



INFANT MORTALITY IN LATIN AMERICAN CITIES

Data from the SALURBAL Project

Infant mortality is an indicator of “whether the society’s social, political, economic structures, and health systems enable children to complete their first year of life.” [27]

Infant mortality reveals the level of social development of a community, as it indicates whether that community has access to adequate healthcare, nutrition, sanitation, and social protections. Rates of infant mortality in Latin America have steadily declined over the past century, similar to other regions in the global south. However, data from the region reveal important inequities in urban infant mortality. Urban environmental characteristics that differ across neighborhoods, cities, and countries can have an important impact on rates of infant mortality.

This data brief describes how the Salud Urbana en América Latina (“Urban Health in Latin America”) project (SALURBAL) is using data to describe patterns of infant mortality across Latin American cities and understand what characteristics of urban environments may be contributing to inequities in infant mortality.

SALURBAL’S infant mortality data

SALURBAL has compiled and harmonized infant mortality data for 366 cities with 100,000 residents or more in 10 countries. The data includes a) age, sex, and home address of the infant, b) underlying causes of death, and c) maternal and birth characteristics. The project has also gathered data on live births.


See “[Data in the SALURBAL Project](#)” for more information on city selection, geographic definition, and data sources.

Key Messages



There is significant variability in infant mortality rates across Latin American cities, both within countries and between countries.

Cities where residents have access to good quality housing, education through age 17 for both boys and girls, mass transit, services such as piped water and sewage connections, and where women are more empowered tend to have better rates of infant survival.



INFANT MORTALITY

What is infant mortality?

Infant mortality is the death of an infant during the first year of life[1]. The infant mortality rate (IMR) refers to the number of infants that die during their first year of life for every 1,000 live births.

Why is infant mortality important?

A country or city's infant mortality rate is an important indicator of health and social development. It reflects living conditions, access to healthcare and other services, and social protections. These conditions mirror society's recognition and protection of the most fundamental human right: the right to life and health[2].

What is the current state of infant mortality globally?

Worldwide, infant mortality has fallen significantly since the 1950s. These improvements occurred due to global investments in cost-effective interventions such as:

SOCIAL ENVIRONMENT

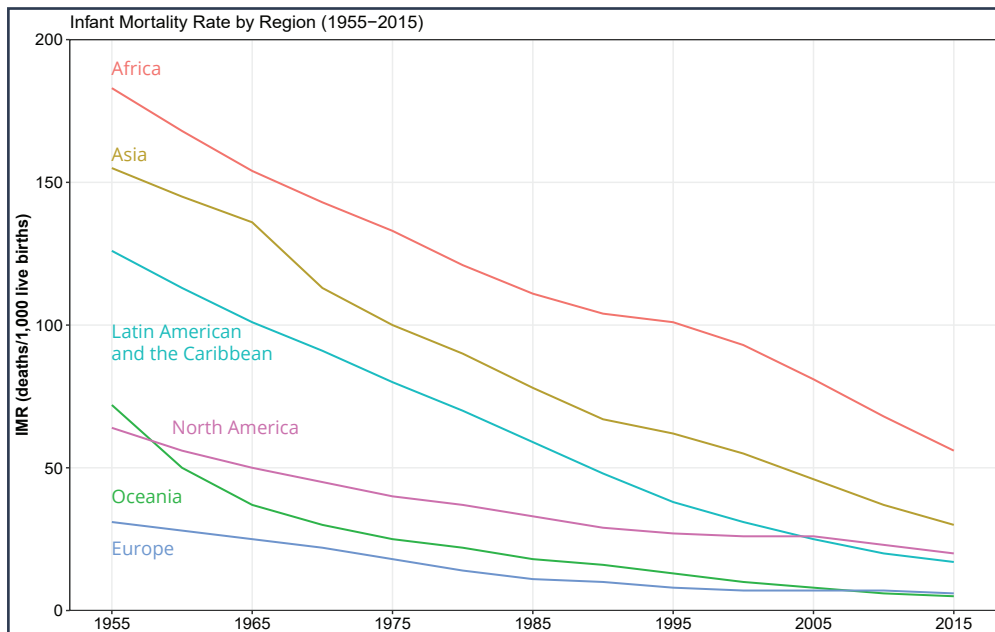
- Improved access to clean water and sanitation
- Breastfeeding education for mothers and families
- Overall improvements in living conditions
- Improvements in girls' and women's access to education

PRE-NATAL CARE AND BIRTH

- Births supported by skilled health professionals

INFANT HEALTH

- Pre- and post-birth healthcare for women
- Vaccine delivery during the first year of life
- Nutritional supplements
- Oral rehydration therapy for infant and childhood diarrhea



Source: Health Nutrition and Population Statistics. World Bank Data

Despite this progress, 4.1 million infant deaths occurred in 2017 globally, around 152,000[3] of which occurred in Latin America[4]. Many of these deaths are avoidable, caused by vaccine-preventable diseases, infectious disease occurring due to lack of access to hygiene and sanitation, lack of access to appropriate care during pregnancy and birth, and lack of access to appropriate medical treatments such as antibiotics.

Between 1955 and 2005, infant mortality in Latin America steadily declined, but since 2005, reductions in preventable infant deaths have stalled [5]. Additionally, this regional statistic hides high rates of infant mortality within countries and in some cities in the region.

The **World Health Organization** lists the three major causes of preventable infant deaths worldwide [6] as:



Infection-related deaths
Linked to adequate access to sanitation, hygiene, vaccines, and antibiotics

36%



Pre-term birth-related deaths
Linked to maternal health and well-being

28%



Birth asphyxia
Linked to access to adequate healthcare during birth

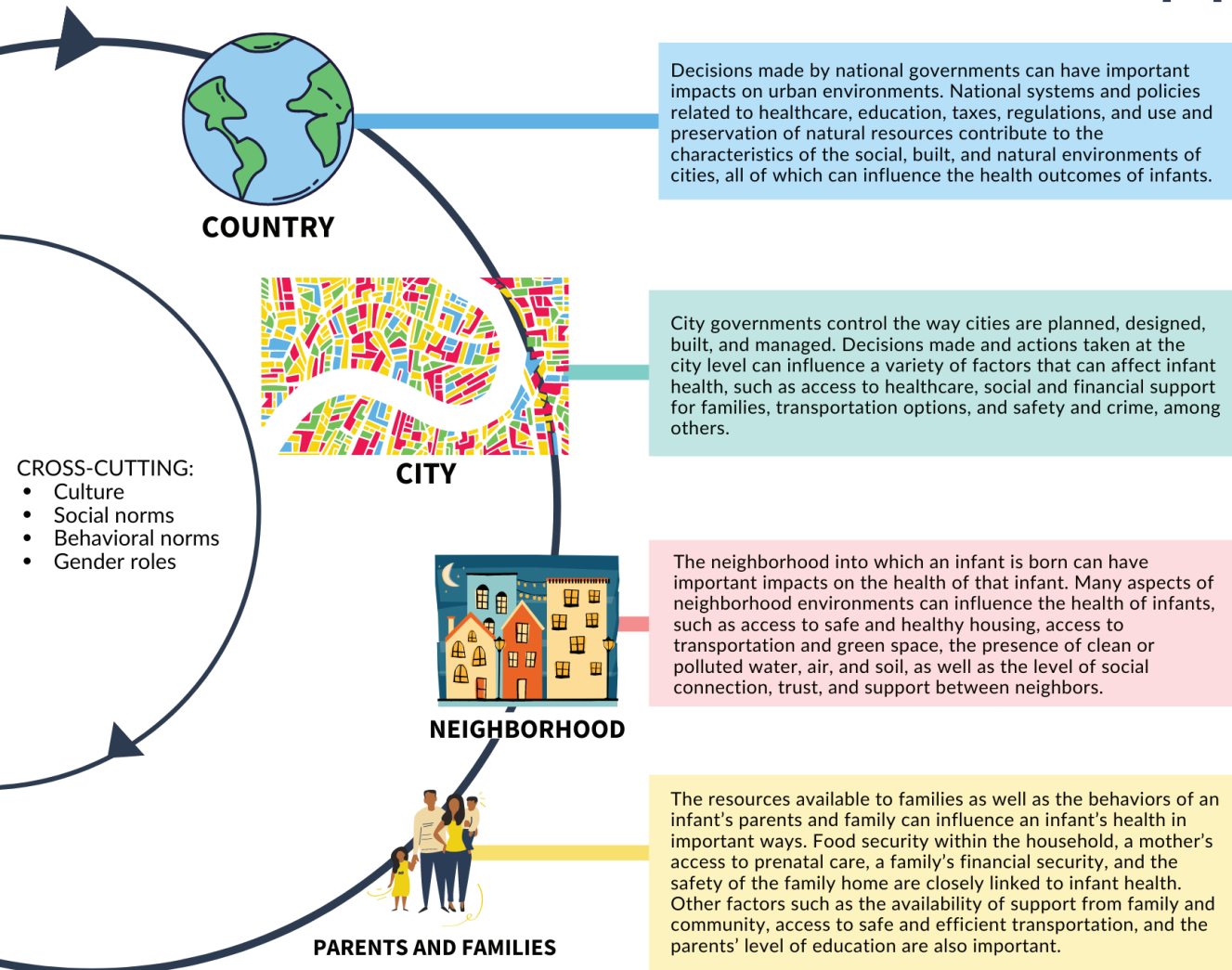
23%

Urban environments and infant health in Latin America

Urbanization in Latin America has brought greater economic opportunities and more access to services, which have led to improvements in population health overall[7,8]. Urban environments can have profound effects on infant health. While cities can provide access to economic opportunities, education, and healthcare, urban living can also negatively affect infant health.

Accelerated urbanization in Latin America has resulted in rapid expansion of many cities without adequate urban planning[9]. Increased reliance on automobile transportation has led to higher levels of pollution[10,11,12] which is linked to premature birth, higher rates of illness among infants, and higher rates of infant mortality[13]. Additionally, almost 20% of the Latin American urban population lives in inadequate and unhealthy housing, which can be harmful for infant health[14].

HOW URBAN ENVIRONMENTS CAN AFFECT INFANT HEALTH [15]

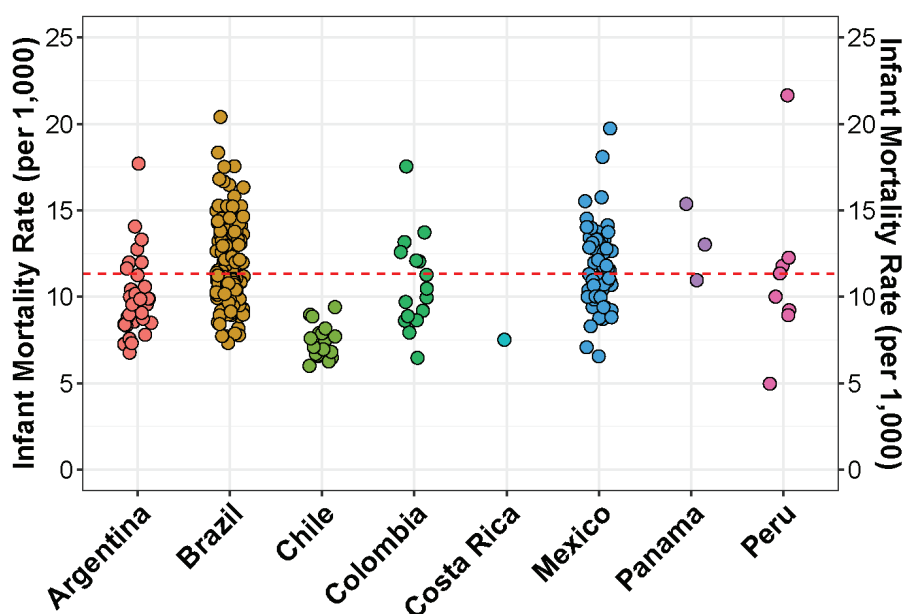


SALURBAL RESEARCH: Infant mortality in Latin American cities

To better understand what features of Latin American cities are related to high or low levels of infant mortality, SALURBAL analyzed data for 286 cities from 2014-2018 in eight countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and Panama[16].

Among the cities included in SALURBAL analyses, the average IMR was 11.2 deaths per 1,000 live births. However, researchers found wide variability in IMR between cities and countries. The country-level average IMR in cities included in these analyses ranged from 7.3 in Chilean cities, to 13.1 in cities in Panama.

Although there were differences across countries, there was also evidence of substantial variability across cities within the same country: almost 57% of the total variability in IMR across cities was within countries. This means that children born in different cities within a single Latin American country may have very different chances of surviving to their first birthday. In some cases, differences between cities within a single country are larger than differences observed when comparing countries.



Each dot represents the infant mortality rate for one city. The red dotted line indicates the average IMR across all cities included in the study, which was 11.2 deaths per 1,000 live births.

Researchers found that **lower IMR was associated with urban environments** where:



A higher proportion of the population experiences adequate living conditions.

ADEQUATE LIVING CONDITIONS

- Access to piped water from any source inside homes.
- No overcrowding within homes. Overcrowding is characterized by more than 3 people per room.
- High adolescent (15-17 years) school attendance.



A higher proportion of the population experiences adequate municipal provision of services.

ADEQUATE MUNICIPAL SERVICE PROVISION

- Households have piped water connected to a municipal water network.
- Households have sewage systems connected to a municipal sewage network.






City residents have access to bus rapid transit and/or a subway system.

These results show that better living conditions and adequate access to services are likely to be important factors for improving infant health and survival in urban environments in Latin America.

WOMEN'S EMPOWERMENT AND INFANT MORTALITY IN LATIN AMERICAN CITIES

Improving women's status and participation in society through increased education, increased financial decision-making power, and increased political participation creates benefits for both women and their communities. These benefits can also contribute to lower levels of infant mortality.

	Aspect of women's empowerment	Outcomes that influence infant mortality
	Adolescent girls stay in school through their teen years	- Fewer adolescent pregnancies[17] - Increased skill and ability among women to care for newborns, infants, and children if they do get pregnant later in life[18]
	Women have financial decision-making power	- More money spent on child health, nutrition, and care[19] - Fewer children born to each woman on average[20]
	More women participate in political decision-making	- Increased population-level education[21] - Enhanced child welfare [22] - More policies implemented that benefit gender equity, development, sustainable peace, and good governance [23]

Research has shown that the presence of a higher proportion of empowered women, even those that are not necessarily mothers, is linked to lower infant mortality[24]. Strategies to increase women's empowerment can therefore provide opportunities to reduce infant mortality.

SALURBAL research on women's empowerment and infant mortality in Latin American cities

SALURBAL researchers developed the first study that investigates associations of women's empowerment with infant mortality across a large number of cities in Latin America [25].

Researchers used data from 286 cities with 100,000 inhabitants or more in eight countries in Latin America (Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and Panama). Researchers examined whether women's level of educational attainment, the proportion of women participating in the labor force, and the degree to which countries have and enforce laws supporting women's rights, are associated with a city's IMR.

The SALURBAL study showed that:

- A higher proportion of women participating in the labor force was associated with lower infant mortality in Latin American cities, regardless of the level of healthcare access or socioeconomic conditions of infants in the cities.
- Higher levels of enforcement of laws related to women's rights at the national level were also associated with lower rates of infant mortality in Latin American cities.

These findings support the development and implementation of laws, policies, and programs that foster women's empowerment as a strategy to improve child wellness and child survival in urban areas of Latin America.



SALURBAL researchers conducted a study focused on Brazilian municipalities, investigating whether political representation of women in elected offices as mayors, state or federal legislators was associated with infant mortality [26]. Researchers used data from Brazilian municipalities from the years 2000 to 2015.

The study showed that reductions in municipal infant mortality over time were associated with:

- The election of a woman as mayor of the municipality.
- Increases in the proportion of women elected to state chambers of deputies to 20% or more.
- Increases in the proportion of women elected to the federal chamber of deputies to 10% or more.

Researchers found that this association is likely linked to efforts made by these elected officials to expand access to primary health care and conditional cash transfer programs within their municipalities.

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Salud Urbana en América Latina (SALURBAL), Urban Health in Latin America, is a five-year project that studies how urban environments and urban policies impact the health of city residents throughout Latin America. SALURBAL's findings inform policies and interventions to create healthier, more equitable, and more sustainable cities worldwide. SALURBAL is funded by the Wellcome Trust.



The Urban Health Network for Latin America and the Caribbean (LAC-Urban Health) seeks to promote regional and multisectoral collaboration in order to generate evidence on the drivers of urban health and health equity and translate this evidence into policies to improve health across cities in Latin America and the Caribbean.

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