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How the Covid-19 pandemic has drawn attention to the issue of active mobility and co-benefits in Latin American cities

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Abstract

The Covid-19 pandemic has brought to the fore many issues that will impact public health for years to come –one such impact is on the nexus between transportation and health. Promoting safe, active transport is an activity that has many physical and mental health benefits. During lockdowns, many cities in Latin America imposed infrastructural and legislative changes in order to abide with public health and social measures to reduce virus spread. These ranged from additional bike lanes to reduced speed limits or incentives to purchase bicycles. These cities showed reduced motorized transport, improved air quality and increased active transport, all of which have multiple health and equity benefits. As countries “build back better”, promoting active transport offers the most value for investment and improves health and well-being while continuing to offer social distancing. Quantified case studies are needed to have a more comprehensive understanding of the impact of active transport in various contexts.

Resumen

La pandemia de Covid-19 ha puesto de manifiesto muchas cuestiones que tendrán repercusiones en la salud pública durante los próximos años; una de ellas es el vínculo entre el transporte

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y la salud. Promover el transporte activo y seguro tiene muchos beneficios para la salud física y mental. Durante los periodos de confinamiento, muchas ciudades de América Latina implementaron cambios legislativos y en la infraestructura para cumplir con las medidas sociales y de salud pública con la finalidad de reducir la propagación del virus. Dichas medidas iban desde carriles exclusivos para bicicletas hasta límites de velocidad reducidos o incentivos para la compra de bicicletas. Estas ciudades obtuvieron una reducción de los viajes en transporte motorizado, una mejora de la calidad del aire y un aumento del transporte activo, lo que tiene múltiples beneficios para la salud y la equidad. Mientras los países “reconstruyen mejor”, la promoción del transporte activo ofrece el mayor retorno sobre la inversión y mejora la salud y el bienestar de la población al tiempo que promueve el distanciamiento social. Se necesitan estudios de caso cuantificados para tener una comprensión más completa del impacto del transporte activo en diversos contextos.

Keywords

walking; cycling; road safety; noncommunicable diseases

Transport has a major impact on population health –it directly affects injury rates and air pollution, and indirectly influences physical activity and associated chronic conditions. The experience of Latin American cities during the coronavirus disease 2019 (Covid-19) pandemic has brought this issue to the fore and many countries in the region and globally prioritized active modes of transport as they were perceived to be safer for infection control, than public transport options. Many cities around the world have created permanent and temporary bike infrastructure, enhanced walking areas for pedestrians, or offered incentives to buy or repair pedal cycles.^{1,2} The National Association of City Transportation Officials encouraged cities around the world to create “safe, walkable streets and choices for getting around” in the immediate response to the crisis and to promote longer term strategies to encourage an economic recovery “that is equitable, sustainable, and enduring”.³ The World Health Organization (WHO) encourages to “whenever feasible, consider riding bicycles or walking” in order to meet daily physical activity targets.⁴

In addition to well-known proximal risk factors for transport related injuries, the magnitude, severity and types of road traffic injuries in Latin America and globally are also determined by social determinants of health –in other words the contexts where people are born, grow up, live and work all play important roles.^{5,6} Latin America is one of the most inequitable regions of in the world. Road traffic injuries (RTIs) affect the least advantaged sectors of the population more, most likely due to a convergence of factors such as the priority road safety is given in the country, the safety standards of vehicles and infrastructure, the public transportation policies, the proportion of vulnerable road users, road safety laws and enforcement, and the prevalence of other behavioral risk factors, such as speeding and drinking and driving.⁵

Reduced exposure to traffic during lockdowns and increased reliance on non-motorised forms of transportation led to some reductions in road traffic crashes^{7–10} and improved air quality¹¹ in Latin America and else-where.¹² However, there is uncertainty as to the

impact of reduced traffic, speeding, and associated increased speed-related collisions and fatalities.^{13,14}

The question, then, is: as countries recover from the pandemic, can these positive road safety gains be sustained? And what other health benefits can be achieved through the promotion of non-motorised forms of transport?

Guided by some key documents on intersections between health and transport, and emerging data during the Covid-19 pandemic, we report on potential co-benefits of active transport and opportunities for sustainable transportation reforms and road safety in Latin America. This short essay attempts to provide an overview of potential gains recognizing that countries and cities in Latin America are not homogenous and, therefore, local adaptations should be sought.

Health co-benefits of active transport

Improving road safety

Road traffic crashes kill around 1.35 million people around the world every year, injure up to 50 million and are the number one cause of death for 5 to 29-year olds.¹⁵ Approximately half of these deaths are among vulnerable road users –pedestrians, cyclists, and motorcyclists. The global road traffic death rate has stayed relatively constant at around 18 per 100 000 population for almost two decades.¹⁵

In the Americas, the situation is not significantly better than in the rest of the world. With a regional mortality rate of 15.6 per 100 000 inhabitants in 2016, RTIs cause more than 150 000 deaths per year or 11% of global road traffic deaths. These average mortality rates hide large disparities between subregions, countries and within countries. Countries in Latin America have some of the highest road traffic injury mortality rates in the world (figure 1).¹⁶

In the Americas region, vulnerable road users – motorcyclists, pedestrians, and cyclists – make up more than half of all road traffic deaths.¹⁷ In almost all Latin American countries there has been a well-documented increase in motorcyclists and motorcycle-related deaths between 1998 and 2010;¹⁸ however, the high incidence of pedestrians' and cyclists' deaths is also of concern, especially in Mesoamerican countries where they account for one-third of deaths.¹⁹ These vulnerable road users are at particularly high risk of injury and death if they are involved in high-speed collisions with other vehicles, in particular in urban areas. In fact, the chances of survival for an unprotected pedestrian or cyclist diminishes rapidly above 30 km/h.^{20,21} In order to maximize the road safety and benefits from non-motorized transportation there needs to be a strong focus in urban areas on reducing speed limits and introducing traffic calming measures, separating various modes of traffic and enforcing road safety laws.^{22,23} Equitable public transportation systems that provide frequent and comprehensive service can also potentially improve road safety by reducing personal motorized vehicle traffic.^{24,25} This would make traffic safer for all road users while at the same time lead to more people walking and cycling.

In Latin America, all countries, except Mexico and Venezuela, have a national speed law. Only seven countries, however, have urban speed laws of 50 km/h or less, and only three of these countries meet WHO's definition of a "good urban speed law".¹⁹ Fourteen countries have policies to encourage walking and cycling which include separating vulnerable road users from fast moving traffic and safe crossings for pedestrians and cyclists (table I).¹⁹

At the start of the Covid-19 pandemic many countries around the world went into lockdowns which involved various levels of travel restriction. Many countries in Latin America closed their borders, stopped international travel, restricted local travel except for essential workers, and implemented public health measures such as social distancing and mask wearing.

As a result, dramatic changes in mobility patterns were observed followed by legislative and infrastructure responses. Mobility patterns documented by Google through the Covid-19 Community Mobility Reports²⁶ included reductions in motor vehicles on the roads and consequently fewer road traffic deaths. In Peru, for example, coroner data showed a dramatic reduction in road traffic injuries of 12.22 per million men per month and 3.55 deaths per million women per month¹⁰ following lockdown. Countries further afield, like South Africa also saw road traffic collisions decreased by 74% during the hard lockdown;²⁷ however, this has not been the case in all countries, some of which have seen increases in speed-related collisions.^{13,14}

Reducing noncommunicable diseases

More than three million people worldwide die prematurely every year due to noncommunicable diseases (NCDs) associated with inactivity.^{28,29} Increasing active transport and other forms of exercise, in addition to other lifestyle changes, have the potential to reduce these high levels of NCDs.

Latin America has seen a dramatic increase in over-weight and obesity levels in the last decade.¹⁶ In fact, 81% of all deaths in the region are due to noncommunicable diseases linked to obesity, such as cardiovascular disease, cancer and diabetes.¹⁷

Regular exercise is good for both physical and mental health. It has been shown to reduce the risk of more than 25 chronic diseases and increase longevity.³⁰ And walking and cycling can be readily integrated into people's busy lives.³¹

As an immediate infrastructural response for the need to physically distance during Covid-19, multiple cities put in place popup cycle lanes, closed roads to encourage walking and cycling, and adopted one-way sidewalks. Argentina, Colombia, and Mexico opened kilometres of new bike lanes. In Bogotá, 85 kilometres of new cycle lanes was put in place, resulting in a 100% increase in cycle trips in the city.³² Similarly, in Buenos Aires, where half of the commutes are less than 5 km long, the city responded to the need for more cycling routes by implementing 60 km of new, widened cycle paths.³³ According to official surveys, the number of trips carried out by bicycle in the city of Buenos Aires increased in every observed point, with differences ranging from 29 to 114%.³⁴

Improving respiratory health

Poor air quality is a serious threat around the world, accounting for approximately seven million premature deaths every year.³⁵ Over four million of these deaths annually are directly related to ambient air pollution.³⁶ In fact, the largest increases in risk exposure between 2010 and 2019 included ambient particulate matter pollution. Walking and cycling are clean transportation modes that generate zero emissions (both air pollutants and greenhouse gases) and emit minimum noise, but these activities may cause more exposure to pollution. However, the overall benefits of non-motorized transport outweigh their risks.³⁷

The *Salud Urbana en America Latina*³⁸ project characterized particulate matter (PM_{2.5}) levels in 366 Latin American cities and found that 58% of the study population live in areas where pollution levels are well above WHO's threshold of 10µg/m³.³⁸ In fact, 95% of the people living in the 10 largest cities included in the study –*i.e.*, over 100 million people – live with air pollution levels well above the WHO limit. These high levels can be attributed, in part, to traffic density, while urban areas with bus rapid transit systems showed lower levels of ambient PM_{2.5}.³⁹

During Covid-19 lockdowns, the Inter-American Development Bank Coronavirus Impact Dashboard showed the dramatic reductions in PM_{2.5} compared to the same period in 2019 in major Latin American cities.⁴⁰ However, in many low-income countries, economic growth has been linked with exacerbations in air pollution emissions. Early evidence from 34 countries indicates that the unparalleled reduction in global economic and transport activity caused by the Covid-19 lockdown has resulted in reductions of nitrogen dioxide and particulate matter by 60 and 31%, respectively.⁴¹

Reducing inequities

In many low-income countries, people walk or cycle out of necessity either because they don't own a motor vehicle or because they cannot afford public transport. However, this is not usually the case in most middle- and high-income countries, where walking and cycling is either a mobility choice or recreational activity.^{42,43}

Lack of access to jobs and services is one of the most significant determinants of poverty. Walking and cycling provide promising options to provide access and opportunity to work, education, food, health, etc. at low cost and with substantial co-benefits, but they need to be available, safe and attractive.⁴⁴

Socioeconomic conditions are also important determinants of transport mode and its impact on population health in Latin America. In São Paulo (Brazil), the more educated are more likely to walk,⁴⁵ while in Chile, the prevalence of active commuting is associated with lower socioeconomic status and lower physical activity.⁴⁶

Urban design and transportation infrastructure can also have as substantial an impact on commute mode choice as household income. A study of the 100 largest urban areas in Mexico showed that people in denser urban areas with jobs concentrated there were less likely to drive; the same applies to cities with more public transportation options.⁴³

While some countries have begun to address transport inequities, the elderly, the disabled, women, and children tend to be overlooked. It is thus important to ensure that investments in walking and cycling environments are made in rural communities as well as urban settings to ensure equitable access to safe active transport options for these vulnerable groups. Given the increasingly aging population in the region, it is especially important to target policies and programmes aimed at promoting healthy aging. Contrarily to motorcycle users, among whom younger males have a higher burden of mortality, older populations experience the highest burden of pedestrian death throughout the region.⁴⁷

The journey to school for children is an excellent example of how the gap can be narrowed. Children who use non-motorized forms of transportation to get to school tend to be better prepared for the day of learning ahead⁴⁸, and walking or cycling in and of itself is a learning opportunity.⁴⁹ The streets need to be safe and clean to support the physical activity needs of children and promote good, lifelong habits. However, most streets are not designed with children in mind and therefore can be hostile and unsafe. Designing streets for children⁵⁰ –an approach that puts people rather than vehicles first by focusing on their specific needs –will encourage more students to walk or cycle to school and other places of education, thereby reducing road traffic collisions and noise pollution because there are less cars on the road. The “Safe Latin American Children in Traffic Program” is an example of a project where a non-governmental organisation, *Fundación Gonzalo Rodríguez* (FGR), has led the way in improving the safety and mobility of school children in Argentina. Through a combination of observational studies of risky behaviours among child pedestrians and infrastructural surveys using the iRAP Star Rating for Schools app in five cities in Argentina, FGR identified that a large proportion of children walked to school and exhibited risk-taking behaviours such as not using the designated crosswalks or crossing mid-block. As a result of effective advocacy and dissemination of these findings among the key stakeholders, the program actively garnered strong commitment from the local authorities to prioritize child road safety in the public agenda and resulted in the undertaking of infrastructural modifications in the cities.⁵¹

These heterogeneous relationships between income and active transport reveal the importance of understanding local needs.

Discussion

There has been an unprecedented global change in mobility patterns since the onset of Covid-19. Latin American communities responded to limit the spread of the virus, and huge demands were placed on healthcare services and shops supplying essential services and food items. Governments restricted population movement as much as possible, limiting gatherings in public spaces and reducing public transport. These measures were effective at reducing population mobility and led to lower rates of transmission of Covid-19^{52,53} though, as noted, these policies may have other long-term consequences and benefits for transportation and road safety in the Latin America region.

As the transition to a “new normal” progresses with the lifting of restrictions and subsequent changes in the movement of people and goods, it is paramount that due attention is given

to not only reinvesting in safer, economically viable public transport systems but also in rebalancing the different modes of transport and promoting the positive gains that have been incurred as a result of reduced car dependency (in some countries) and increased safe walking and cycling. The epidemic has highlighted that it is eminently possible for cities and countries to rapidly modify or put in place new transportation policies and practices. Therefore, the time is ripe to focus these efforts on reducing road traffic injuries.

Some of the most effective responses seen in Latin America have been infrastructural and policy changes. Modifying curb space and traffic lanes by banning motor vehicles and reallocating them to non-driving activities such as walking and cycling, putting in temporary barriers using cones, gates, and other dividers have also been popular in many cities. Good examples are the Colombian city of Bogotá, which took the opportunity to expand preCovid-19 actions to promote non-motorized transport by putting in place 85 km of new bike lanes³², and the cities of Salta and Rosario in Argentina, which added 22 and 34 km respectively to their pre-existing bike lane networks.⁵⁴ The city of Buenos Aires developed a plan to add 60 km of new cycle lanes on selected avenues, which in turn required reducing speeds from 60 km/h to 50 km/h, providing safe intersections and loading and unloading zones within the design.³¹

Several countries took the opportunity to change posted speed limits or general limits within a city in order to protect vulnerable road users from road traffic collisions. The cities of Bogotá (Colombia) and Santa Fe (Argentina) opted to tackle speed firstly by adopting a default 50 km/h limit for the whole city, while latter establishing specific 30 km/h zones.⁵⁵ Yet other countries opted for incentives to encourage active transport: Peru made bicycles more affordable by releasing subsidies to foster local production of cheap bicycles for the broader population.

The impact of all these changes on road safety has been documented in many cities, but the co-benefits have been less conspicuous. The global community, however, is paying more attention to the issue: the Stockholm Declaration, for example, encourages countries to “speed up the shift toward safer, cleaner, more energy efficient and affordable modes of transport and promote higher levels of physical activity such as walking and cycling, as well as integrating these modes with the use of public transport to achieve sustainability”⁵⁶ while the 6th UN Road Safety Week (17–23 May, 2021) called for ‘Streets for Life’ by encouraging cities to put in place 30 km/h speed zones in areas where there is potential for conflict with vulnerable road users.⁵⁷

Conclusion

The Covid-19 pandemic offers an unlikely opportunity to advance a range of UN sustainable development goals related to the transport sector: SDG 1 on ending poverty, SDG 3 on ensuring healthy lives and wellbeing –including the reduction of road traffic deaths by 50% by 2030–, SDG 8 on productive employment and decent work for all, SDG 9 on infrastructure, SDG 10 on reduced inequalities, and SDG 11 on making cities inclusive, safe, resilient and sustainable. Several cities around the world have growing interest in active transport, enhancing the wellbeing of its citizens. Active modes offer the most value

for investment, and their diversity enables the social distancing, a challenge with public transport.

However, quantified case studies are needed to attain a comprehensive understanding of the impact and challenges of active transport in context. The connections between active transportation and health are complex and go beyond what is usually conceived by decision makers and the general public. Often those missing links end up overshadowing the needs for specific subpopulations. Researching behavioural effects of temporary infrastructure projects will be of importance, considering social inclusion and gender equality.

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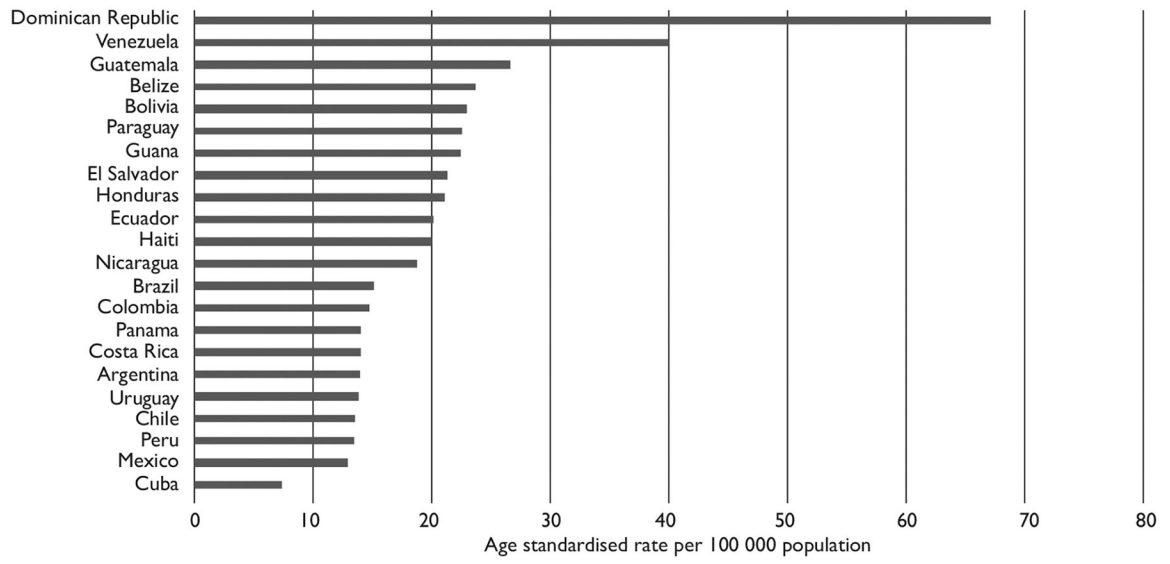


Figure 1. Age-standardized road traffic death rates in Latin American countries, 2019
Source: Reference 16

Table 1

Laws and policies which encourage walking and cycling in Latin America, 2016

Country	National speed law	Law can be modified	Urban speed limit	Enforcement (out of 10)	Walking & Cycling policies
Argentina	Yes	Yes	60 km/h	5	Yes
Belize	Yes	No	~ 40 km/h	4	No
Bolivia	Yes	Yes	40 km/h	3	Subnational
Brazil	Yes	Yes	80 km/h	6	Yes
Chile	Yes	Yes	60 km/h	5	Subnational
Colombia	Yes	Yes	80 km/h	5	No
Costa Rica	Yes	No	50 km/h	4	Subnational
Cuba	Yes	No	50 km/h	7	No
Dominican Republic	Yes	No	60 km/h	6	Yes
Ecuador	Yes	Yes	60 km/h	7	Yes
El Salvador	Yes	No	50 km/h	6	Yes
Guatemala	Yes	Yes	60 km/h	4	Subnational
Honduras	Yes	No	–	6	No
Mexico	Yes*	Yes	20–70 km/h	4	Yes
Panama	Yes	No	80 km/h	4	Subnational
Paraguay	Yes	Yes	50 km/h	4	Subnational
Peru	Yes	Yes	60 km/h	1	Yes
Uruguay	Yes	Yes	45 km/h	6	Yes
Venezuela	No	No	–	–	No

* Mexico does not have a national law per se but >80% of States do have a speed law

Source: Modified from reference 19