
MARCH 2018

# SYSTEM OF INFORMATION AND MONITORING OF ROAD SAFETY:
## PUBLIC POLICY PROPOSAL FOR MEXICO CITY

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# INTRODUCTION

In Mexico, road traffic crashes are the eighth cause of death at a national level, the first among children ages 5 to 9, and the second among adolescents and young people ages 10 to 20 (ST-CONAPRA, 2016). In Mexico City, two or more people die every day in a road traffic crash, and 12,527 crashes were related to injuries among 3,082 people in 2015 (STCONAPRA, 2015).

Road safety has recently become a priority in the mobility, public health and sustainability political agendas of Mexico City. Therefore, the Mexican capital is the first city in Latin America and the Caribbean to have adopted a comprehensive road safety strategy called Vision Cero CDMX with the goal of reaching zero road traffic deaths and serious injuries. This innovative approach to road safety accounts for the fact that crashes are preventable, and when they do occur, they should be survivable. It emphasizes the notion of co-responsibility, the idea that the government, private sector and citizens can jointly undertake actions to improve safety for everyone. Nonetheless, numerous actions must be taken to reach this ambitious goal, including making road safety data open, transparent, and useable.

# OPEN ROAD SAFETY DATA FOR MEXICO CITY: WHERE ARE WE?

## VISION ZERO AS A FOUNDATION

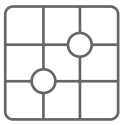
Vision Zero recognizes the important role of road safety data and its necessity in decision-making. Cities over the world formulated and promoted this strategy in diverse ways. In order to encompass them and propose a replicable model, ITDP promotes a Vision Zero strategy based on four pillars (Leal and Vadillo, 2015).

1 **Road design.** Safe road design enables road users, to decide the best way to move about the city and share streets, whether on foot, bicycle or motorized transport. Therefore, road redesign is encouraged to reduce speed and promote accessibility and safety for the most vulnerable, such as pedestrians, children and people with disabilities. Road design diminishes the probability that road traffic crashes occur and, if they do, lessens their severity to prevent serious injuries and deaths.

2 **Law enforcement.** Based on the recognition human factors are an inherent part of mobility, local authorities must ensure the proper enforcement of transit regulations to sanction and progressively discourage risky behaviours among road users. Trained civil servants must strictly enforce transit norms, using adequate sanction tools and devices.

3 **Culture of mobility.** The city is safer when its inhabitants adopt a culture of mobility that gives the priority to people, regardless of the mode of transport they use.

Authorities must provide sufficient information to citizens to explain the individual and collective benefits of using different modes of transportation. This promotes intermodality and healthy coexistence among all road users.



4 **Road safety management.** The last pillar is related to the three previous ones. Institutions must work together in a coordinated and complementary way, to determine integral road safety actions and monitor them via agreed upon baselines and indicators. Within this framework, public agencies are in a better position to coherently collect and process road traffic crash information, and generate quality road safety data that supports data-based decision and accountability.

The actions of the Vision Zero pillars are interdependent. However, coordination among public agencies and the proper use of road safety data are fundamental to determine, monitor and fulfill short, medium and long-term goals to reach Vision Zero. In Mexico City, there are still numerous actions needed to improve road safety management. In the face of this challenge, the Strategy of Open Road Safety Data (Estrategia de Datos Abiertos de Seguridad Vial, EDASVI) was created by the Laboratory for the City (Laboratorio para la Ciudad, LabCDMX) in 2016, and integrated in 2017 by the local Mobility Ministry (Secretaría de Movilidad, SEMOVI) and the Institute for Transportation and Development Policy (ITDP) with the support of the FIA Foundation. The goal of the EDASVI is to improve the quality and reliability of data related to road safety in Mexico City, through the creation of the System of Information and Monitoring of Road Safety (henceforth, "System"), explicitly mentioned in the "Integral Program of Road Safety" 2016-2018 (Programa Integral de Seguridad Vial, PISVI) as a strategic short-term

# DIAGNOSIS

Currently, the lack of a System significantly hampers the proper coordination of public agencies in charge of road safety in the city, and therefore, the generation of reliable data that could help communicate, justify and evaluate goals and actions of the PISVI, and be accountable to citizens.

## Information collection and registry.

Multiple actors collect information related to road traffic crashes in Mexico City, from the public safety, justice, health, insurance sectors, and others. These public and private institutions have different goals and interests related to the use of information; for example, the justice procurement agency seeks to document the exact circumstances of road traffic crashes and human and material damages, whereas medical emergency and rescue services are more interested in the medical condition of victims. For this reason, each institution collects different information for the same road traffic crash and its consequences. Institutions document different parts of the crash and engage with victims at various times, using differing registry methods.

## Interinstitutional coordination and information analysis.

Currently, the agencies in charge of collecting road safety information in Mexico City have little effective contact with one another. Furthermore, there is no legal or normative obligation for them to coordinate to match and analyse data on road traffic crashes, which they collect based on their own sector and perspective. To rectify this, the Ob-

servatory of injuries of Mexico City, attached to the local Health Ministry (Secretaría de Salud, SEDESA), was created. According to the guidelines promoted by the national Technical Secretary of the National Council for the Prevention of Accidents (Secretariado Técnico del Consejo Nacional para la Prevención de Accidentes, STCONAPRA) which governs the creation and function of such institutions, the Observatory's purpose is to work jointly with public agencies generating information to collect, analyse and improve the quality of road safety data in the capital. The task of the Observatory, similar to that of the future operator of the System, is currently hindered by its limited resources. Additionally, since it does not own the information that it processes, it cannot make data available to the public.

## Information-based evaluation and accountability.

The PISVI sets short, medium and long-term goals to reduce road traffic deaths and injuries in Mexico City. The majority of these goals are associated with a series of indicators that measure their progress. However, launching the PISVI at the end of the current city administration may jeopardize the implementation of this ambitious program. Nonetheless, it is urgent to implement a System that discloses reliable and legible data, to document changes in the city's road traffic crash trends and contribute to the evaluation of road safety policies and actions. This System must be established in a way that can survive a change of administration. The city currently lacks a communication channel with citizens about the high number of road crashes and the government's response. There currently is no official source of information on road traffic crashes that is publicly available and easy to use by those who wish to stay informed.

As part of the Vision Zero strategy to address this situation, the EDASVI proposes several recommendations for the urgent implementation of an open road safety data public policy to make progress towards zero road traffic deaths and serious injuries on the streets of Mexico City.

# INSTITUTIONAL FRAMEWORK

There are many norms, programs and institutions related to road safety, data or a combination of both in Mexico City. This document focuses on those at the local level, but it is important to note that at an international level, Mexico is committed to the Decade of Action for Road Safety (2011-2020) of the United Nations, as well as the United Nations Sustainable Development Goal which includes two road-safety specific targets (SDG 3.6 and 11.2), and the UN Habitat III New Urban Agenda which prioritizes safe and healthy journeys for children. The designated authority to compile road safety data and promote road safety policies in coordination with agencies of the three levels of government is the observatory at STCONAPRA.

At the local level, several statutory texts justify the importance of consolidating road safety management capacity for Mexico City:

- The "Law to make Mexico City an open city" (Ley para hacer la Ciudad de México una Ciudad Abierta, 2015) declares in its sixth article the importance of generating a culture of open data that may contribute to a better quality of life and more efficient public policies.

- The "Law of Electronic Government of the Federal District" (Ley de Gobierno Electrónico del Distrito Federal, 2015) stresses the importance of the city government to generate interoperable open data.

- The "Law of Mobility of the Federal District" (Ley de Movilidad del Distrito Federal, 2014) emphasizes the need to create and maintain a System of information and monitoring of road safety through a road traffic crash database to execute PISVI, in articles 48 and 49.

- The Integral Program of Road Safety 2016-2018 for Mexico City (Programa Integral de Seguridad Vial 2016-2018, PISVI) states in strategic pillar 1 (road safety management) action 1.9: "Develop a System of information and monitoring of road safety" in the short-term, 2016-2018:

> "System of collection of road traffic crashes. Creation of a System of road safety information and monitoring that is integrated and registers, processes and updates information. The system must use data that is reliable, georeferenced, open, public and in interoperable formats to rigorously integrate data on road traffic crashes and their consequences in Mexico City, offering a detailed history of concurring factors and indicators, with analytical and disclosing purposes."

Therefore, institutions within the EDASVI analysed current data generation and management processes to identify the challenges and opportunities in creating the System, and to better understand how road safety management could be improved more generally. Based on the guidelines of the aforementioned institutional framework, the EDASVI emphasized involving different public, private and civil society institutions interested in road safety information, to agree upon a public policy proposal. Therefore, in addition to promoting information-based decision making and evaluating actions of public authorities, the EDASVI seeks to generate an information tool that all citizens can use, to improve road safety policy in Mexico City from a public perspective.

# BACKGROUND OF THE PROPOSAL

This proposal for the System is the result of research and collaboration among the main institutions which generate, process, and analyse road safety data in the city. It was comprised of three main steps:

1 **Research of best practices and existing data, and comparison of information.** The EDASVI created a white paper about open road safety data (Laboratorio para la Ciudad, 2018). This document presents a benchmark of best practices and includes case studies from New York City and Los Angeles in the US, and Torreón in Mexico. It also proposes the adoption of a minimum number of variables for the System, based on international and national recommendations, and compares the information currently available in Mexico City. This document allowed the EDASVI to define the actions needed to involve more actors in the System's creation.

2 **Interviews with key stakeholders**. A map of local and national stakeholders in charge of generating, processing and/or analyzing information related to road traffic deaths and injuries was created. Contact was made to interview one or several of its each organization's members who conduct work relevant to the goal of the EDASVI. Based on a questionnaire adapted to each institution, detailed information was obtained about road traffic crash data, its nature, the methods of collection and registry, final use, and possible mechanisms of coordination between existing among agencies. The interviews were conducted between August and October 2017.


*Interview in the National Institute of Statistics and Geography, August 2017.*

3 **Stakeholders workshop**. The information from interviews was analysed to better understand the process of data management. Using this information and the World Health Organization (WHO, 2010) recommendations were identified to design and implement a new road safety data system and establish the System's ideal information flow (Table 1).

| Step | Description |
|---|---|
| Collection and entry in the System | Conceptualization and logistics of collecting and registering data after the crash. |
| Tracking and analysing the information | Operation and coordination related to data management after it is entered in the System. |
| Purpose of the System | Goals and needs of each institution, facilitated by the System. Includes diffusion and awareness strategies. |
| Implementation and evaluation of the System | Operation and coordination related to the implementation of the System |

*Table 1. Information flow proposed for the structure of the workshop.*

Interviewed stakeholders and other experts were called upon to take part in the workshop, organized by ITDP, SEMOVI and Lab-CDMX on November 23rd, 2017. The goal of the workshop was to obtain feedback on the functioning processes of the System and its implementation, according to the aforementioned steps. Each step was linked to specific questions to collect further and more detailed information. The topics and guided conversation gave way

to a collective discussion. The workshop allowed key stakeholders to collaboratively discuss the System that would be created for Mexico City.

| Institution | Area |
|---|---|
| C5 | Data analysis |
| INEGI | Statistics department, road traffic crashes in urban and sub-urban areas |
| Injury obvervatory | Data collection and prevention strategies definition |
| Injury observatory | Support the road safety program of Mexico City |
| PGJ CDMX | Digital processing of data |
| PGJ CDMX | Network of criminality research and statistics |
| SSP | Organized delinquency |
| SSP / ERUM | Bureau of statistics on pre-hospital care |
| SSP / Transit | Information and technology |
| STCONAPRA | Measuring of risk factors |
| STCONAPRA | Data standardisation and traffic crashes prevention based on scientific evidence |
| Institute of Geography UNAM | Data georeferencing and risk mapping |
| Repubikla ciuDATA | Data georeferencing and civil society diffusion |
| AXA | Governmental relations |
| AXA | Part of Mexico City's "dangerous crossings" project |
| CESVI México | Institutional area on data management |
| Sin Tráfico | Big data analysis and information diffusion |

*Table 2. Institutions of origin and specialty of the workshop participants.*


*“System of information and monitoring of road safety” workshop.*
*November 2017.*

# 2.

# PROPOSAL FOR THE SYSTEM OF INFORMATION AND MONITORING OF ROAD SAFETY

According to the local legal framework, the System must be a unique repository of data that is "reliable, georeferenced, open, public and in interoperable formats to rigorously integrate data on road traffic crashes and their consequences in Mexico City." The international definition of "system" proposed by the WHO's Data Manual, includes "the people, processes, hardware and software that are part of the collection and management of information related to road traffic accidents," elements present in the proposal of EDASVI as well.

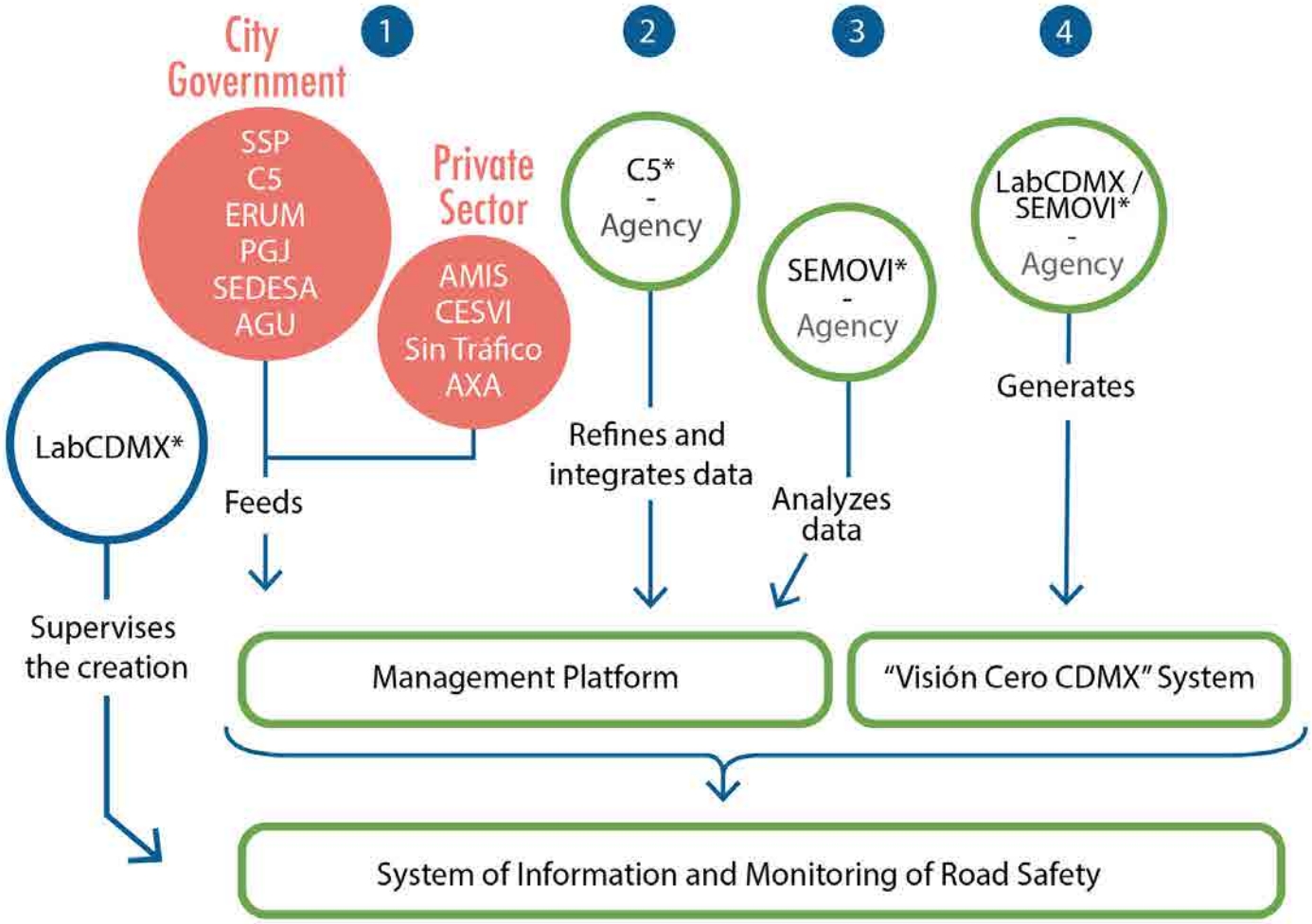
In this section, the proposal for the System is presented in two parts. First, an institutional and operational scheme of the System is presented as the ideal situation. The second part presents a more detailed - and urgent - process to be followed.

# INSTITUTIONAL AND OPERATIONAL SCHEME

Once implemented, the System will be operated by a series of public and private institutions, to benefit public agencies that will promote public policies, and citizens who will have better access to road safety information. For that purpose, two entities are proposed.

1) **Management Platform.** The Management Platform will be the repository of data fed by the different institutions generating information. It will work as a tool available to public agencies for guidance in decision-making and actions. Given the complexity of using and managing the System to generate public policies, it is proposed that the Management Platform be internal to government agencies and other institutions in charge of keeping it operational and functional.

2) **"Visión Cero CDMX" System.** While citizens may not have access to the Management Platform, it is fundamental that they are able to consult and use its detailed data. It is therefore proposed that such data, derived from the Management Platform, be presented in an easy-to-use system, for users to consult and view the most up-to-date history and data on road traffic crashes in the city, their geolocation, main characteristics, etc.
These two entities would be operated by different institutions, according to the scheme presented in Figure 1.




**Entities temporarily proposed as responsible, subject to modification according to the provisions taken by the government of Mexico City in the creation of the Management Platform and the "Visión Cero CDMX" System.*

*Figure 1. Institutional and operational scheme of the System.*

Initially, the LabCDMX officially known as the General Direction of Creativity would be in charge of designing and supervising the creation of the System in light of the attributions it is given by the article 207 of the Rules of Procedure of the Federal District Public Administration:

> I.- Collect, systematize and analyse global practices related to the provision of urban services, the attention to citizens and the solving of strategic urban issues, as well as the promotion of its use in Mexico City if need be.
>
> III.- Design, build, make diagnosis, voice opinions, solutions and innovations for the provision of urban services, the attention to citizens, the functionality of public right of way and creative development, in coordination with the public and private sectors prone to the national and international promotion of Mexico City.

The scheme should be read taking into account two temporalities. In the first months following the creation of the Management Platform and the "Visión Cero CDMX" System, these will have to be operated and maintained by government agencies that currently have greater understanding and experience in data management. In the medium-term, the road safety Agency that has yet to be created in Mexico City will operate the System and open road safety data to citizens. The steps for operating the System will be as follows.

1 **The entities generating road safety data from all sectors feed into the System** on a monthly basis, using separately collected data that reflects their function and the step of the road traffic crash process they usually engage in. These entities are:

**(a)** Public Safety Ministry (Secretaría de Seguridad Pública, SSP);
**(b)** Center of Command, Control Computing, Communications and Citizen Contact (Centro de Comando, Control, Cómputo, Comunicaciones y Contacto Ciudadano, C5);
**(c)** Rescue and Medical Emergencies Squad (Escuadrón de Rescate y Urgencias Médicas, ERUM);
**(d)** Attorney general (Procuraduría General de Justicia, PGJ);
**(e)** Health Ministry (Secretaría de Salud, SEDESA);
**(f)** Urban Management Agency (Agencia de Gestión Urbana, AGU);
**(g)** Private entities, depending on the agreements and modalities of participation determined with the government of Mexico City: Mexican Association of Insurance Institutions (AMIS), Center of Experimentation and Road Safety Mexico (CESVI), Sin Tráfico, AXA;
**(h)** Other entities to be defined.

These entities will be defined from the beginning and will continue feeding data to the System throughout its existence and operation.

To the contrary, the following steps have to be examined through the lense of the two temporalities: they will first be led by existing government agencies, and later replaced by the Road Safety Agency of Mexico City, whose functions are best suited to manage the System's data. Indeed, the creation of the Agency is set in the PISVI (2017) as a 2019-2021 goal in charge of the central government of the city, with an aim to "[manage] independently, and based on the adequate human and material resources, all road safety policy, in which numerous public agencies from government and organized civil society will have to take part".

2 **The Center of Command, Control, Computing, Communications and Citizen Contact (C5)** refines and integrates the data captured in the previous step, in the System. C5 is the public agency that currently has the greatest capacity to take on this task, as it is in charge of capturing integral information for decision-making in the realms of civil protection, justice, public safety, medical emergency, mobility, environment, community services, emergency and disasters. For that purpose, it integrates and analyses the information captured through its video-monitoring integral center, the use of technological tools, data bases, or relevant telecommunications and geolocation systems or equipment. It can also associate itself with public agencies from the local, federal, state or municipal governments, and private institutions and organizations, in accordance with the First Article of the creation decree of said institution.

3 **SEMOVI** jointly with other government agencies analyzes the data to redirect road safety actions to critical spots of the city to reduce the number of road traffic deaths and injuries.

4 **LabCDMX generates and feed the "Visión Cero CDMX" System** based on the data refined and integrated by C5 in the Management Platform, under the supervision of SEMOVI, continuously trying to ensure that the online tool is as complete and easy to use as possible for citizens.

# FORMATION PROCESS OF THE SYSTEM

This section presents the main recommendations of the EDASVI to form the System, derived from the collected and analyzed data mentioned in the previous section. The proposal is separated according to the main steps identified by the World Health Organi-

sation to create and implement a typical road safety data system. Sub-sections include: (1) data collection and entry in the System; (2) tracking and analysis of the information; (3) purpose of the System; (4) implementation and evaluation of the System.

## DATA COLLECTION AND ENTRY IN THE SYSTEM[1]

To be functional, the System has to include data and variables that allow for a detailed collection of road traffic crashes in the city, the conditions in which they occur, the types of vehicles and persons involved, and consequences for victims. This depends on the capacity of different institutions in charge of collecting information related to crashes to do so in an efficient and coordinated way. This section emphasizes the importance of adequately collecting information in the field and capturing it in the System. Recommendations include:

- Register all road traffic crash, independently of their level of severity;
- Thoroughly define "road traffic death" to ensure that each fatal crash is effectively registered as such;
- Define the method of data collection, from field collection and complementary data from other information services, to the use of technology to digitally capture data;
- Assign a unique ID to each road traffic crash;
- Determine the data elements to be captured, and a protocol of capture in the System that would detail the flow of information among agencies.

*1 This section is a summary of the detailed recommendations made in the Spanish version of the same document.*

## TRACKING AND ANALYSIS OF THE INFORMATION

Once collected and captured in the System, road traffic crash data will have to be verified. This step assumes adequate information tracking among different institutions involved, to avoid any omission, error or duplication. Data will have to be used in a way that allows the identification of preventive actions -such as road redesign, communications campaigns aimed at certain road users, the strategic placement of traffic enforcement cameras, among others- which is why it is also necessary to establish ways to analyse the System's information. It is therefore recommended to:

- Determine which agencies will be responsible for capturing and systematizing data (temporarily supervised by SEMOVI, and later replaced by the Agency once created);
- Initially and continuously train personnel of all relevant institutions on how to use the System and manage data;
- Generate a culture of transparency among public agencies.

## PURPOSE OF THE SYSTEM

Before the System is created, its final purpose must be clearly defined; in other words, the fundamental goals that it will have to achieve. This is necessary for the institutions that will feed the System, and for the citizens who will have access to the information and data visualizations. Therefore, the recommended purposes of the System are to:

- Analyse data to identify the causes and characteristics of road traffic crashes, and improve prevention strategies as a result;
- Evaluate mobility and road safety programs and goals;
- Inform citizens about the state and evolution of road safety trends, through the "Visión Cero CDMX" System and regular publications.

## IMPLEMENTATION AND EVALUATION OF THE SYSTEM

Like the previous step, the implementation and evaluation phase will be more meaningful once the previous phases are better defined. However, the EDASVI recommends the following steps:

- Determine the judicial grounds for the operation of the System;
- Conduct one or several initial internal evaluations of the System.

# 3.

# CONCLUSION

## OPPORTUNITIES FOR OPEN ROAD SAFETY DATA IN MEXICO CITY

The design, creation and operation of the System presents not only a series of operative, financial and political challenges, but also significant opportunities in terms of institutional coordination and citizen engagement, to significantly improve Mexico City's road safety. This public policy proposal has sought to stress these challenges and opportunities. Following the guidelines of the World Health Organization, analysis of international best practices and, above all, knowledge of local main stakeholders, the EDASVI recommends several key elements to be included in the process of the System's creation. Considering that, according to the PISVI, the creation of this System will be effective in 2018, we conclude this document by exploring opportunities available through the implementation of the System.

### Interinstitutional work and coordination.

In the various events and dialogues surrounding the EDASVI, stakeholders stressed the added value of collectively discussing a data repository, which would de facto function through their various institutions. Despite the fact that they all work in the same area and pursue the same goal – to improve safety of the public and road users - many institutions had not, until then, had the opportunity to converse and exchange points of view in such a direct and open way. The majority expressed their interest in repeating such multi-stakeholder exercises to contribute to System's creation, both striving to meet common goals, and facilitating their own individual work. It will therefore be fundamental to capitalize on this initial open dialogue and interinstitutional collaboration throughout the remaining steps of the System's formation, and while making the city's road safety data open.

## Follow-up and implementation of the System.

Road safety has recently taken an important place in Mexico City's mobility agenda, and it has increasingly been perceived as an urgent public health issue by public opinion and decision makers. The adoption of the Vision Zero and the publication of the PISVI are undeniable and encouraging achievements; however, their ambitious goals and actions will have to be implemented to have a real and positive effect in the city. Currently there is a window of opportunity to reap benefits from these tools and demonstrate their immense usefulness. In this sense, the Vision Zero online tool, functional and usable by citizens, will be a fundamental tool to evaluate the goals that have been set, to demonstrate the progress made, and to actively involve civil society in the road safety agenda.

## Transcendence of the road safety policy.

While the road safety agenda has recently become more prominent in Mexico City, the city is also approaching an administration change in 2018. Independently of who will next come into power, it will be fundamental that the next administration pursues and improves open road safety data, as it has many implications for the population. Therefore, it is paramount that the process continues over in the next months, to define and install the System of Information and Monitoring of Road Safety, a necessary tool to continue to implement Vision Zero in Mexico City.

*Participants to the System of information and monitoring of road safety, November 2017.*

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