POLICY BRIEF

LOW SPEED ZONES:

A MEASURE TO SAVE LIVES

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INTRODUCTION

Over 1.2 billion people across the world lose their lives in traffic crashes every year. In Brazil alone, traffic fatalities exceed 40,000 per year and this number continues to grow. Traffic crashes, currently the leading cause of death for young adults aged 15 to 29 years, are expected to become the fifth leading cause of death globally by 2030. In 2011, governments around the world, including Brazil, pledged to adopt measures to reduce the number of traffic-related victims in response to the Decade of Action for Road Safety. Road safety has also been included in the United Nations Sustainable Development Goals, aiming to halve the number of deaths and injuries in traffic crashes by 2020, and in the New Urban Agenda, signed in 2016 by 167 countries, including Brazil.

The World Health Organization (WHO) lists 5 risk factors associated with road crashes: drunk driving, helmets not worn, seat belts and child restraints not used, and excessive speed.[i] Brazil has adequate legislation regarding many of these factors. Through stricter enforcement, it was possible to generate a cultural change with respect to the use of road safety equipment (seat belt, helmet and child restraint) and to increase the awareness of the risks of driving while intoxicated. However, solutions for excessive speed are still little explored.

The factor dealing with excessive speed remains without an effective action at national level.

The speed limits recommended by the Brazilian Traffic Code (BTC)[ii] are higher than those recommended by WHO, which for urban arterial roads is up to 50 km/h. In areas with great pedestrian and bicyclist circulation, the maximum speed limit is recommended to be 30 km/h[iii]. In many cities in Brazil and across the world, the speed limit adopted is even higher than these recommendations.

Adapting the BTC to WHO recommendations is an important measure against the epidemic of road crashes. However, according to the BTC, it is up to the municipal government to determine the speed limits for urban roads.

Cities have autonomy to opt for safer speed limits.

One of the most effective measures to reduce road crashes is to lower the maximum speed limit combined with urban redesign, encouraging vehicles to drive within permitted speed limits. When these changes are implemented in a group of roads, low

speed zones can be created, usually called zone 30 when the maximum speed limit is 30 km/h.

Low speed zones are consolidated measures for crashes reduction adopted in many different countries, such as The United Kingdom, The Netherlands, The Unites States, Mexico, Australia and Brazil.

A low speed zone is a delimited area comprising a group of roads intended for circulation of vehicles, pedestrians and bicyclists where the maximum permitted speed is 20 km/h, 30 km/h or 40 km/h. These zones are traditionally implemented in places with high flow of pedestrians and bicyclists, near schools and hospitals or in residential or commercial areas.

(Photo: Alain Rouiller)

SPEED RISKS

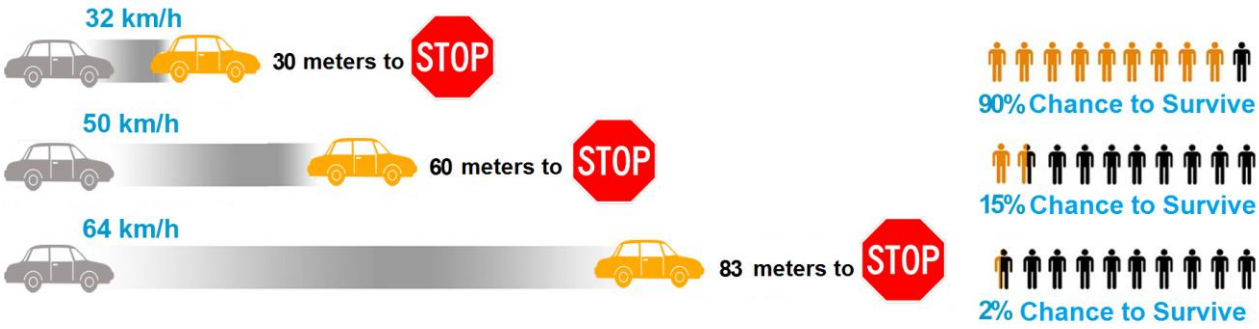
Speed is considered one of the main risk factors for traffic crashes as it increases both their likelihood and severity[iv]. The higher the speed of a vehicle, the greater the distance and time required for bring this vehicle to a complete stop after braking.

To avoid crashes, drivers must have good visibility of what is happening around, which is not always the case in urban areas, and be able to react in advance. Urban streets have many visual blocks, including trees, poles, street furniture and buildings at intersections.[v] In urban streets, there are also movements that may represent interferences and potential collision between vehicles, pedestrians and bicyclists, such as entrance and exit of lots, lane changing, parking along the road and stopping at traffic lights. Restricted visibility and potential conflicts, when combined with high speed, make it very difficult for a driver to avoid a crash. High speeds also increase the chance of a driver losing control of the vehicle and can result in a crash.

High speed is particularly dangerous for vulnerable roads users, such as pedestrians and bicyclists.

The risk of severe injuries and death increases exponentially with speed, i.e., crashes at higher speeds are always more severe. In cases of pedestrian crash, the risk of pedestrian fatality is directly associated with speed[vi]. The fatality risk for pedestrians with vehicles traveling at 60 km/h is almost ten times higher than the risk at 30 km/h, and their chances of surviving are almost nil.

Therefore, in areas with high flow of pedestrians and bicyclists, such as residential areas, commercial areas and areas near schools and hospitals, speed limits must be adopted in order to minimize the risk and severity of crashes for road users.



The risk of collision and pedestrian death decreases at lower speeds.[vi]

DESIGNING SAFER ROADS

Cities can turn their roads into safe environments for people to coexist and travel, regardless of their transportation mode choice. This concept must be included in projects of new any type of construction interacting with users in the urban environment. However, it is not only with new projects that we can make our roads safer. The existing environment can also be adapted.

Implementing lowered speed zones should be based not only on the reduction of the speed limit but also on changes in the street design that encourage drivers to respect the new limits.

Drivers choose their driving speed based on their perception of safety and the street design can influence their perception of safety to ensure actual safety[vii]. The road design should help show the speed limit established in a self-explanatory manner. Thus, it is necessary to implement consistent streets projects, creating an environment that causes few surprises to road users and accommodates potential mistakes of drivers, pedestrians and bicyclists without resulting in serious crashes. The established speed limit should be respected because it is understood to be a safe speed. Wide streets, for instance, encourage higher speeds and it is not viable to expect drivers to travel at 30 km/h in such streets.

The road environment should be in line with the speed limit.

Creating an environment compatible with low speeds includes using devices such as speed bumps, narrowing roads and widening sidewalks, pedestrian refuge islands, raised pedestrian crossings, roundabouts, shared spaces, chicanes and other road design measures to encourage drivers to slow down and increase safety, particularly for pedestrians and bicyclists. These traffic calming measures, when implemented together in a delimited area, consolidate a low speed zone. Initially, low-cost materials can be used for the application of temporary measures and, as they result in positive impacts, materials of longer duration and better quality are used to build permanent infrastructure.

Low speed street in downtown Belo Horizonte. (Photo: Belo Horizonte City Hall)

BENEFITS AND IMPACTS

Low speed zones improve travel conditions and pedestrian and bicyclist safety, encouraging trips on foot or by bike. The design of cities plays a major role by promoting urbanization that enables more people to use the public transport system, walk and ride bicycles. Providing safe and comfortable infrastructure enhances accessibility and offers new opportunities for everyone, creating sustainable, competitive, egalitarian and smart cities, with improved quality of life.

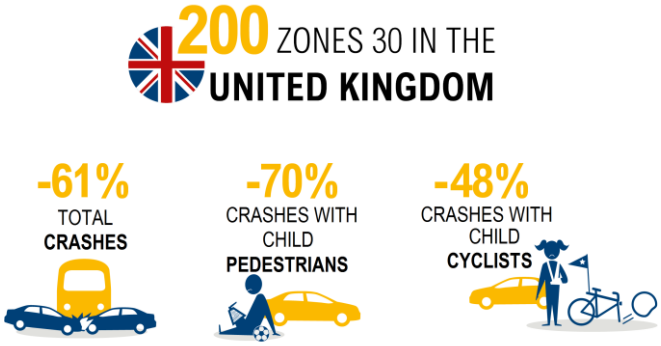
Low speed zones have a positive environmental impact. A study carried out in Germany shows that areas where the speed limit was reduced from 50 km/h to 30 km/h had improvements in pollutant emissions. Emissions reduction is mostly the result of people choosing to travel on foot or by bike over cars in these areas[viii].

Migrating to active modes of transport, present in lowered speed zones, also plays a key role in improving population health. Promoting physical activity on daily commutes could help prevent conditions such as type 2 diabetes, obesity, heart diseases, and some types of cancer.[ix]

Low speed zones reduce the number and severity of traffic crashes. In 2013, the city of São Paulo started implementing the so-called "Areas 40". These are lowered speed zones distributed across the main population centers in the city. The first implementation stage of the Areas 40 played an important role in the process of breaking the culture of high speeds. Approximately 1 year after implementation in the downtown area, a 71% reduction in the number of pedestrian crashes fatalities was observed[x].

Similar results were observed in other cities in Brazil and the world. Curitiba reduced by near 25% the number of crashes with victims after implementing the "Calm Area" in the downtown area[xi]. An assessment of 200 residential areas with lowered speed limits in the United Kingdom showed a reduction in the total number of crashes, crashes involving child pedestrians and crashes involving child cyclists[xii].

Low speed zones have a positive economic impact. Studies show that streets that offer better conditions for pedestrians and cyclists result in the valuation of residential and commercial properties in their surroundings, revitalize urban areas attracting visitors, generate new business and stimulate the local economy[xiii].



Impact of implementation of zones 30 in the United Kingdom.

RECOMMENDATIONS

1. *Promoting a paradigm shift towards prioritization of sustainable modes of transport*

Walking and cycling are ways to thrive as they help reduce emissions in addition to being active and healthy modes of transport. Policy and engineering actions in cities should focus on people, creating attractive spaces for circulation and resting. The infrastructure for pedestrians and cyclists should include connected networks to enable direct, accessible and safe routes.

2. *Identifying places with flow of pedestrians and high incidence of runovers for implementation of low speed zones*

Places with intense pedestrian flow and recurring pedestrian crashes and other road crashes with severely injured victims or fatalities present the main characteristics to justify the implementation of low speed zones. These places should be identified in order to receive the required investments at critical points of the road network to increase the number of lives saved. Speed limit reduction should be integrated with user and community engagement, information to road users and enforcement efforts.

3. *Adapting the road environment to the speed limit*

The speed limit must be compatible with the road environment design, i.e., the road infrastructure should be adapted to the new speed limit. A road environment consistent with the speed limit desired positively influences the behavior of drivers, being required to prevent speeds above the established limit. Low speed zones are usually implemented with clear posting of entrances, vertical and horizontal signs, narrow traffic lanes, walkway extension, raised pedestrian crossings, chicanes and other traffic calming measures.

4. *Integrating all stakeholders in the process of project planning and implementation*

Projects for low speed zones achieve better results when they are multidisciplinary and are not associated with a single municipal department or secretariat. Representatives of the secretariats for planning, management, construction, transport and traffic, accessibility committees, cycle departments, regional prefectures, as well as budget, finance and economic development departments must be involved in all decision-making stages in order to avoid delays and rework.

5. *Promoting engagement of civil society*

Social participation is critical in the process of implementing a low speed zone. Creating or maintaining public participation spaces increases the chances of the government hearing the opinion of the population about the development of policies, projects or even resource allocation. The community must be heard directly by those responsible for the project and get the information they need to understand and also give their opinion about what is being planned for their neighborhood and city. Engagement actions include meetings with the community and local leaders, public hearings and creation of an open communication channel, allowing the presentation of the proposal to the community directly involved in a timely manner for suggestions, criticism and ideas related to the project.

6. *Assessing results against data and indicators*

Before and after implementing a low speed zone, data should be collected for assessment of potential impacts of implementing the measure. Good data collection planning is crucial to avoid misinterpretation of results. Impacts on congestion and road crashes must be carefully monitored in order to identify additional post-implementation adjustments that may be required. Proven benefits can serve as an argument to strengthen and replicate this measure.

7. *Encouraging long-term planning and alignment of strategies and plans for the city*

Long-term planning provides a view of the future, with clear goals and objectives for the development of a city or region. In the urban context, pursuing strategies for a 20- to 30-year time frame allows implementing infrastructure in line with the urban development plan. Planning of low speed zones should take into account the local context, analyzing current and future land use, as well as projected and induced demands.

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i WHO. Global Status Report on Road Safety 2015: Supporting a Decade of Action. Geneva, Switzerland, 2015
ii Brazil. Law 9,507, Brazilian Traffic Code. 1997
iii PAHO. Speed Management: A Road Safety Manual for Decision-Makers and Practitioners. 2012.
iv WHO, Speed management. 2008.
v Design Manual for Urban Roads and Streets, Ireland. 2013
vi WRI. O Desenho de Cidade Seguras/ Cities Safer by Design 2016
vii TAC. The Impact of lowered speed limits in urban and metropolitan areas, Melbourne. 2008.
viii PHAROAH & RUSSELL. Traffic calming: policy and evaluations in three European countries. 1989
ix UITP. Policy Brief - Unlocking the health benefits of mobility. 2016
x SÃO PAULO. 40 Area - Lowered Speed Zone 2016
xi http://www.curitiba.pr.gov.br/noticias/area-calma-completa-um-ano-com-reducao-de-acidentes-e-multas/40574
xii Webster D, Mackie A. Review of Traffic Calming Schemes in 20mph Zones. TRL Report 215. 1996.
xiii HEART FOUNDATION. Good for Business. The benefits of making streets more walking and cycling friendly. Discussion paper. South Australia, 2011.