ensuring low passenger density to maintain the
Zoning Law; Land Use and Occupation Law		Reduction in emissions of air pollutants and automotive noise.	necessary physical distance.
		Reduction in the number of CNCDs resulting from air	BENEFITS:
		pollution and physical inactivity.	Reduce risk factors for contamination and harm, such
		Improvement in the health conditions of urban populations.	as:
		Reduction in environmental and socioeconomic costs resulting from motorized commuting.	 i. Improvement in physical- spatial conditions for active commuting;
		Implementation of urban development oriented towards	ii. Reduction of vehicle emissions;
		sustainable transport.	iii. Reduction in time of exposure to polluted air;
			iv. Reduction of exposure time in public transport;
			v. Favor the operational conditions of public transport with lower passenger density.
			Improve individual and collective health conditions, with increased physical activity due to active commuting.

Table 2 – Objectives and Lines of Action of the Convergent Agenda: Objective 2

OBJECTIVE 2

Reduce accidents and other health problems, with measures to reduce the use and for the responsible and sustainable use of individual motorized transport

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
2.1 Adoption of traffic moderation measures Normative and planning references: Brazilian Traffic Code Law number 9503 of September 23, 1997, and related legislation	Establish "Zones 30" in areas where there is the predominance of local roads and an intense flow of vehicles, pedestrians and cyclists. Change the geometry of the lanes, whenever possible, with the narrowing of the lanes (funneling, chicanes, widening of median strips or islands); the reduction of the turning radius; and the installation of road alternatives, such as roundabouts and mini roundabouts. Install speed bumps, speed cushions, rumble strips. Adopt traffic signs and educational signs. Raise the floor at pedestrian crossings (intersections/elevated crossings). Whenever possible, extend sidewalks and traffic islands in the median strips. Schedule safe phases of pedestrian crossings at traffic lights. Adopt electronic surveillance and speed monitoring devices. Conduct social marketing campaigns combined with effective measures focused on speed, since speed is the main risk factor in accidents.	Dissemination of knowledge and expansion of collective awareness of the fact that speed is the main risk factor in accidents. Reduction in the speed of motor vehicles. Improved road safety for urban travel. Dissuasion from unnecessary use of a car. Reduction of traffic jams. Reduction in the number, frequency and severity of collisions and runovers of pedestrians and bicyclists. Reduction in the number of hospitalizations and deaths from traffic accidents. Reduction in emissions of air pollutants and automotive noise. Reduction in the number of CNCDs resulting from air pollution. Reduction in environmental and socioeconomic costs resulting from motorized commuting. Increased walkability/ safety levels for pedestrians and cyclists, especially at intersections and crossings. Creation of environments that are more welcoming for pedestrians, fostering socialization and the community spirit on the streets. Increased economic vitality of the area.	ALERTS: Deterring the unnecessary use of automobiles can cause people to prioritize the use of public transport over the use of private vehicles and this must be accompanied by policies that: a. prioritize the use of clean and/or low-emission technologies in bus fleets; b. implement strict sanitary measures, for the hygiene of both vehicles and passengers; and c. ensure low passenger density to maintain the necessary physical distance. Deterring the unnecessary use of automobiles can enhance the use of non-motorized transport over motorized transport, and this must be accompanied by policies that ensure adequate physical-spatial conditions for active commuting, with proper social distancing. BENEFITS: Take advantage of the lived experience to readjust the speed on the roads that became "emptier" in the period(s) of social distancing. Reduce risk factors for contamination and harm, such as reduction in vehicle emissions. Improve individual and collective health conditions, with increased physical activity due to active commuting.

2.2 Reduction in the number of trips by motorized individual transport

LINES OF ACTION

Normative and planning references: Brazilian Traffic Code - Law number 9503 of September 23, 1997, and related legislation

Possible strategies

Conduct social marketing campaigns combined with effective measures for the individual motorized transport user to reduce the number of trips in these modes and prioritize active commuting for short trips or collective transport for medium to long distance trips

Adopt a congestion charge/ urban toll in central regions with a high flow of vehicles and/ or roads frequently affected by congestion.

Adopt policies that encourage and regulate chartered collective transport - authorized private collective transport for specific routes that serve companies; schools, institutions etc.

Adopt policies that encourage and regulate the joint use of vehicles for common routes (carpooling).

Regulate shared individual transport systems.

Define in the Building Code that the areas for parking vehicles (individual or collective garages) will be included in the total calculation of areas to be built, as determined by the coefficient or index of urban development.

Expected results

Improved road safety for urban travel.

Dissuasion from unnecessary use of a car.

Dissemination of knowledge and expansion of collective awareness of the social, economic and environmental benefits arising from the reduction in the use of individual motorized transport.

Prioritization of non-motorized transport over motorized transport (active commuting)

Prioritization of public transport over individual transport.

Reduction of traffic jams.

Reduction in the number, frequency and severity of collisions and runovers of pedestrians and bicyclists.

Reduction in the number of hospitalizations and deaths from traffic accidents.

Reduction in emissions of air pollutants and automotive noise.

Reduction in the number of CNCDs resulting from air pollution and physical inactivity.

Reduction in environmental and socioeconomic costs resulting from motorized commuting.

ALERTS:

Increased risk of collisions and running over of motorcyclists due to the growth of delivery services (delivery applications) resulting from the growth in online shopping.

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Deterring the unnecessary use of automobiles can cause people to prioritize the use of public transport over the use of private vehicles and this must be accompanied by policies that:

- a. prioritize the use of clean and/or low-emission technologies in bus fleets;
- b. implement strict sanitary measures, for the hygiene of both vehicles and passengers; and
- c. ensure low passenger density to maintain the necessary physical distance.

Deterring the unnecessary use of automobiles can enhance the use of non-motorized transport over motorized transport, and this must be accompanied by policies that ensure adequate physical-spatial conditions for active commuting, with proper social distancing.

BENEFITS:

Take advantage of the lived experience to expand the physical-spatial conditions for active commuting that increased in the period(s) of social distancing.

Reduce risk factors for contamination and harm, such as reduction in vehicle emissions.

Improve individual and collective health conditions, with the increase in physical activity resulting from the increase in active commuting.

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
2.3 Reduction in	Implement a pay-by-space time-	Improved road safety in central	ALERTS:
the number of individual motorized vehicles traveling in central areas	limited parking system Adopt congestion charge/urban toll for driving within central areas. Establish "Zones 30" in the central areas.	Dissuasion from unnecessary car use in these areas. Increased attractiveness and road safety for active commuting in these areas.	Deterring the unnecessary use of automobiles can cause people to prioritize the use of public transport over the use of private vehicles and this must be accompanied by policies that:
Normative and planning references: Brazilian Traffic Code - Law number 9503 of September 23, 1997, and related legislation	Transform public parking spaces alongside the roads into living areas such as parklets and/or into areas for the installation of collective paracycles or shared bicycle stations. Implement shared-use vehicle service in these areas (preferably clean technology vehicles). Convert parking in commercial areas into sports, recreational or farmer-market spaces on specific days and/or at specific times.	Expand pedestrians' access to, use of and time of stay in the streets and spaces that surround them. Greater social interaction among people in public spaces. Reduction in the occupation of public spaces with parking lots. Prioritization of non-motorized transport over motorized transport (active commuting). Prioritization of public transport over individual transport. Reduction of traffic jams. Reduction in the number, frequency and severity of collisions and runovers of pedestrians and bicyclists. Reduction in the number of hospitalizations and deaths from traffic accidents. Reduction in emissions of air pollutants and automotive noise. Reduction in the number of CNCDs resulting from air pollution. Reduction in environmental and socioeconomic costs resulting from motorized commuting.	a. prioritize the use of clean and/or low-emission technologies in bus fleets; b. implement strict sanitary measures, for the hygiene of both vehicles and passengers; and c. ensure low passenger density to maintain the necessary physical distance. Deterring the unnecessary use of automobiles can enhance the use of non-motorized transport over motorized transport, and this must be accompanied by policies that ensure adequate physical-spatial conditions for active commuting, with proper social distancing. BENEFITS: Take advantage of the lived experience to expand the physical-spatial conditions for active commuting that increased in the period(s) of social distancing. Reduce risk factors for contamination and harm, such as reduction in vehicle emissions. Improve individual and collective health conditions, with increased physical activity due to active

Table 3 – Objectives and Lines of Action of the Convergent Agenda: Objective 3

OBJECTIVE 3

Contribute to collective health, improving the public transportation service

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
3.1 Equitable and efficient provision of public transport service Normative and planning references: Urban Mobility Law (Law 12587/2012); Municipal Master Plan; Urban Zoning Law; Land Use and Occupation Law	Make a diagnosis of the system, including a user satisfaction survey. Carry out an origin/destination survey that includes, in addition to physical-spatial aspects and reasons for commuting, socioeconomic, cultural, gender and race aspects. Analyze the data from the origin/destination survey in conjunction with the infrastructure and land use and occupation data. Develop/review the Mobility Plan together with the Master Plan, so that interventions in land use and occupation and in the road system prioritize and favor, in motorized modes, collective transport over individual transport. Plan and implement a public transport network that covers, in broad way, all regions of the cities. Adopt traffic engineering measures that prioritize, in the road system, public transport over individualized motorized transport. Ensure the regularity in the operation of the lines, that is, punctuality in the arrival and departure times of vehicles at the boarding and alighting locations. Ensure the frequency of service on each line of public transport, that is, the regularity in the time interval between consecutive passages of vehicles through the boarding stops. Ensure supply so that there is no overcrowding in public transport vehicles, even at peak times.	Making public transport effective as a social right and an urban strategy for the realization of other rights. Implementation of public transport as a structuring mode for medium and long distances. Implementation of urban development oriented towards sustainable transport. Prioritization of public transport over individual transport. Promotion of equity in the connection of territories and physical access to public transport. Promotion of equity in the access of users to opportunities in the city. Increase in operational speed on public transport lines. Reduced travel time for passengers. Increased passenger comfort and safety. Increased reliability and loyalty of users to the system. Increased attractiveness for travel by public transport. Increased productivity in the public transport system. Reduction in the operational cost of public transport and, consequently, allow the adoption of public transport fares that are more affordable for users. Provision of adequate infrastructure for efficient operation of public transport.	ALERTS: Lack of reliable information. If the user does not have reliable information or simply if he or she does not have information about the arrival and departure times of the bus, he will be exposed to contamination for a longer period. Migration of passengers from public transport to the individual motorized transport or even to active commuting due to the risks of contamination. Risk of precariousness of the public transport service due to the drop in the number of passengers and, consequently, a drop in revenue and economic/financial imbalance in the system. Risk of precariousness of the fleet due to the economic/financial imbalance of the system and the consequent increase in vehicle emissions. Reduction in the offer of the service due to the economic/financial imbalance of the system and the consequent overcrowding of vehicles in operation, increasing the risk of contamination. BENEFITS: Take advantage of the strict rules imposed on the operation of the transport system in periods of social distancing to define: a. New compensation strategies for the service, moving from remuneration per transported passenger to remuneration per kilometer traveled;

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
	Offer a system of geographic information on lines and routes that enable users to optimize their commuting around the city, using the mobility network efficiently. Implement special lines, ensuring frequency, regularity and comfort, to cover major cultural, sporting and institutional events. Adopt regulatory measures that accelerate fleet renewal, aiming at full accessibility for people	Favor strategies to change the model of compensation for the public transport service, moving from remuneration per transported passenger to remuneration per kilometer traveled. Ensure that the public transport service is stable and is of good quality. Ensure that the public transport service is accessible to the lower-income population or people in situations of extreme social	b. Encourage the vehicular production chain in the public transport sector to change to clean technologies, contributing to the economic dynamism and formation of new industrial parks; c. Reduce the risk factors for contamination and harm, such as technological change and the consequent reduction in vehicle emissions.
	with reduced mobility. Adopt fair cost policies for fees. Develop socio-educational and protection actions related to the age, race and gender policy, in the planning and operation of	vulnerability. Guarantee public safety for women, children, the elderly, homosexuals, blacks and indigenous people, in public transport;	

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
3.2 Qualification of infrastructure for public transport Normative and planning references: Urban Mobility Law (Law number 12587/2012); Accessibility Law (Law number 10098/2000)	Ensure proper sizing, type of pavement, lighting and maintenance of lanes and sidewalks on public transport lines. Implement priority lanes and exclusive corridors for public transport, ensuring adequate separation of this from other lanes. Implement signs, including traffic lights, that prioritize public transport, including restriction or control of left turn by vehicles that are in lanes to the right of the bus lanes. Ensure accessible routes and safe crossings in the access of public transport users to stations and boarding/alighting stops. Signal boarding/alighting stops with information about the itinerary and schedule of each line. Ensure that the boarding/alighting stops are integrated with the sidewalks, without obstructing the pedestrian traffic lanes. Ensure that all boarding/alighting stops have benches or support bars and protection against bad weather and pollutant emissions. Ensure that boarding/alighting stops are properly spaced and coordinated with public equipment or points of interest. Design and implement comfortable, safe and efficient stations and terminals with an effective information system for users.	Reduction of conflicts between buses, other vehicles, pedestrians and bicycles. Increased road safety. Reduction of traffic jams. Reduction in the number, frequency and severity of collisions and runovers (traffic accidents). Increase in operational speed on lines. Reduced travel time for passengers. Increased passenger comfort and safety on the route and when accessing public transport. Increased productivity in the public transport system. Reduction in the operational cost of public transport.	The absence of public restrooms or sanitation devices at stations and embarkation/alighting stops increases the risks of contamination. BENEFITS: Reduce risk factors for contamination and harm, such as: i. Improvement in physical-spatial conditions for active commuting; ii. Reduction of vehicle emissions; iii. Reduced time of exposure of transport users to polluted air; iv. Reduction of exposure time in public transport.

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
integration and integration of the public transport network with other modes of transport Normative and planning references: Urban Mobility Law (Law number 12587/2012); Accessibility Law (Law number 10098/2000)	Connect public transport boarding/alighting stations and stops with active mobility routes (sidewalks and cycling infrastructure - bike paths, bike lanes, bike routes). Ensure that boarding/alighting stations and stops have, in their surroundings and access, accessible sidewalks, safe infrastructure for cycling, signposted and safe pedestrian crossings. Ensure that, around the public transport boarding/alighting stations, there are stopping points for taxis and transport by application, for the arrival and departure of public transport users who "integrate" with these other modes of travel. Ensure that all boarding/alighting stations have bicycle racks, paracycles, tire pumps and shared bicycle stations. Ensure that the physical-spatial conditions of micromobility in the neighborhoods allows that it takes no more than 20 minutes for the micro mobility public transport user to travel from their origin to the boarding point and from the alighting point to their final destination (equity in access to the system). Give a partial or full discount to the collective transport user who travels the first or last mile by bicycle or light electric vehicle. Adopt a single ticket for the integration of public transport with other active commuting or light electric modes. Provide, on buses and trains, space for the boarding of bicycles, light electric vehicles or human-powered vehicles.	Reduction of conflicts between buses, other vehicles, pedestrians and bicycles. Increased road safety. Reduction in the number, frequency and severity of collisions and runovers of pedestrians and bicyclists. Promotion of equity in physical access to public transport. Increased attractiveness for travel by public transport. Encouraging active commuting and micromobility as a step of public transport commuting.	Lack of reliable information. If the user does not have reliable information or simply if he or she does not have information about the arrival and departure times of the bus, he will be exposed to contamination for a longer period. Measures that lead to an increase in the number of public transport users over the number of users of individual modes of transport must be accompanied by policies that: a. P b. prioritize the use of clean and/or low-emission technologies in bus fleets; c. implement strict sanitary measures, for the hygiene of both vehicles and passengers; and d. ensure low passenger density to maintain the necessary physical distance. BENEFITS: Reduce risk factors for contamination and harm, such as: i. Improvement of physical-spatial conditions for active commuting to boarding/alighting stops and stations. Improve individual and collective health conditions, with the increase in physical activity resulting from the increase in active commuting to stations and boarding/alighting stops.

Table 4 – Objectives and Lines of Action of the Convergent Agenda: Objective 4

OBJECTIVE 4

Prevent chronic non-communicable diseases (NCDs), reducing the emission of pollutants by motor vehicles

LINES OF ACTION	N _	Possible strategies	Expected results	Covid-19 Alerts
4.1 Adoption of measures, at the municipal level, that reduce polluta emissions by motor vehicle Referência Normative an planning references: Bra Traffic Code - Law numb 9503/1997; Law numb 8723/1993 (Proconv); Conama Resolution num 18/1986; Conama Resolution number 03/1 Conama Resolution number 03/1 Conama Resolution num 491/2018.	ant ss nd azzilian ber er nution ma 1990; nuter	Adopt more rigorous vehicle inspection procedures and routines for passenger transport fleets of services provided by companies authorized or permitted to operate by the city government or which have entered into a concession agreement with the city government, such as: a. Municipal public transport; b. Taxi service; c. Transport by application; d. School bus; e. Charter transport. Adopt more rigorous inspection procedures and routines in the municipal administration's vehicle fleets. Review municipal legislation and concession contracts relating to public transport, so that there is a gradual replacement of combustion engine fleets with fleets made up of vehicles that use non-polluting matrices (e.g., electricity, solar energy), including less polluting fleets, such as hybrid engines (biodiesel, biogas, ethanol, hydrogen). Include, in the call for bids for the acquisition or lease of vehicles for the city's fleet, or even for the contracting of transport services for the government, evaluation and classification criteria that consider the energy efficiency and environmental efficiency of this fleet. Adopt fiscal strategies and form partnerships for the installation and operation of an electric car sharing network as part of the urban mobility system. Adopt fiscal strategies and form partnerships for the installation and operation of an electric car sharing network as part of the urban mobility system. Adopt fiscal strategies and form partnerships for the installation and operation of a micromobility network with shared light electric vehicles (scooters, bicycles, mopeds, skateboards, segways etc.) that are part of the city's mobility system.	Reduction in emissions of air pollutants and automotive noise. Lower initial cost for the acquisition of public transport fleets with clean technologies. Micromobility for those who are unfit or have any permanent or occasional disability, especially the first and last kilometers of the route. Reduction in emissions of air pollutants and automotive noise. Reduction in the number of CNCDs resulting from air pollution and physical inactivity. Reduction in environmental and socioeconomic costs resulting from motorized commuting.	ALERTS: Evidence demonstrates a clear link between long-term exposure to pollution and Covid-19's mortality rates. BENEFITS: Reduce risk factors for contamination and harm by reducing vehicle emissions.

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
	Establish "low emission zones" and/or routes at specific times, especially close to schools, hospitals, sports areas and leisure areas, in which the traffic of motor vehicles is restricted based on the polluting potential.		
	Adopt a congestion/urban toll rate in regions or roads with a high flow of vehicles, on the days and times that the air monitoring system indicates a high risk to health.		
	Conduct social marketing campaigns about the impact of air quality on health caused by the use of individual motorized transport modes and combine them with structural measures that favor active commuting either in shared modes or in collective modes.		
	Search for new sources of financing for the municipal public transport system that use non-polluting matrices.		
	Offer tax incentives to companies whose economic activities are taxed at the municipal level (Tax on Services), encouraging the renewal of their fleets with the adoption of clean technologies and fuels.		
	Encourage the renewal of the fleet in operation in the municipality, with energy-efficient and less polluting vehicles, through awareness-raising campaigns, seals, permission to drive in restricted areas and at restricted hours and other strategies within the competence of the city government.		

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
4.2 Adoption of air-quality monitoring and control measures Law number 8723/1993 (Proconv); Conama Resolution number 18/1986; Conama Resolution number 05/1989; Conama Resolution number 03/1990; Conama Resolution number 491/2018.	Set up capacity-building programs for municipal managers and technicians to train them in the use of 'health situation analysis' and 'air quality modeling' software, methodologies and programs. Include the municipality in the air-quality monitoring network in Brazil. Implement a continuous static or mobile municipal monitoring system. Implement a periodic routine for measurement of air quality parameters. Circulate bulletins and reports about the monitored air quality, informing its effects on the population's health, and giving guidance on the adoption of the preventive and protective measures. Implement awareness-raising campaigns and disseminate information to the population, with an emphasis on training leaders of vulnerable groups in air quality issues, the impacts of vehicle emissions and the risks of pollution to human health.	Periodic evaluation and demonstration of the effectiveness of measures adopted by municipalities to reduce air pollution and its effects on the health of the population. Reduction in emissions of air pollutants and automotive noise. Reduction in the number of CNCDs resulting from air pollution and physical inactivity. Reduction in environmental and socioeconomic costs resulting from motorized commuting.	ALERTS: Evidence demonstrates a clear link between long-term exposure to pollution and Covid-19's mortality rates. BENEFITS: Reduce risk factors for contamination and harm by reducing vehicle emissions.

Table 5 – Objectives and Lines of Action of the Convergent Agenda: Objective 5

OBJECTIVE 5

Promote individual and collective health, ensuring physical and spatial conditions for active mobility

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
5.1 Increased walkability	Plan and implement an urban network of sidewalks	Increased public security and road safety for people that	ALERTS: Ensure adequate physical
patterns in	considering:	commute on foot.	conditions for active commutin
different areas of	a. Geographical distribution,	Increase in thermal comfort	with proper social distancing
the city	covering, in an equitable way, all areas of the city;	and reduction of effects of bad weather on pedestrian paths.	(tactical city planning and/or interventions in infrastructure and signaling).
Irban Mobility Law (Law 2587/2012); Accessibility	b. Continuity between neighborhoods;	Increased attractiveness of and adherence to active modes of	and signaling).
aw (Law 10098/2000 and	c. Greater network	commuting.	BENEFITS:
ecree 5296/2004); Posture ode; Basic Sanitation ow (Law_11445/2007);	connectivity, increasing the alternatives of routes and distance reduction - increase in	Dissemination of knowledge and expansion of collective awareness of the social,	Reduce risk factors for contamination and harm, such as:
ontran Resolution number 38/2018; Pedestrian Statute ote: not all municipalities	the number of intersections by pedestrian lane segments;	economic and environmental benefits of physical activity, with a focus on walking.	i. Improvement in physical- spatial conditions for active
ave an approved Pedestrian tatute; therefore, the São	d. Interconnectivity of the network with urban facilities	Promotion of equity in the	commuting;
aulo Pedestrian Statute is sed as a reference)	(health, culture, social work, leisure facilities and schools), green areas (squares, parks,	connection of territories and in the access of inhabitants to opportunities in the city,	 i. Reduction of vehicle emissions.
	backwaters), stations and boarding/alighting stops in	including people with permanent or occasional disabilities.	Improve individual and collectine health conditions, with the
	neighborhood centers;	Expand pedestrians' access to,	increase in physical activity resulting from the increase in
	e. Full accessibility for all people, including those with permanent or occasional	use of and time of stay in the streets and spaces that surround them	active commuting.
	disabilities (e.g., ensuring the necessary width for	Greater social interaction among	
	pedestrian traffic; lowering sidewalks along pedestrian	people in public spaces. Reduction in reliance on	
	crossings; installing tactile flooring; ensuring regular	individual motorized vehicles for short distance travel.	
	and continuous longitudinal inclination, avoiding irregularities in the pavement;	Reduction in emissions of air pollutants and automotive noise.	
	installing ramps and devices to address height difference issues	Reduction in the number, frequency and severity of injuries	
	and eliminating obstacles in the route).	caused by collision or fall of pedestrians from sidewalks.	
	Design the sidewalks so that, at least in areas with greater pedestrian traffic, they have a	Reduction in the number, frequency and severity of traffic accidents involving	
	free lane, a service lane and a transition lane, as follows: a. Free lane: exclusive to pedestrian traffic, without interference and obstacles that reduce its width or hinder the flow;	pedestrians because they have to walk on car lanes due to the	
		precariousness of sidewalks. Increased attractiveness and	
		safety of roads for active commuting.	
	b. Service lane: where urban equipment will be installed (benches, garbage bins, lighting and electricity poles, paracycles, traffic signs and	Reduction in emissions of air pollutants and automotive noise.	
	other vertical elements), vegetation and where the underground infrastructure for urban services passes through;		

LINES OF ACTION	Possible strategies	Expected results	Covid-19 Alerts
	b. Transition lane: lane adjacent to buildings, with space for stopping and access for people to buildings without obstructing the free lane. Develop and implement an afforestation plan for sidewalks, traffic islands, backwaters and squares without any conflicting interference with floors, electrical networks and the lighting system.	Reduction in the number of CNCDs resulting from air pollution and physical inactivity. Reduction in environmental and socioeconomic costs resulting from motorized commuting.	
	Note: for shading sidewalks, other architectural resources can also be used, such as canopies, pergolas, arbors, etc.		
	Perform drainage services that prevent flooding and water puddles on sidewalks and other traffic lanes, ensuring the proper cross-slope of the sidewalk, the installation of rainwater catchment devices (grills and rain gardens) and, when necessary, the diversion of rainwater to the road's drainage system.		
	Conduct social marketing campaigns combined with effective measures to publicize the multiple social, economic and environmental benefits of physical activity, with a focus on walking.		

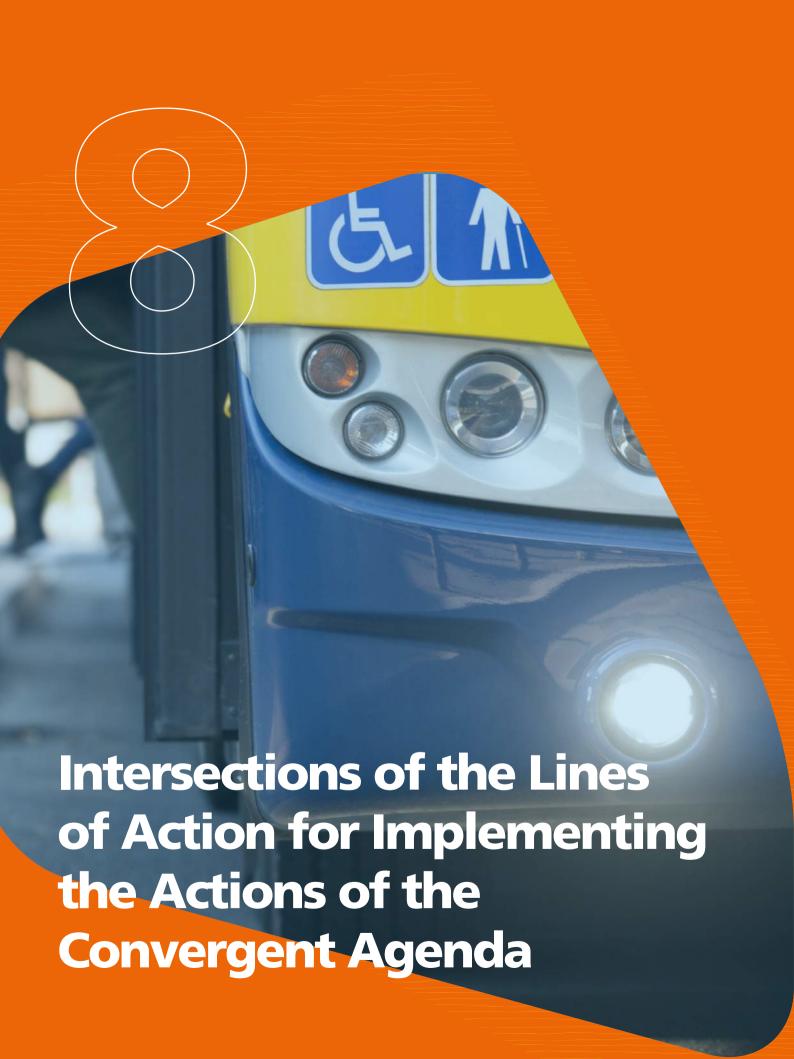
LINES OF ACTION Possible strategies **Expected results** Covid-19 Alerts Increased public security and Plan and implement an urban ALERTS: 5.2 Increase in road safety for users of the cycling network (bike paths, bike the cyclability Increased risk of collisions and lanes, bike routes) considering: urban cycling network. running over of motorcyclists standards in a. Routes that extend into Increase in thermal comfort due to the growth of delivery different areas of different areas of the city: and reduction in effects of bad services (delivery applications) resulting from the growth in weather for users of the urban the city b. Continuity of the network cycling network. online shopping. from one neighborhood to the Urban Mobility Law (Law Increase in the attractiveness of Ensure adequate physical 12587/2012); Accessibility conditions for active commuting, and adherence to active modes c. Connectivity of the cycling Law (Law number with proper social distancing of commuting 10098/2000 and Decree network, with the increase (tactical city planning and/or number 5296/2004); Posture in route alternatives and Dissemination of knowledge interventions in infrastructure and expansion of collective reduction of distances; Code; Basic Sanitation Law and signaling). awareness of the social, (Law number 11445/2007); d. Interconnectivity of the economic and environmental Contran Resolution number cycling network with urban benefits of physical activity, with 738/2018 **BENEFITS:** facilities (schools and health, a focus on cycling. cultural, social work, leisure Reduce risk factors for facilities), green areas (squares, Promotion of equity in the contamination and harm, such connection of territories and parks, backwaters), stations as: and boarding/alighting stops, the access of inhabitants to local and regional economic opportunities in the city through i. Improvement in physicalcenters. the urban cycling network. spatial conditions for active commuting: Whenever possible, provide Reduction in reliance on for the shading of the cycling individual motorized vehicles i. Reduction of vehicle network, with trees and for short and medium distance emissions. other architectural, urban and landscape elements. Improve individual and collective Reduction in emissions of air health conditions, with the Perform drainage services that pollutants and automotive noise. increase in physical activity prevent flooding and water resulting from the increase in Reduction in the number, puddles in the cycling network. active commuting. frequency and severity of injuries Conduct social marketing caused by collision, fall or runcampaigns combined with over of cyclists. effective measures to publicize Increased attractiveness and the multiple social, economic safety of roads for active and environmental benefits of commuting. physical activity, with a focus on cycling. Reduction in the number of CNCDs resulting from air Implement bike sharing systems. pollution and physical inactivity. Adopt awareness-raising and Reduction in environmental and encouragement strategies for socioeconomic costs resulting public servants to use active from motorized commuting. modes when commuting to work Adopt tax incentive policies for private companies that encourage and promote the use,

by their employees, of active modes when commuting to

work.

LINES OF A	ACTION	Possible strategies	Expected results	Covid-19 Alerts
integrati active me network other me transpor Urban Mobility L 12587/2012); Ac Law (Law numbe 10098/2000 and number 5296/20 Code; Basic Sanii (Law number 11- Contran Resoluti 738/2018	ion of the oblity with odes of t. aw (Law ccessibility er d Decree 004); Posture tation Law 445/2007);	Connect the cycling network to stations and boarding/alighting stops of the public transport system. Ensure that boarding/alighting stations and stops have, in their surroundings and access, accessible sidewalks, safe infrastructure for bicyclists, and signposted and safe pedestrian crossings. Install bike racks, paracycles, shared bicycle stations, tire gauges and changing rooms at all boarding/alighting stations. Ensure that the installed network of pedestrians and cyclists allows public transport users to travel, from their origin to the stations and boarding/alighting stops, in a period of time of no more than 20 minutes. Give a partial or full discount to the collective transport user who travels the first or last mile by bicycle or light electric vehicle. Adopt a single ticket for the integration of public transport with other active commuting or light electric modes. Provide, on buses and trains, space for the boarding of bicycles, light electric vehicles or human-powered vehicles.	Increased attractiveness, accessibility, comfort and safety for active modes when commuting from their origin to boarding/alighting stops and stations of the public transport system. Promotion of equity in the connection of territories and in the access of inhabitants to opportunities in the city. Reduction in the dependence on individual motorized vehicles for short, medium and long-distance commuting. Reduction in emissions of air pollutants and automotive noise. Reduction in environmental and socioeconomic costs resulting from motorized commuting.	ALERTS: Ensure adequate physical conditions for active commuting, with proper social distancing (tactical city planning and/or interventions in infrastructure and signaling). BENEFITS: Reduce risk factors for contamination and harm, such as: i. Improvement in physical-spatial conditions for active commuting; ii. Reduction of vehicle emissions. Improve individual and collective health conditions, with the increase in physical activity resulting from the increase in active commuting.
of street leisure a	opening es for nd activities timulate y ((Law 2000 and 5296/2004); asic Law number	Carry out activities with the community in each region of the city (meetings, workshops, public hearings) to present proposals for "open streets" and define which streets and in what period they will integrate programs. Make the physical-spatial and road diagnosis of the indicated streets, making a plan for an alternative flow of traffic when the road is closed for vehicular traffic. Conduct social marketing campaigns combined with tactical city-planning measures to publicize the project and promote the pedagogical character of redefining the use of roads and the fact that people take ownership of the city.	Reduction in segregation and abandonment of the public space. Greater social interaction among people in public spaces. Expand pedestrians' access to, use of and time of stay in the streets and spaces that surround them. Stimulus to physical activity. Reconciling and development of affections between inhabitants and public spaces. Reduction in the occupation of public spaces with parking lots. Stimulation of the local economy. ALERTS	ALERTS: Ensure adequate physical conditions for active commuting, with proper social distancing (tactical city planning and/or interventions in infrastructure and signaling). BENEFITS: Improve individual and collective health conditions, with the increase in physical activity resulting from the increase in active commuting.





INTERSECTIONS OF THE LINES OF ACTION FOR IMPLEMENTING THE ACTIONS OF THE CONVERGING AGENDA

As already mentioned in this document, sustainable mobility has a direct impact on health, whether by preventing morbidity and mortality from injuries resulting from collisions and being run over, or by reducing the time of exposure of passengers to traffic and its externalities, or, also, for measures that include the promotion of physical activities and improvements in air quality. Therefore, the Convergent Agenda for Sustainable Mobility and Health works with an inter-sector view, articulating three basic dimensions: (i) urban mobility; (ii) physical activity; and (iii) air quality.

In the context of this work, after defining the Objectives of the Convergent Agenda in each of these dimensions and, for these Objectives, establishing Lines of Action and Possible Strategies for the implementation of the Agenda, an assessment was carried out to check the level of intersection of these Lines of Action with the three basic dimensions mentioned.

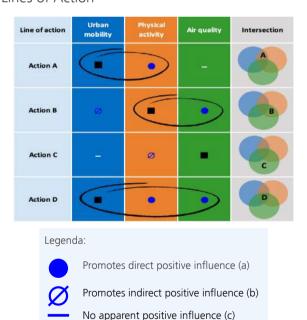
The evaluations were carried out over nine workshops, in which specialists in the areas of traffic, physical activity, air quality and city planning reviewed the relevance and scope of each Line of Action, debated and considered their positive influence on the dimensions of the Agenda and also evaluated their level of influence, as described below:

a. There is **positive and direct** influence, easily noticeable, of the Line of Action of a given dimension on the other dimensions:

- b. There is **indirect positive influence**, not always easily noticeable, of the Line of Action of one dimension on the other dimensions:
- c. There does not appear to be any positive influence of the Action Line of one dimension on the other dimensions.

Exemple:

Table 6 – Example of intersections between the Lines of Action



The result of this analysis, in addition to being an indicator of the pertinence and scope of each Line of Action for the realization of the Convergent Agenda for Sustainable Mobility and Health, can be a relevant variable to assist governments in decision-making processes regarding the prioritization of investments in the implementation of the Agenda.

Table 7 – Intersections between the Lines of Action: Objective 1

OBJECTIVE 1

Improve public health and mobility, with equitable and sustainable urban development measures

LINES OF ACTION	MOBILITY	PHYSICAL ACTIVITY	AIR QUALITY	INTERSECTION
1.1 Sustainable occupation and densification of urban areas - compact city				1.1
1.2 Physical-spatial decentralization of economic activities and public services - polynucleated city				1.2
1.3 Intensification and diversification of land use and occupation in blocks adjacent to public transport corridors - connected city			0	1.3
1.4 Adoption of active facades in economic centers and in blocks adjacent to public transport corridors - active city			Ø	1.4
1.5 Formation of a system of urban green areas connected by active mobility routes - connected and walkable city				1.5

LINES OF ACTION	MOBILITY	PHYSICAL ACTIVITY	AIR QUALITY	INTERSECTION
1.6 Compatibility between the Municipal Master Plan and the Urban Mobility Plan				1.6

Table 8 – Intersections between the Lines of Action: Objective 2

Objective 2

Reduce accidents and other health problems, with measures to reduce use and for the responsible and sustainable use

LINES OF ACTION	MOBILITY	PHYSICAL ACTIVITY	AIR QUALITY	INTERSECTION
2.1 Adoption of traffic moderation measures			0	2.1
2.2 Reduction in the number of trips by motorized individual transport				2.2
2.3 Reduction in the number of individual motorized vehicles traveling in central areas				2.3

Table 9 – Intersections between the Lines of Action: Objective 3

Objective 3

Contribute to collective health, improving the public transportation service

LINES OF ACTION	MOBILITY	PHYSICAL ACTIVITY	AIR QUALITY	INTERSECTION
3.1 Equitable and efficient provision of public transport service				3.1
3.2 Qualification of infrastructure for public transport			Ø	3.2
3.3 Connection and integration of the public transport network with other modes of transport			0	3.3

Table 10 – Intersections between the Lines of Action: Objective 4

Objective 4

Prevent chronic non-communicable diseases (NCDs), reducing the emissions of pollutants by motor vehicles

LINES OF ACTION	MOBILITY	PHYSICAL ACTIVITY	AIR QUALITY	INTERSECTION
4.1 Adoption of measures, at the municipal level, that reduce pollutant emissions by motor vehicles	0	0		4.1
4.2 Adoption of air-quality monitoring and control measures	0	0		4.2

Table 11 – Intersections between the Lines of Action: Objective 5

Objective 5

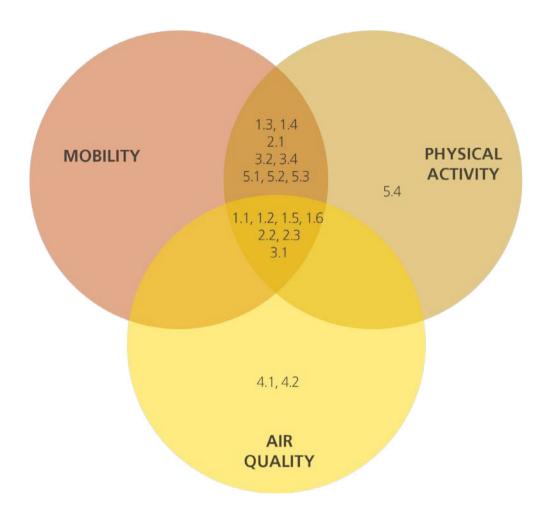
Promote individual and collective health, ensuring physical and spatial conditions for active mobility

LINES OF ACTION	MOBILITY	PHYSICAL ACTIVITY	AIR QUALITY	INTERSECTION
5.1 Increased walkability patterns in different areas of the city			Ø	5.1
5.2 Increase in the cyclability patterns in different areas of the city			Ø	5.2
5.3 Connection and integration of the active mobility network with other modes of transport			Ø	5.3
5.4 Promote the periodic opening of streets for leisure and cultural activities and to stimulate the local economy	Ø		Ø	5.4

Table 12 –Summary of intersections of the Lines of Action

	Summary
OBJECTIVES	INTERSECTION
Improve public health and mobility, with equitable and sustainable urban development measures	1.3 e 1.4 1.1, 1.2, 1.5 e 1.6
Reduce accidents and other health problems, with measures to reduce the use and for the responsible and sustainable use of individual motorized transport	2.1 2.2 e 2.3
Contribute to collective health, improving the public transportation service	3.2 e 3.3 3.1
Prevent chronic non-communicable diseases (NCDs), reducing the emission of pollutants by motor vehicles	4.1 e 4.2
5. Promote individual and collective health, ensuring physical and spatial conditions for active mobility	5.1, 5.2 e 5.3 5.4

Figure 2 – Summary of intersections of the Lines of Action







THE SUSTAINABLE DEVELOPMENT GOALS (SDG) AND THE CONVERGENT AGENDA FOR SUSTAINABLE MOBILITY AND HEALTH

In 2015, UN member countries launched the 2030 Agenda containing 17 SDGs. In addition to reflecting on the potential social, economic and environmental damage, at a global level, from the process of industrialization and urbanization of the 20th century, the SDGs presented a set of goals to be achieved by societies and their governments in a period of 15 years (from 2015 to 2030), understanding that the survival of humanity on the planet is conditioned to sustainable development, which requires mid-course corrections and new practices.

In the same year as the launch of the 2030 Global Agenda, the Brazilian Congress approved the Constitutional Amendment Bill (PEC), which started to consider transport as a social right. Three years before that (2012), the Brazilian National Urban Mobility Policy 57 had been sanctioned, establishing the following objectives to be achieved:

- Reduce inequalities and promote social inclusion;
- ii. Promote access to basic services and social facilities:
- iii. Provide for the improvement in the urban conditions of the population with regard to accessibility and mobility;
- iv. Promote sustainable development, with the mitigation of the environmental and socio-economic costs of the flow of people and cargo in cities;
- v. Consolidate democratic management as an instrument and guarantee the continuous improvement in urban mobility.

Observing the objectives set out in that law, by itself, connects urban mobility, even if tacitly, to the 17 SDGs defined in the 2030 Agenda, as mobility is a fundamental condition for urban populations to access other social rights such as work, health, education, housing, leisure, culture and social work, being also an urban functionality with direct impacts on the environment. Mobility, therefore, is confirmed as a fundamental condition for the realization of the right to the city and its opportunities.

To analyze the correlations between the Convergent Agenda for Sustainable Mobility and Health and the SDGs, the level of relevance of each Line of Action of the Convergent Agenda was evaluated based on its potential contribution to the achievement of one or more SDGs:

- a. At the first level, established as very relevant, it was considered that the implementation of a given Line of Action will have a direct impact on the achievement of at least two goals of an SDG;
- At the second level, established as relevant, it
 was considered that the implementation of a
 given Line of Action will have a direct impact
 on the achievement of a goal of an SDG and,
 indirectly, on at least two others;
- c. At the third level, established as moderately relevant, it was considered that the implementation of a given Line of Action will only have an indirect impact on the achievement of one or more goals of an SDG.

The summary of this analysis can be seen in the following tables:

Table 13 – SDGs and the Convergent Agenda for Sustainable Mobility and Health: Objective 1

Objective 1

Improve public health and mobility, with equitable and sustainable urban development measures

LINES OF ACTION	Very Relevant	Relevant	Moderately relevant
1.1 Sustainable occupation and densification of urban areas - compact city	SDG 3 SDG 11 SDG 13	SDG 6 SDG 7 SDG 12	SDG 1 SDG 4 SDG 5 SDG 8 SDG 9 SDG 10 SDG 14 SDG 15 SDG 16
1.2 Physical-spatial deconcentration of the economic activities and public services - polynucleated city	SDG 11	SDG 3 SDG 8 SDG 9 SDG 10 SDG 12 SDG 13	SDG 1 SDG 4 SDG 5 SDG 7 SDG 14 SDG 15 SDG 16
1.3 Intensification and diversification of land use and occupation in the blocks adjacent to the public transport corridors - connected city	SDG 11	SDG 3 SDG 8 SDG 9 SDG 12 SDG 13	SDG 5 SDG 7 SDG 8 SDG 10 SDG 16
1.4 Adoption of active facades in economic centralities and on the blocks adjacent to the public transport corridors - active city	SDG 11	SDG 3 SDG 8 SDG 16	SDG 5 SDG 8 SDG 9 SDG 10 SDG 12 SDG 13
1.5 Formation of a system of green urban areas connected by active mobility routes - connected and walkable city	SDG 3 SDG 11 SDG 13	SDG 6 SDG 12	SDG 5 SDG 8 SDG 9 SDG 10 SDG 14 SDG 16

Table 14 – SDGs and the Convergent Agenda for Sustainable Mobility and Health Action Objective 2

Objective 2

Reduce accidents and other health problems, with measures to reduce use and for the responsible and sustainable use

LINES OF ACTION	Very Relevant	Relevant	Moderately relevant
2.1 Adoption of measures of	SDG 3	SDG 13	SDG 8
traffic moderation	SDG 11	SDG 16	SDG 12
2.2 Reduction in the number of	SDG 3	SDG 7	SDG 8
trips by individual motorized	SDG 11	SDG 12	SDG 15
transport	SDG 13	SDG 16	2DG 12
2.3 Reduction in the number	SDG 3	SDG 8	SDG 8
of of individual motorized vehicles driving in the	SDG 11	SDG 12	
central areas	SDG 13	SDG 16	SDG 15

Table 15 – SDGs and the Convergent Agenda for Sustainable Mobility and Health: Action Objective 3

Objective 3

Contribute to collective health, improving the public transportation service

LINES OF ACTION	Very Relevant	Relevant	Moderately relevant
3.1 Equitable and efficient provision of public transport service	SDG 11 SDG 13	SDG 3 SDG 8 SDG 10 SDG 12	SDG 1 SDG 4 SDG 5 SDG9 SDG 10 SDG 15 SDG 16
3.2 Qualification of infrastructure for public transport	SDG 11	SDG 3	SDG 8 SDG 9 SDG 10 SDG 12 SDG 13 SDG 16
3.3 Connection and integration of the public transport network with other modes of transport	SDG 11 SDG 13	SDG 3 SDG 8 SDG 10 SDG 12	SDG 1 SDG 4 SDG 5 SDG 9 SDG 10 SDG 15 SDG 16

Table 16 - SDGs and the Convergent Agenda for Sustainable Mobility and Health: Action Objective 4

Objective 4

Prevent chronic non-communicable diseases (CNCDs), by reducing the emissions of pollutants by motor vehicles

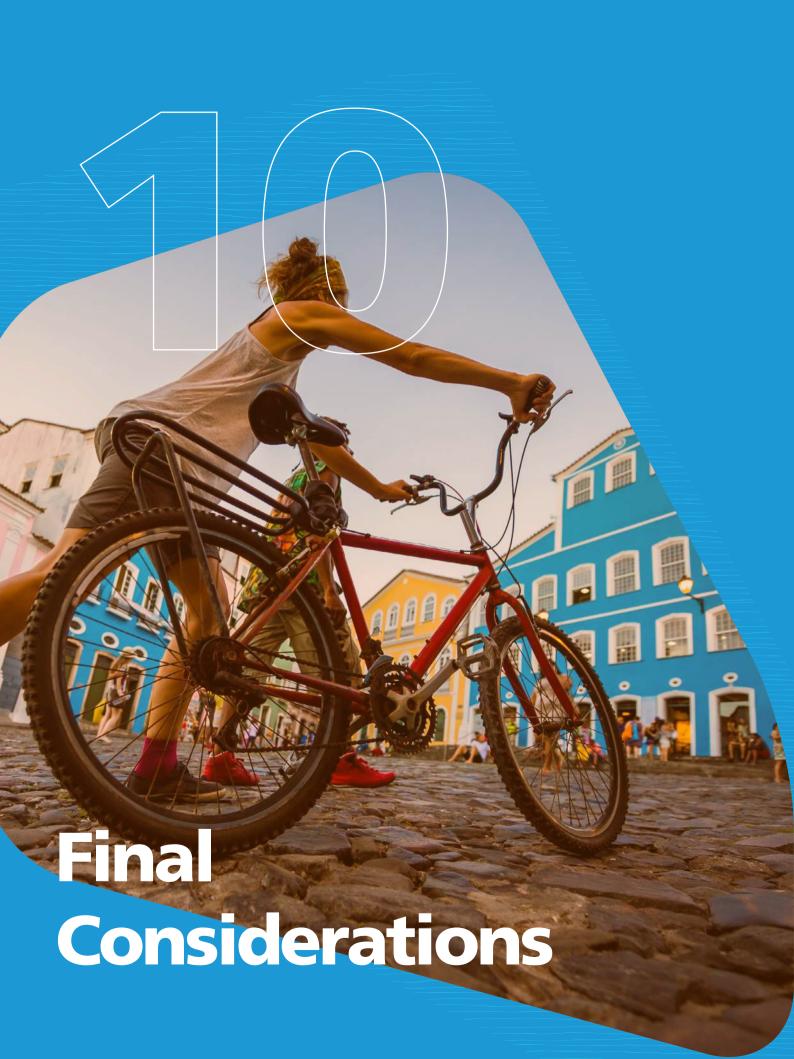
LINES OF ACTION	Very Relevant	Relevant	Moderately relevant
4.1 Adoption of measures, at	SDG 11	SDG 3	SDG 8
the municipal level, that reduce pollutant emissions	SDG 13	SDG 7	SDG 14
by motor vehicles	300 13	SDG 12	SDG15
4.2 Adoption of air-quality	CDC 11	SDG 3	SDG 8
monitoring and control	SDG 11	SDG 7	SDG 14
measures	SDG 13	SDG 12	SDG 15

Table 17 – SDGs and the Convergent Agenda for Sustainable Mobility and Health: Action Objective 5

Objective 5

Promote individual and collective health, ensuring physical and spatial conditions for active mobility

LINES OF ACTION	Very Relevant	Relevant	Moderately relevant
			SDG 1
		SDG 8	SDG 4
5.1 Increased walkability patterns in different areas of	SDG 3	SDG 10	SDG 5
the city	SDG 11	SDG 12	SDG 9
		SDG 13	SDG 15
			SDG 16
			SDG 1
		SDG 8	SDG 4
5.2 Increased walkability patterns in different areas	SDG 3	SDG 10	SDG 5
of the city	SDG 11	SDG 12	SDG 9
		SDG 13	SDG 15
			SDG 16
		SDG 3	SDG 1
5.3 Increased walkability		SDG 8	SDG 4
patterns in different areas	SDG 11	SDG 10	SDG 5
of the city		SDG 12	SDG 15
		SDG 13	SDG 16
			SDG 8
			SDG 9
5.4 Increased walkability patterns in different areas	SDG 11	SDG 3	SDG 10
of the city	SUG II		SDG 12
			SDG 13
			SDG 16



FINAL CONSIDERATIONS

Evidence of synergy of the Convergent Agenda for Sustainable Mobility and Health (urban infrastructure, road safety, time and mode of travel: physical activity and air quality), in its three main dimensions: urban mobility (urban infrastructure, road safety, time and mode of transport), has great potential for improving not only the quality of life of the populations, but also for the rationalization of public resources by the government. As these agendas inhabit different places within the management spaces, it is necessary to encourage cross-sector collaboration in order to allow the construction of effective convergence agendas. Another important aspect is to observe the management times for the construction of sustainable proposals, which last beyond political changes.

There is no one-size-fits-all recipe for developing this Convergent Agenda; each territory has its own singularities, challenges and specific powers. However, the strengthening of negotiated management spaces, with great openness to social control and popular participation, are guiding elements of agendas with great possibilities for visibility and success.

The Convergent Agenda for Sustainable Mobility and Health involves the convergence of knowledge and practices related to the field of health, such as epidemiology, the qualification of information related to traffic injuries, in addition to other information related to traffic engineering, city planning, public safety, physical activity and the environment. This also implies multidisciplinary approaches in terms of knowledge and cross-sector dialogues, so that their implementation and results are synergistic.

Boosting cross-sector and cross-program actions is essential for the viability of the Convergent Agenda, as opposed to the strictly sector-based approaches by the Cartesian paradigm of knowledge production. The challenge is to promote the convergence of the three dimensions, so that it is not an experiment in public management, but that it can become the rule in the government.⁵⁸

As for the principles, questions arise regarding the adaptation of the traffic environment to the needs of people with disabilities and mobility restrictions; development of cities with lower emission of air pollutants and better quality of urban environment from the perspective of pedestrians; promotion of traffic safety; equitable distribution of traffic space as a measure of reversing the priorities given to motorized driving and full mobility, such as fewer restrictions on movement, less expense and greater inclusion.



GLOSSARY

Accessibility – According to Law 10098/2000,⁵⁹ which establishes, in its Article 1, the "general rules and basic criteria for the promotion of accessibility for people with disabilities or with reduced mobility, through the removal of barriers and obstacles in roads and public spaces, in urban equipment, in the construction and renovation of buildings and in the means of transport and communication".

As provided for by ABNT NBR 9050/2004,⁶⁰ in general terms, accessible space is one that creates "the possibility and condition for reaching, perceiving and understanding, for the safe and autonomous use of urban buildings, space, furnishings, equipment and elements".

Universal Accessibility – Means the guarantee of full accessibility in all spaces of the city (sidewalks, squares, parks, public buildings, etc.) for all people, including those with permanent disabilities or reduced mobility (wheelchair users, visually or hearing-impaired people, pregnant women, elderly, obese, etc.).

Densification – This is the increase in the population growth rate regulated by its density.

Underutilized areas – In many cases, it is common to refer to underutilized areas as urban voids or territorial fractions with a low occupancy rate, in addition to unoccupied buildings. It can also be land parcels that are kept unoccupied for the acquisition of a higher market value, especially if they are contained in areas provided with equipment for collective use, infrastructure, commerce and services, etc.

Authorized agent – This is an authorization granted by public authorities to a private entity,

through a public bidding process, for the provision of a certain public service.

Comfortable sidewalks - By definition, according to ABNT NBR 9050/2004, sidewalks are part of the road, normally segregated and at a different level, not intended for the traffic of vehicles, reserved for pedestrian traffic and, where possible, for the implementation of furniture, signage and vegetation and for other purposes. The condition of comfort is associated with the guaranteed right of pedestrians to travel in a space free of obstacles and with ergonomic dimensions that are adequate to the basic principle of two-way simultaneous traffic. Comfortable ones may also be those lowered at intersections, lanes where some pedestrians need to walk through a ramp built or installed on the sidewalk, designed to promote the matching of levels between these and the carriageway.

Safe sidewalks – In understanding of the technical principles established by ABNT NBR 9050/2004, safe sidewalks are those that do not contain damage to their paving nor physical obstacles capable of causing accidents. The safety of the sidewalks is also associated with good lighting conditions and guaranteed visual perception without any restriction on the flow of pedestrians. It should also be noted the importance of signage for vehicle access to garages, delivery of goods, access for people with mobility difficulties, etc.

Territorial centralities – These are commonly designated as urban centralities, which refer to "areas of the city where various urban activities and flows converge, not just meaning central geometric points. An urban centrality can be a neighborhood center, a dynamic corner, in short, a focal point where various types of activities

converge, such as pedestrian flows, commerce, transport, activities, services and urban soul".⁶¹

Bike lanes – With lower costs compared to bike paths, bike lanes are generally used in places where there is low intensity of traffic; it is a strip that is not physically separated from the carriageway, but which has markings painted on the pavement or the so-called cat-eyes road reflectors or speed humps.

Bike paths – This is a physically separate space for bicycle traffic, which guarantees the safest way for bicyclists to ride their bicycles, due to the isolation that prevents contact with other vehicles.

Collective – Everything that encompasses several people or things.

Clean fuel – These are fuels that reduce toxic emissions into the atmosphere. In general, "the aim is to control the sources of emissions of compounds, such as carbon monoxide, hydrocarbons and other reactive elements that produce secondary compounds, such as photochemical smog sidewalks -, aldehydes and particulates. To control global emissions means to control greenhouse gas emissions. In this case, the use of renewable, non-fossil fuels is pointed out as the main solution" 62

Exclusive corridors – Refers to "lanes exclusive for the public transport system in the urban road system. The exclusive lane is also known as the bus corridor". ⁶³

Transport corridors – This is the "gathering of processes, sequences, means and equipment organized to link two ends or areas where there is or there is the expectation that there will be an intense flow of goods or people".⁶⁴

Smart growth – In accordance with the priorities established in the Europe 2020 Strategy, smart, sustainable and inclusive growth is associated with "investments aimed at supporting companies and innovation (...), also aiming to reduce carbon emissions, (.) increasing the share of the use of renewable energy (.) as well as improving the efficiency in the management of energy".65

Development oriented towards sustainable transport (Dots) – It is an urban planning and design model aimed at public transport, which builds compact and high-density neighborhoods, offers people a diversity of uses, services and safe and attractive public spaces, favoring social interaction. ⁶⁶

The Dots strategy, in general terms, can also be understood as a set of urban principles that establish guidelines to avoid urban sprawl and promote the efficient use of urban infrastructure, bringing housing areas and employment opportunities closer together, through incentives for the mixed use of land close to public transport corridors and hubs. ⁶⁷

Demographic density – Also defined as population density or relative population, it is equivalent to the rate that quantifies the ratio between population and land area, expressed in number of inhabitants per square kilometer (inhabitant/km²).

Active commuting – In general, commuting takes three forms: passive or exogenous commuting, active or autogenous commuting, and praxis commuting. With regard to active commuting, participants in the studies of motricity in its psychic dimension, the movement in space is understood through a motor, affective and cognitive totality. ⁶⁸

In city-planning terms, active can be understand as how active smooth or non-motorized mobility is a form of mobility for the transport of passengers and, in some cases, of goods, which uses only the human physical means for locomotion.

Pendulum-like commuting - It is mostly an urban phenomenon, although there are occurrences in rural areas. This type of commuting, which is also called pendulum-like mobility, refers to the way workers, students and other people travel daily from home to their place of activity and return to their place of origin at the end of the day. In general, individuals travel from one municipality to another, or from one region to another, and return to their homes at night to sleep, and this causes the intensification of the flow of vehicles on transport routes, especially at the beginning and end of the day.

Vehicle emissions - These are atmospheric emissions of polluting gases (carbon monoxide, non-methane hydrocarbons, nitrogen oxides, particulate matter, methane, hydrocarbons) produced by motor vehicles that use fossil fuels or whose engines are in a degraded state of conservation, which end up damaging other automotive components.

Urban public equipment - According to Decree number 7341/2010,⁶⁹ that regulates Law number 11952, of June 25, 2009, in its paragraph 1, "urban public equipment refers to urban infrastructure spaces and facilities for public services such as water supply, sanitary sewage, rainwater collection, disposal and treatment of solid waste, public transport, electricity, telephone network, piped gas and the like".

Public community equipment - According to Decree number 7341/2010,⁶⁹ which regulates Law number 1 1952, of June 25, 2009, in its paragraph 2, "community public equipment refers

to the urban infrastructure spaces and facilities for public services of education, health, culture, social work, sports, leisure, public safety, supply, funeral services and the like".

Urban sprawl - Also called urban spreading, this is a term widely used to refer to the horizontal expansion of cities, as opposed to the ideal demographic density in already consolidated urban areas. An exemplary case for this phenomenon is the emergence of dormitory districts that are located at great distances from the city center.

Extension of sidewalks - Practice of expanding this type of public space to fulfill the functions established by existing municipal legislation or a practice of owners of establishments without frontage who seek to expand the space of access to their properties or recover sidewalks where there has been no negligence on the part of the government.

Positive/negative externalities - Externalities are understood as "social, economic and environmental effects indirectly caused by the sale of a product or service (...) and are summed up in the difference between private costs and social costs or between private and social profits. This means that externalities arise in the economy and can be negative or positive for society".⁷⁰

When a State's action or economic practices promote benefits for other companies and for the population, these are positive externalities, that is, those that provide indirect gains, producing a beneficial result to third parties. Negative externalities, on the other hand, are associated with indirect damage caused by a certain activity and, therefore, will result in harm to the forces that operate third parties.

Active facade - Refers to the front of a building facing a public street or open space,

whose occupation is located in the alignment of sidewalks with access open to the population.

Priority lanes - These are lanes intended for exclusive traffic and with continuous speed with few stops for vehicles, public transport or for cargo traffic.

Risk factors - They refer to situations in which there is an increased probability of the occurrence of some illnesses, accidents, among other problems that can make health vulnerable.

Green strip - This is a connection between urban green areas that have "vegetation coverage, (native and introduced) tree coverage, shrub coverage or grass coverage and that significantly contribute to the quality of life and environmental balance in cities".⁷¹

Refuge islands - Refers to the "part of the road, duly signposted and protected, intended for use by pedestrians while crossing the road".⁷²

Utilization Index (AI) - This is a numerical value that, when multiplied by the land area, results in the maximum buildable area allowed in some urban regulations. It serves to manage the horizontal densification process in relation to urban land. It is also called coefficient of land use or land use index.⁷³

Passenger-per-kilometer index (IPK) - It is the index that determines how many passengers a bus transports, on average, per kilometer traveled.

Tax instruments - It is part of the instruments of Financial Law that provide for the regulation of tax activity related to taxes, fees, etc.

City-planning instruments - Refers to the set of actions legally defined by the government to

intervene in urban processes and, especially, in the regulation and control of the production of city spaces.

Physical integration - Set of measures that enable physical-spatial articulations, with the aim of integrating infrastructure, transport, telecommunications and energy systems, among others.

Tariff integration - This is a benefit for public transport users who need to use more than one line in a pre-established period, paying only the higher-value tariff or the integration tariff for the two trips.

Emission inventories - It is "a kind of X-ray used to determine sources of greenhouse gases in production activities and the amount of greenhouse gases (GHG) released into the atmosphere. With the GHG inventory, it is possible to promote actions to reduce emissions, contributing to the mitigation of climate change".⁷⁴

Social marketing- Refers to the "modality of institutional marketing action whose main objective is to alleviate or eliminate social problems, the needs of society related mainly hygiene and public health, work, education, housing, transport and nutrition issues in society."⁷⁵

Clean energy matrix - Means the maximum use of "energy through sources that emit little or no pollutant gases. It also represents the full range of available energy sources, including those for travelling by the modes of transport and for generating electricity".⁷⁶

Non-polluting matrices - Procedures that use types of renewable energies, which are those that regenerate spontaneously or through human intervention. At the same time, they are considered clean energy, as there is no waste left in nature.

Micromobility - Refers to "several actions to facilitate the movement of people and goods in cities, with the objective of positively impacting economic and social activities in the urban perimeter of a city." 77

Active mobility - Also known as "active transport", this type of mobility is in line with the National Law on Urban Mobility (Federal Law number 12587/2012), which aims to encourage "non-motorized modes", with priority for the act of walking and/or cycling, through the implementation of urban infrastructure for this type of commuting.

Non-motorized modes - This is a form of mobility for transporting people and, in some cases, goods, which uses only human physical means for locomotion.

Modes of transport - Refers to the various ways of transporting passengers, cargo and different types of economic production. In general, they can be defined through five different types of modes: road, rail (including subway), waterway, airway and pipeline.

Harmonic occupation of urban land - It can be understood through the establishment of a good subdivision of urban land, aiming to coherently interact with the environmental set to which it belongs, considering the "proximity with other types of activities (commercial activities, urban center, type industry, leisure, etc.), the use of natural resources, paying attention to the quality of the air, water bodies, vegetation and geomorphology of the terrain, among others."⁷⁸

Land occupation - Use and occupation of urban land deals with the distribution in the urban space (urban zone and urban sprawl) of different types of use, public and private, resulting from the different human functions: living, working,

carrying out recreational activities, commuting and finally, the functions that ensure the effective realization of good human life in the city. The types of land use are: residential, commercial, industrial, institutional and for commuting purposes. Each of them occupies the land differently, which is why the expression always comes with its complementary occupation of urban land.⁷⁹

Territorial planning - In municipal planning, part of the integrated planning process that deals with the physical-territorial aspect of the municipality and, more specifically, with its urbanized spaces, by organizing the land uses and occupation (Zoning Law), the building regulations (Building Law or Building Code), the structuring of the road system, the scheduling of public works, also considering other aspects of integrated planning. In regional planning, part of the integrated planning process that deals with the physical-territorial aspect of the region, that is, the hierarchy of its centers, the delimitation of the sub-regions or micro-regions that comprise them, the design of its transport system (road, railway, waterway and airway), guidance on agricultural uses and cultivated areas, all without disregarding the other aspects considered by integrated regional planning.

Emission standards - Corresponds to the amount of pollutants discharged into the atmosphere or aquifers, in accordance with the rules and standards established by law, within the competence of environmental licensing and supervisory bodies, such as Ibama and Conama.

Mobility Network - This is a "complex system, consisting of urban infrastructure, legal regulations, organizations and procedures for inspection and control of the use of infrastructure, passenger and cargo transport services, by institutional regulatory and financial mechanisms of strategic management".⁸⁰

Qualified, Connected and Comfortable Mobility Network - These are passenger commuting networks physically coordinated through a qualified infrastructure capable of optimizing comfortable commuting and optimized times.

City-Planning Regulation - In compliance with the City Statute Law, which establishes the figure of the Master Plan (PD) as the main instrument of city planning, city-planning regulations comprise the main regulatory strategies for the adequate growth of cities, such as the determination of frontage, maximum allowable framing for buildings etc.

Mobility routes - Urban mobility procedures to facilitate locomotion, in short or long routes, with a view to reducing impacts related to the modes of transport and harmful occurrences to the environment, providing, for this, signaling supports for modal circuits and the use of GPS (Global Positioning System) and internet applications.

Complete streets - These are components of public spaces designed to "give security and comfort to all people, of all ages, users of all modes of transport. The concept is based on distributing space in a more democratic way, benefiting everyone. There is no one-size-fits-all Complete Street solution. All the best urban design alternatives can be incorporated as long as they respond to the local context of the area where they are located, and reflect the street identity and the priorities of that community".81

Public security - Refers to the state of normality that allows the exercise of rights and the fulfillment of duties, where the illegitimate alteration thereof constitutes a violation of basic rights, usually accompanied by violence, which produces events of insecurity and criminality.

Road safety - Refers to methods and protective measures that enable the reduction of the risk of accidents in the municipal, regional and interstate road network, in order to prevent the occurrence of injuries and deaths.

Green area system - Consists of hierarchical green areas aimed at fulfilling the ecological function, capable of articulating backwaters, squares, parks, spaces for leisure, physical activity and entertainment, connecting them by active mobility routes (sidewalks, bike paths, bike lanes).

Active transport - It is the one in which energy is wasted during the commuting process.

Collective/Public transport - Consists of a system for transporting passengers on trips in groups, generally managed at scheduled times, operated on established routes and with rates compatible with the population's income.

Shared transport - Also known as shared ride or carpooling; is a type of collective transport in a private car, with two people or more, with the purpose of acquiring "greater mobility with a considerable decrease in the volume of cars that travel around the city on a daily basis, reduction in fuel consumption and, therefore, a good alternative to reduce the emission of carbon gas and for savings with extra expenses, such as tolls and parking".⁸²

Individual motorized transport - This is a private and individualized transport - automobiles and motorcycles -, which uses the public space in an unreasonable way under the pretext of the inefficacy of public transport, or mass transport, contributing to "the increase in traffic congestion, the emission of polluting gases and greenhouse effect gases and the number of traffic accidents" 83 etc.

Raised crossings - Traffic-calming features that discipline the shared use of public space by pedestrians and motor vehicles. They can also be understood as pedestrian crossings in the form of footbridges raised from the ground to ensure the physical integrity of people when traveling over roads with heavy traffic, railways, etc.

Safe crossing - Surface space (crosswalks) or aerial space (footbridges) with qualified infrastructure and properly signposted to ensure the safety of the spaces for pedestrians.

Tactical city planning - These are limited urban interventions aimed at promoting the right to the city, and allowing individuals, who are the main users, to regain ownership of the urban space. For this, it proposes changes through interventions that allow people to feel closer to public spaces in general.

Unplanned urbanization - Also called informal urbanization, it is an urban development process that takes place in a way that is contrary to official urban and construction standards established in laws and regulations, outside the control of the local government, without a legal number statute and based on different types of rationale and mechanisms of land access and occupation. Many call it spontaneous urbanization.

Mixed use - variety of land uses within a building or area. Combining homes, offices and stores in a neighborhood is considered mixed use.⁸⁴

Land use - "It basically deals with types of functions and intensities of land and building use; it seeks a variety and mixture of functions compatible with each other and the most intense use possible 24 hours a day, with compatible densities, in order to generate an urban area with the greatest possible vitality, a posture that is totally

different from that advocated by the modern movement".85



INSTITUTIONAL NORMATIVE ASPECTS

An institutional normative review was carried out to understand the opportunities and gaps in public policies and existing instruments. Although these regulations were prepared at different times and in different situations and in a dissociated form from each other, it was possible to identify, in their wording, characteristics of great relevance to and opportunities, explicitly or implicitly, for the convergence of agendas. The summary of these findings is systematized in table 18.

Table 18 - Institutional instruments to promote and strengthen the synergies of Sustainable Mobility and Health

Institutional instrument	Objectives/Characteristics	Convergence opportunities
National Policy of Health Promotion (PNPS, in Portuguese)	It seeks to promote equity and the improvement of conditions and ways of living, enhancing the potential of the individual and collective health and reducing vulnerabilities and health risks arising from social, economic, political, cultural and environmental determinants.	The PNPS is oriented towards promoting safe, healthy and sustainable environments and surroundings. It establishes, in its specific objectives, the prioritization of human mobility and accessibility and defines essential themes for sustainable mobility, such as bodily practices and physical activities. It defends, in its operational axis, the coordination and cooperation among sectors, proposing the "sharing of plans, goals, resources and common objectives between the different sectors".
National Policy of Urban Mobility (PNMU)	Its objective is to contribute to universal access to the city, through the integration between the different modes of transport and the improvement of mobility conditions for people and cargo in the territory.	It defines objectives for clear interfaces with health, in particular: (i) universal accessibility; (ii) sustainable development of cities in the socioeconomic and environmental dimensions; (iii) safety in people's trips; (iv) equity in the use of public traffic space, roads and streets; and (v) efficiency, efficacy and effectiveness in urban traffic.
Brazilian Traffic Code, through the Law number 9503 of 1997	Its guideline is safety, comfort and fluidity in traffic, standardizing criteria for the execution and inspection of its operation. It created the Compulsory Insurance for Personal Injuries caused by Motor Vehicles on Land Roads (DPVAT).	The Ministries of Health, Education and Sport, Labor, Transport and Justice, through the National Traffic Council, must develop and implement programs for the prevention of injuries and deaths in traffic, through qualification of information, planning, monitoring, follow-up and evaluation of actions. DPVAT resources are transferred to the National Health Fund to support actions for the prevention and care of victims of traffic accidents, and to the department that coordinates the National Traffic System - National Traffic Department (Denatran).
Urban Mobility and Traffic Program .	It seeks to promote the coordination of policies on transport, traffic and universal accessibility, with an emphasis on urban public transport and non-motorized transport systems, incorporating traffic-calming measures.	It pays special attention to the qualification of the urban mobility system of cities through broad and democratic access to space, in a safe, socially inclusive and sustainable manner, supporting, in particular, the development, by the municipalities, of projects and plans for sustainable urban mobility.
Transport Infrastructure and Urban Mobility Program (Pro- Transport)	It seeks to promote quality of life through investments in systems and other infrastructure for urban mobility, prioritizing collective and non-motorized modes of transport.	It provides resources for the qualification of infrastructure for non-motorized transport, such as sidewalks, bike paths and bike lanes and traffic-calming measures, which have a direct effect on the topic of physical activity and road safety.

Institutional instrument	Objectives/Characteristics	Convergence opportunities
Program "Life in Traffic" (PVN)	It seeks to support public managers in the strengthening of policies for the prevention of injuries and deaths in traffic through the qualification of information, planning, monitoring, follow-up and evaluation of actions.	Developed from a pilot in five capitals, it was later expanded to 52 Brazilian municipalities. The initiative, which already starts on the assumption of cross-sector integration as a basis for actions in the territories, has also been developed to place emphasis on the urban design as a way to reduce traffic deaths and injuries.
Program for the Reduction of Morbidity/Mortality Caused by Traffic Accidents	It seeks to promote health and act in the prevention of traffic accidents, and it also defines actions related to assistance, recovery and rehabilitation of victims.	It invests in the mobilization and coordination of government, non-governmental and population sectors in general for actions to promote health and reduce morbidity and mortality caused by traffic accidents.
Conama Resolution number 491/2018 Air Quality Standards, Atmospheric Emission Control Plans and Air Quality Assessment Reports	It establishes air quality standards to be adopted in four steps; defines the obligation and deadline for the states and the Federal District to prepare annual atmospheric emission control plans and air quality assessment reports and publicize them.	
Conama Resolution number 05/1989 Brazilian National Air Quality Control Program	It institutes the National Air Quality Control Program (Pronar), which determines the creation of a National Air Quality Monitoring Network.	
Contran Resolution number 716 Program of Technical Inspection of Vehicles (PITV)	Establishes the form and conditions for the implementation and operation of the Program of Technical Inspection of Vehicles, in compliance with the provisions of Article 104, Law number 9503 of September 23, 1997, which instituted the Brazilian Traffic Code (CTB). (Suspended indefinitely by Deliberation number 170).	It has a clear interface with health in the air quality dimension of the Convergent Agenda, and it must be the purpose of advocacy campaigns by municipalities, for the implementation and execution by the states, being followed also, in whatever is within the local competence, by the
Conama Resolution number 18/1986 Proconve	Provides for the creation of the Air Pollution Control Program for Motor Vehicles (Proconve).	municipalities themselves.
Law number 8723 of October 28, 1993 October 1993	Provides for the reduction of pollutant emissions by motor vehicles and establishes other measures.	
Proconve		
Conama Resolution Number 297/2002	Establishes the limits for the emission of polluting gases by mopeds, motorcycles and similar new vehicles.	
Conama Resolution number 342/2003	It establishes new limits for the emission of polluting gases by mopeds, motorcycles and similar new vehicles, in compliance with Resolution number 297, of February 26, 2002, and it establishes other measures.	

Figure 3 – Flowchart of the systematic review

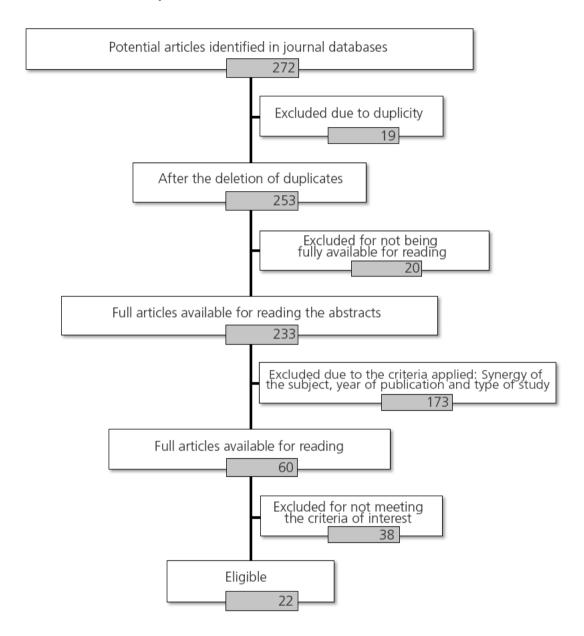


Table 1 – Identification of articles by author, country of origin and year of publication

Authors (year)	Country	2004-2009	2010-2014	2015-2019
Total		2		
Öhrström (2004)	Sweden			
Li et al. (2008)	United States			
Total			8	
White <i>et al.</i> (2010)	United States			
Bluhm & Eriksson (2011)	Sweden			
Thompson et al. (2011)	United Kingdom			
Islam & Aktar (2011)	Bangladesh			
Moreland-Russell et al. (2013)	United States			
Fuller, Cummins & Matthews (2013)	Canada			
Goodman, Sahlqvist & Ogilvie (2013)	United Kingdom			
Suminski <i>et al.</i> (2014)	United States			
Total				12
Ulmer <i>et al.</i> (2015)	Canada			
Giles-Corti et al. (2016)	Australia			
Clum <i>et al.</i> (2016)	United States			
Nieuwenhuijsen (2016)	Spain			
Mueller et al. (2017)	Spain			
Stevenson (2017)	Australia			
Nieuwenhuijsen <i>et al.</i> (2017)	Spain			
Feng & Astell-Burt (2017)	Australia			
Murphy et al. (2017)	Australia			
Hankey & Marshall (2017)	United States			
Mueller et al. (2018)	Spain			
Shouket et al. (2019)	Pakistan			

Table 2 – Number of articles in the systematic review by theme, author and year of publication

Theme	Authors (year)	N	Main guidelines/recommendations
	G'I G 1 (1 (2015)		- Increase in sales of/dependence on private vehicles increases traffic volumes and road trauma, resulting in injuries and early death.
Traffic safety	Giles-Corti et al. (2016); Nieuwenhuijsen et al. (2017); Stevenson (2017)	3	- The estimated risk of death per kilometer for a driver in a private motor vehicle in Delhi is twice the risk in Melbourne or London.
			- Likewise, the estimated risk of death while riding a bicycle in São Paulo is 43 times greater than the risk in Copenhagen.
			- Better regional accessibility was associated with: more walking, cycling and less traffic, shorter trips and reduction in GHG emissions.
			- The presence of public transport: associated with 1.5 to 2.9 more chances of not feeling limited in social, leisure and work activities, in addition to instrumental activities of daily life.
			-Higher percentages of workers cycling to work: related to more cycling policies, infrastructure components and older residents, but not to funds and resources; more cycling policies coincided with a greater number of bicycle infrastructure components.
Time and Travel Mode	Islam e Aktar (2011); Clum et al. (2016); Feng e Astell-Burt (2017); Fuller, Cummins e Matthews (2013); Giles-Corti et al. (2016); Goodman, Sahlqvist e Ogilvie (2013); Islam e Aktar (2011); Li et al. (2008); Moreland-Russell et al. (2013); Murphy et al. (2017); Nieuwenhuijsen	15	- Mixed land use was positively associated with the three types of walking activities and adoption of recommendations for physical activity. Neighborhoods with high connectivity of streets, high density of public transport stations, and green and open spaces were related to walking and the adoption of physical activity recommendations to varying degrees (increase of 1 SD in street connectivity increased the prevalence of walking by 16 % for walking in the neighborhood, 20% for transport and 11% for other daily activities).
	et al. (2017); Öhrström (2004); Suminski et al. (2014); Ulmer et al. (2015); White et al. (2010)		- Consumption of four or more servings of fresh products a day was associated with: owning or having access to a car and grocery shopping more than once a week.
			- Decrease in road traffic: reduction of noise, sleep disturbances and annoyances, premature deaths, various negative health outcomes, reduced economic costs and increased general well-being, as well as improved air quality.
			- Land use measures such as density, connectivity and land use mix, and travel policies and interventions to increase walking and cycling are associated with increased use of public transport, with more walking; however, further studies on the relationship with environmental exposures are needed, as the measurements are highly correlated.
			- Exposure to motor vehicle traffic is an important source of air pollution in both high-income and low- and middle-income countries.
Air quality	Giles-Corti et al. (2016); Hankey e Marshall, (2017); Mueller et al. (2017); Nieuwenhuijsen (2016); Nieuwenhuijsen e Mark et al. (2017);	8	- People living within 300m of busy streets are exposed to higher levels of pollutants, including particulates, carbon monoxide and nitrogen oxide.
	Öhrström (2004); Shouket et al. (2019); Stevenson (2017)		- The physical and mental health impacts of green space, public spaces that promote physical activity, and noise are well-studied aspects of the urban environment, and there is evidence that these factors can modify the relationship between air pollution and health.
			- Physical inactivity and unhealthy diets are major contributors to noncommunicable diseases (NCDs), and much of the evidence for city planning and health has focused on physical activity.
	Feng e Astell-Burt, (2017); Giles-Corti		- In 2010, an estimated 3.2 million deaths per year were attributed to the person being insufficiently active, causing 69.3 million global Dalys.
Physical activity	et al. (2016); Li et al. (2008); Mueller	6	- Higher levels of physical activity are associated with more favorable levels of mental health and significantly correlated with the ease of purchasing fresh fruits, vegetables, and low-fat products.
			- Analyses of individual characteristics of the neighborhood environment with specific areas of disability revealed that subjects without parks and walking areas reported less frequent engagement in a regular fitness program and participation in social activities compared to those with parks and walking areas.

Theme	Authors (year)	N	Main guidelines/recommendations
Food	Clum et al. (2016); Fuller, Cummins e Matthews, (2013); Giles-Corti et al. (2016); Murphy et al. (2017); Thompson et al. (2011)	5	- Worldwide, 6 million deaths a year are attributed to insufficient intake of fruits and vegetables, and an estimated 2.1 billion people are overweight or obese. A growing evidence base has examined the relationship between food purchases, diets and land use characteristics in urban food environments: food availability (i.e., food supply) and food accessibility (i.e., location of food supply and physical proximity). The availability and variety of healthy foods are consistently and positively associated with better diets, with supermarket density related to higher consumption of fruits and vegetables.
Green areas	Giles-Corti et al. (2016); Hankey e Marshall (2017); Mueller et al. (2017); Mueller et al. (2018); Nieuwenhuijsen (2016); Ulmer et al. (2015); White et al. (2010)	7	- A reduction in personal exposure to air pollution has been observed in areas with more green spaces, although it has been suggested that vegetation reduces air pollution levels and temperature, and vegetation (trees, plants) and soil may have an impact on sound level. - Greater access to parks and trails was associated with physical activity, while greater access to sidewalk coverage and bicycle facilities was associated with more walking or cycling as a means of transportation. Access to high-quality green spaces has also been shown to improve physical and mental health.
Noise	Giles-Corti et al. (2016); Hankey e Marshall (2017); Mueller et al. (2017); Mueller et al. (2018); Nieuwenhuijsen (2016); Ohrstrom (2004); Bluhm e Eriksson (2011); Shouket et al. (2019)	8	- Chronic exposure to noise has implications for physical and mental health through boredom, sleep disturbances, and chronic pathways of stress. - Road traffic noise is the most important source of exposure to ambient noise worldwide. - Furthermore, ambient noise levels are associated with the density of buildings, the road network, traffic flow, speed and burden, junctions, acoustics and weather conditions in cities. - A reduction in personal exposure to air pollution has been observed in areas with more green spaces, while vegetation has been suggested to reduce air pollution levels and temperature, and vegetation (trees, plants) and soil can have an impact on the sound level. - Evidence is emerging for a role of air pollution in other diseases such as diabetes. Air pollution from ambient particulates was ninth in the ranking of the estimates of the 2010 Global Burden of Diseases, contributing to an estimated 3-4 million premature deaths. It is estimated to reduce life expectancy by almost nine months on average in Europe. - Ambient noise has been associated with a number of different health outcomes, including cardiovascular mortality and morbidity, boredom and sleep disorders, high blood pressure in children, cognitive effects in children and reproductive outcome. The cardiovascular effects of ambient noise have been shown to be independent of exposures to air pollution.
Violence	Giles-Corti <i>et al.</i> (2016)	1	- Crime can affect non-communicable diseases (NCDs), because people can restrict their own social and physical activities to avoid places or situations they deem unsafe. - Although evidence is mixed, the safety associations related to crime and physical inactivity with rising levels of obesity are more consistent for groups who consider themselves physically vulnerable to crime (e.g., women and the elderly) or who are economically vulnerable to crime (e.g., low-income populations and minorities).

Table 3 – Number of documents by topic, institution and year of publication

Theme	Institution/year*	N	Main recommendations
			- Transport speed reduction measures.
			Separation of pedestrian, motorized and non-motorized vehicle traffic.
			- Use of internal retention (protection) device.
			- Lit roads.
	WHO (2009); Transport for London (2014); WHO (2016); WHO (2011a)**;		- Inclusive signage adapted to the needs of users.
Road safety	WHO (2011b)***; UN (2016); UN (2010); Unece/UN (2019); WRI (2018);	13	- Actions to discourage the use of private vehicles in the urban center.
	Belfast Healthy Cities (2016); Eltis (2019a); Eltis (2019b); Polis (2011)		- Safer modes of travel should be encouraged.
			- Identification and improvement of high-risk locations on the road network.
			- Training and testing of drivers on speed management, issues of road users.
			- Austerity in the inspection of safety standards. For example, wearing a helmet and seat belt, airbags, child restraint system.
			- Measures that reduce congestion.
			- Invest in pedestrian areas, standardization of sidewalks, tree- lined and safe streets.
Commuting time	WHO (2016); Eltis (2019a)	2	- Fast and exclusive routes for public transport.
			- Investment in bike paths (rental, secure parking).
			- Develop bike paths adapted to faster cyclists.
			- Integrated transport system.
	WHO (2009); Transport for London (2014); WHO (2014a); WHO (2014b);**** WHO (2006); WHO		- Promotion of physically active commuting and travel patterns.
			- Integrated systems that enable connectivity.
			- Intermodal transportation.
Mode of commuting	(2011a); WHO (2011b); UN (2016); UN (2010); WHO/UN/Unece (2015); WRI		- Economic measures that reduce the cost of public transport.
Commuting	(2018); Eltis (2019a); Eltis (2019b); European Green Capital/EC (2015);		- Dedicated public transport corridors.
	Polis (2016); Polis (2011); Polis/ Thinking Cities/EU (2018); UN (2018)		- Bike sharing.
	Trillianing Cities/E0 (2010), ON (2010)		- Safer environments for walking and cycling.
	WHO (2009); Transport for London		- Reduction of toxic gas emissions (carbon monoxide, nitrogen oxide) and soot.
	(2014); UN Environment, ILO, UNDP,		- Monitor pollution levels.
	Unido, Unitar (2017); WHO (2014a); UN/WHO (2013); WHO (2018a)*****;		- Avoid exposure in places and times of congestion.
	WHO (2014b); WHO (2006); WHO (2016); WHO (2011b);		- The implementation of renewable energy.
Air quality	EPA (2010): UN (2019); UN (2012); UN (2016); UN (2010); WHO/UN/Unece	26	- Replace public transport vehicles powered by petroleum products with electric transport vehicles.
	(2015); Unece/UN (2019); Belfast Healthy Cities (2015); Eltis (2019a); Eltis (2019b); Polis/Thinking Cities/EU (2018); WHO (2019a); WHO (2019b); WHO (2018b);****** WHO (2004)		- Use of natural resources to prevent and capture pollution.
			- Measures to reduce traffic congestion and speed.
			- Invest in green strips.
			- Paving sidewalks to reduce dust.

Theme	Institution/year*	N	Main recommendations
			- Incorporation of physical activity practice into everyday life.
	WHO (2009); Transport for London (2014); WHO (2016); WHO (2011b);		- Give preference to walking or cycling rather than traveling by car, bus or train.
Physical activity	Belfast Healthy Cities (2016); Eltis (2019b); Polis (2011)	7	- Children and young people must do physical activity for at least 60 minutes over the course of a day, twice a week.
			- A good infrastructure for walking and cycling integrated with public transport.
			- Urban agricultural program.
			- To produce good food, there must be healthy soil and clean water.
Food	WHO (2016); UN (2012); UN (2018)	3	- Increase the diversity of urban food systems.
			- Recruit and invest in lower-income families in urban agricultural programs.
	Transport for London (2014); WHO		- Green spaces can increase the capture of toxic gases, reduce noise, prevent flooding.
	(2014a); WHO (2014b); WHO (2016);		- Promote a new planting or reforestation scheme.
Green areas	WHO (2011b); UN (2019); UN (2012); UN (2010); Unece/UN (2019); WRI	14	- Investing in green transport as a way to create jobs.
	(2018); Belfast Healthy Cities (2016); Polis/Thinking Cities/EU (2018); WHO (2018b); UN (2018)		- Build green areas for tourism and leisure areas such as urban and peri-urban parks.
			- Invest in landscaping.
			- Reduce transport-related noise.
			- Keep night noise lower than 45 dB, recommended for road traffic.
	WHO (2009); Transport for London (2014); WHO (2006); WHO (2018a); WHO (2016): WHO (2011b): UN		- Decrease the speed of traffic and divert traffic away from residential streets.
Noise	(2016); WHO/UN/Unece (2015);	10	- Invest in completely silent transport.
	Belfast Healthy Cities (2016); European Commission DG Research (2005)		- Reduce the population's exposure to transport noise, where possible.
			- Invest in road surface materials that reduce noise. In the area of civil construction, invest in materials that reduce the impact of noise.
			- Increase the number of police officers or transport inspectors (patrols).
Violana.	Transport for London (2014); WHO		- New technologies (reporting apps and "panic button").
Violence	(2016); Metropolis (2018); ActionAid International (2015)	4	- Well-lit streets.
			- Policies to reduce gender inequality.
			- Provide training for traffic personnel (drivers and conductors).

Notes: *World Health Organization (WHO); Polis - European Cities and Regions Networking from Innovative Transport Solutions; European Union (EU); United Nations Environment Programme (UN Environment Programme); International Labour Organization (ILO); United Nations Development Programme (UNDP); United Nations Industrial Development Organization (Unido); United Nations Institute for Training and Research (Unitar); United Nations (UN); Environmental Protection Agency (EPA); World Resources Institute (WRI); Eltis — The Urban Mobility Observatory.

^{**} WHO (2011a): Transport (road transport): shared interests in sustainable outcomes.

^{***} WHO (2011b): OMS Health Co-benefi TS of Climate Change Mitigation - Transport Sector.

^{****} WHO (2014b): From Amsterdam to Paris and beyond: The Transport, Health and Environment Pan-European Programme (The PEP) 2009-2020.

^{*****} WHO (2018a): Environmental Noise Guidelines for the European Region.

^{******} WHO (2018b): Available at: https://www.who.int/sustainable-development/Sustainable-Cities_Health-at-the-Heart-of-Urban-Development_low-res_12JUL18.pdf;

Table 4 – Number of theses and dissertations by topic, institution and year of publication

Theme	Author/year	N	Main findings and recommendations
Road safety	Sá (2016)	1	 In cities where individual and motorized transport was more present, the highest mortality rate was related to the increase in traffic accidents. The risk for traffic accidents was related to gender. The recommendation is to invest in road safety and non-motorized modes of transport.
Commuting time	Sá (2016)	1	The use of public transport and active transport on school trips decreased between 1997 and 2007, while the use of private transport increased, mainly among children. The average transport time to school remained stable. To improve mobility, it is recommended that investments be made in infrastructure in the routes used by schoolchildren to go to and return from school.
Mode of commuting	Sá (2016)	1	- The average prevalence of active transport in Brazil was 12%. The lowest prevalence was found in Palmas, Northern Brazil (5.1%), and the highest in Rio Claro, in the Southeast. - For lower-income people, the frequency of active commuting is higher. - Greater health gains in the scenario involving increased walking and cycling, combined with reductions in car and motorcycle use. - There should be an increase in active transport, reduction of individual motorized trips, diversity and integration in the transport system.
Air quality	Sá (2016); Felipe (2017)	02	 - Air pollution, associated with climate issues, increased respiratory complaints. - People that do physical exercise regularly responded better to pollution. - Scenarios with greater active commuting showed positive benefits in terms of reductions in air pollution. The greater the area covered by air quality, the higher the benefit to health. - The suggestion is to invest in non-polluting modes of commuting and cleaner energy sources.
Physical activity	Sá (2016); Felipe (2017)	2	- There was evidence of health benefits to the population after a shift in the commuting pattern to more active commuting. The effects were noticed mainly in ischemic heart disease and type II diabetes. - 4.7% of deaths from ischemic heart disease can be prevented by increasing physical activity alone. - It is recommended that investments be made in wooded parks, in exercise programs supervised by physical education professionals, and equipment for the practice of physical exercises and a walking trail.
Food	-	-	-
Green areas	Azevêdo (2014); Felipe (2017); Monteiro (2013)	3	 Environments that contain vegetation can encourage people to become more active. Great social and economic inequalities were found in the distribution of green areas. Such social disparities have an influence on the unequal distribution of health conditions. There was a higher rate of hospital admissions in places with a smaller green area. The creation of wooded parks close to residential neighborhoods is recommended.
Noise	-	-	-
Violence	-	-	-

Table 5 – Documents on violence found on research websites, websites of NGOs and blogs

Institution (year)	N	Main recommendations
		- 44% of the women interviewed believe that public transport is where there is a greater chance of them suffering sexual harassment. The apprehension begins even before boarding: 4% of them believe they are at the same risk at the bus stop.
Rede Nossa São Paulo/Ibope (2019)	1	- 7.8% (3.9 million) were physically harassed in public transport, such as buses, subways.
		- 4.0% were physically harassed in private transport called by transport by application and 3.3% said they were harassed because they were drunk.
Datafolha (2015)	1	- Public transport is the place where women in the city are most harassed: 35% say they have already been the target of some type of harassment, such as squeezing; 22% of them say they have suffered physical harassment; while 8% were the target of verbal harassment and 4% of both.
		- After public transport, the places where harassment happens are the street (33%), night clubs (19%) and work (10%).
Subway/SPTrans		- Increase in reports of harassment through the SMS-Reporting Hotline: in 2013, there were ten cases; in 2014, 61 cases; and, in October 2015, 111 cases, an increase of 82% from 2014 to 2015, with 115 police reports filed.
NGO Think Olga (2015)		Campaigns: "#primeiroassedio" ("#firstharassment") and "Chega de Fiu-Fiu" ("No More Wolf Whistle")
		With respect to public transport:
Revista dos Transportes Públicos / Public		- Make it more secure;
Transport Magazine (2019); PUC (2016); Pragmatismo político / Political pragmatism (2014); Middle East - BBC News (2015);	9	- Invest in gender-sensitive policies and programs as a means of preventing violence;
Consultor Jurídico / Legal Consultant (2017);	9	- Install the "Panic Button";
Extra (2019); Gênero e Número / Gender and number (2007); UN (2018); UN (2019)		-Training professionals;
		- Strengthen punitive policies for crimes of sexual harassment and violence.

Table 6 – Laboratories/extension/research groups, research and production lines

Institution	Link	Laboratory/ research group	Area/year	Research lines/projects	Unit
				Research lines	
	https://labeurbe.	- ode - ode		- Landscape.	The materials produced are together with other
UnB	wixsite. com/home/	ratory of Studies	Multidisci- plinary	- Cultural heritage.	groups on the UnB program page: http://www.ppgfau.unb.br/2014-06-03-18-22-28/laborato-
	pesquisadores	or Urbe/2010		- Design and planning.	rios-nucleos#link-1
				- Theory and history of architecture, the city and urban planning.	
				Research projects	Publications
				- 2019 - Climate change and urban heat islands. Emphasis on urban configuration and the assessment of sustainability and environmental performance (Research	Recent theses
				Project Financed by CNPq).	https://www. lasus u nb.com/teses. htm l
				- 2019 - Participatory sustainable urban design for the resilient city: strategies for public policies against violence (Research Project Funded by FAP-DF).	- Urban thermal field. Heat Islands in Brasília-DF. 2018. Thesis.
				- 2018 - Studies on the relationship between climate change and urban heat islands in Brasília. Emphasis on urban configuration and evaluation of sustainability and environmental performance (Research Project Funded by FAP-DF).	- Oscar Niemeyer's palaces. A modernist and bioclimatic architecture. 2018. Thesis.
				- 2016-2018- Parameterization of open spaces. Study of urban configuration. Heat islands.	Recent dissertations
		Lasus - Sustaina-		- 2012-2016 - Parameterization of open spaces. Study of urban configuration and environmental performance for sustainable environmental rehabilitation 2.	- Mitigation strategies for urban heat islands: a case study in commercial areas of Brasília. 2018.
UnB	http://www. lasus.unb.br/	bility Laboratory Applied to Archi- tecture and City	Multidisci- plinary	- 2008-2012 - Parameterization of open spaces. Study of urban configuration and environmental performance for sustainable environmental rehabilitation.	- Bioclimatic analysis of a modern architectural ensemble of cultural value; the School of Edu-
		Planning		- 2006-2008 - Sustainable city planning for the rehabilitation of degraded areas. Building a system of urban sustainability indicators.	cation of the University of Brasilia. 20 17. - Thermal simulation of green walls made up of
				- 2004-2006 - Construction of urban sustainability indicators.	native Certado vegetation. 2010.
				- 2001-2004- Sustainable city planning for the rehabilitation of degraded areas.	Note: Mobile lab of the Group and of Lasus: 1
				Other activities	for measuring environmental variables, built with resources from Fine (TINERA 2006 and
				- 2008-2012 - United States-Brazil-Universities of the Future Consortium.	Pro-equipmentos 2007. With the equipment
				- 2007 - The path of the waters as a guide for the environmental rehabilitation of urban settlements.	requested, it is possible to make instantaneous measurements and scheduled measurements in predetermined series and measure the air tem-
				- 2003-2007 - Sustainable urban projects and community action based on resource management.	perature, radiant temperature, relative humidity, air velocity and illuminance.

Institution	Link	Laboratory/ research group	Area/year	Research lines/projects	Unit
					Publications
					Papers
					- Design of the urban form appropriate to the tropical region with a hot and humid climate.
				Resparch lines	- Paulo Marcos Oliveira
	http://www.w	Lacam - Environ-	Faculdade de Arqui- tetura e	- Environmental thermal comfort.	- Architecture as an effector of sound space. Paulo Marcos de Oliveira.
UnB	lacam.unb.br/	mental Control and Energy	Urbanismo	- Luminous comfort.	Master's Theses/Dissertations
	equipe	Efficiency Labora- tory/1992	Architecture and City Planning")	- Acoustic comfort Positive acoustics.	- Computer simulation of daylight applied to architectural design"). 2004. Dissertation (Architecture and City Planning).
				- Kenabilitation (thermal, light and acoustic environmental).	- Green Agenda x Brown Agenda: lack of ecological principles for the design of urban settlements.
					- Residential architecture of the Brasilia Pilot Plan superblocks: thermal comfort aspects: Darja Kos Braga.
					Recent papers (2019)
				Racaarth linac	- Precariousness of housing in the São Paulo macro-metropolis.
	http://www.			- Metropolization and urban development: dynamics, scales and strategies.	- The impact of school expansion on the reduction of inequalities in Brazilian metropolises.
UnB	observatoriodas- metropoles.net. br/brasilia-2/	Ubservatorio das Metrópoles		 Right to the city in the metropolis: urban well-being and opportunities. Right to the city, citizenship and urban governance. 	- Social map of the metropolitan region of São Paulo: spatial inequalities.
				- Metropolitan strategies for the right to the city and urban development.	- Metropolitan regions and their social struc- ture.
					- Urban mobility and the spatial configuration of the city
	https://web. facebook.com/ pg/saudetransito/ about/	NES-Tran (Cen- tor for Studies		Research lines - Epidemioloav of traffic accidents.	
Uesb	nestran@uesb. edu.br	on Health and Traffic)	Health Collective	- Urban mobility	
	http://www2. uesb.br/wp- -content/uplo- ads/2018/04/	Coordinator: Polianna Alves Andrade Rios.	2013	 Traffic and work relationships. Public policies and traffic-related morbidity and mortality. Traffic and quality of life. 	
	Grupos-de-Pes- quisa_UESB.pdf			,	

Institution	Link	Laboratory/ research group	Area/year	Research lines/projects	Unit
UFMG	https://site. medicina. ufmg.br/osubh/ institucional/ equipe/?tab=co- ordenadores	OSUBH- Urban Health Observatory of Belo Horizonte	Public health 2002	Research projects Health in Belo Horizonte: - Urban health. - Social predictors of obesity in Belo Horizonte, Brazil. - Systematic social observation: application of direct observation of physical and social conditions in a neighborhood. - Teenagers from a large urban center. - Social determinants. - Exercise BH: healthy lifestyles and habits in BH - an epidemiological assessment. - Project Life in the Traffic.	https://site.medicina.ufmg.br/osubh/biblioteca/categoria/artigos/ - Theses Dissertations Papers Book Book chapters Papers in journals Papers in congresses Working papers.
UFC	https://www. det.ufc.br/ In?Itemid=118&i- d=524&option=- com_content&- task=view	LRI -Logistics and Infrastructure Networks	Transport Engineering 2004	Research projects - Earthmoving. - 2014 World Cup. - School bus; - Covering. - Oil logistics.	http://www.lri.ufc.br/publicacoes/ - Theses Dissertations Papers Books Book chapters Papers in journals Papers in congresses Working papers.
UFC	https://www.det. ufc.br/gttema?l- temid=118&i- d=524&option=- com_content&- task=view	GTTEMA-Group of Research on Transport, Traffic and Environment	Depart- ment of Transport Engineering	Research projects - Accessibility and urban mobility from the integrated planning of land use and transport Modeling synthetic OD matrices in strategic and operational analysis of transport networks Integrated modeling of transport and land use in urban accessibility and mobility planning Road safety performance modeling Modeling of vehicular traffic in the urban road network in Fortaleza Modeling the demand-supply ratio in cargo transportation in metropolitan regions.	Extension actions/services https://www.det.ufc.br/exten-sao=-gttema?l-temid 118=&id524=&option-com_content&-task=view Example: Project: - Accessible Fortaleza": pilot project "Ferreira Square. Extension paper Master and Operational Plan for Inter-city Passenger Transport in the State of Ceará (PDO-TIP-CE, in Portuguese).

Institution	Link	Laboratory/ research group	Area/year	Research lines/projects	Unit
UFRGS and external entities Note: it is not an academic group, it is a research group made up of professionals.	https://www. ufrgs.br/nuitran/ quem-somos/	Nuitran - Interdis- ciplinary Traffic Center	Multidisci- plinary		https://www.ufrgs.br/nuitran/biblioteca-do-tran- sito/trabalhos-academicos/
UFJF	http://dgp. cnpq. br/dgp/ espelhogru- po/246911218 3050482 https://www.ufjf. br/ambientecons- truido/curso/gru- pos-de-pesquisa/ agora/	Agora	Architec- ture, City Plan- ning and Design - Interdisci- plinary	Research lines - Architecture, city planning and design . - Landscape, environment and urban space.	Dissertations. - Buildings prepared for automation, sustainabi- lity and accessibility.
UFSC	http://observa- toriodamobi- lidadeurbana. ufsc.br/	Urban Mobility Observatory	Inter-disci- plinary	Research projects The implementation of urban mobility plans and policies in the metropolitan region of Florianópolis. Neotrans Il Project - Study of the integration of metropolitan public transport in the greater Florianópolis.	https://observatoriodamobilidadeurbana.ufsc.br/ publicacao/publicacoes-academicas Some publications Undergraduate level - Public transport and public space: the Barrei- ros-São José transfer station (OTTO, 2017). Dissertation - Analysis of attraction and rejection factors in the implementation of BRT stations in a roa- dway median strip - case study: BR-101/SC and BR-282/SC (LOPES, 2018).

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