

# Data in the SALURBAL Project

*This brief presents an overview of SALURBAL’s approach to creating a multi-country dataset enabling policy-relevant research on the drivers of health and health inequities in Latin American cities.*

One of SALURBAL’s main aims is to study the impact of the physical and social features of urban environments on health and health inequities. We are interested in understanding how cities and neighborhoods differ in terms of health and to what extent different factors contribute to these differences. To this end, the project is developing a dataset that allows for comparisons of cities and neighborhoods within cities. SALURBAL researchers will use this data to identify factors that influence health and health inequities with the end goal of proposing interventions and policies that improve urban health.

## The Dataset

The SALURBAL dataset covers a total of 371 cities with 100,000 or more inhabitants (according to 2010 census estimates) in eleven Latin American countries. These cities were identified and defined using various databases and a practical and systematic protocol. Urban subdivisions were also defined to enable comparisons of neighborhoods and sectors within a city. A common terminology based on “levels” was defined to better describe the cities and their components, as follows:

### Level 1: “City”

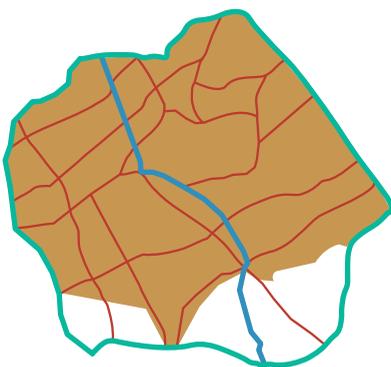
This level refers to urban agglomerations. While some only include a single municipality, others include various jurisdictions (e.g. Greater Bogotá). The “cities” or Level 1 units can be defined in various ways: as a collection of municipalities or similar units (L1AD), based on country-specific designations of metropolitan areas (L1MA), or based on the built-up area (or urban extent) identified using satellite and quantitative methods (L1UX).

### Level 2: “Subcity”

These units are defined by the smaller administrative areas (e.g. municipio, comuna, distrito) that compose Level 1 cities.

### Level 3: “Neighborhood”

These are the smallest units for which data is available, defined by the censuses of each country (e.g. census tract, sector censal).



**Example of a hypothetical city.** The green line represents the boundaries of the city (L1AD) defined as a collection of two Level 2 units (municipalities separated by the blue line). In turn, the municipalities are divided into neighborhoods (L3) indicated by the red lines. The orange fill represents the city as defined by the urban extent (L1UX), which will not always coincide with the city defined by a collection of Level 2 units (L1AD).

SALURBAL cities and definitions of level 2 and 3 units by country			
Country	Cities	Level 2 Unit	Level 3 Unit <sup>b</sup>
Argentina	33	Departamento/Partido/Comuna <sup>a</sup>	Radio Censal
Brazil	152	Municípios	Setor Censitário
Chile	21	Comuna	Zona Censal
Colombia	35	Municipio	Sector Urbano
Costa Rica	1	Canton	Unidad Geoestadística Mínima
El Salvador	3	Municipio	Sector Censal
Guatemala	3	Municipio	Sector Censal
Mexico	92	Area Geoestadística Municipal	Area Geoestadística Basica
Nicaragua	5	Municipio	Sector Censal
Panama	3	Corregimiento	Barrio
Peru	23	Distrito	Zona Censal

<sup>a</sup> Comunas in City of B.A., Partidos Province of B.A., Departamentos elsewhere. <sup>b</sup> As defined for country-designated urban areas.

## Where do SALURBAL data come from?

We collect data from existing sources in each country, including vital statistics, population records, surveys, maps and satellite images, and other sources. In most cases, data requires harmonization to maximize comparability between cities and between countries. To perform harmonization the research team uses international standards and protocols used in other studies whenever possible.

## What types of data are included?

SALURBAL data encompass five main domains: 1) demographic characteristics, 2) mortality, 3) self-reported or measured health, behaviors, and risk factors, 4) social environment, and 5) built environment. Some – but not all – data are available at all three levels. The table below presents a list of the variables that SALURBAL is working to collect and harmonize.

The items in **bold** are still in process of compilation and harmonization.

<p><b>Demographics</b></p> <ul style="list-style-type: none"> <li>» Age</li> <li>» Sex</li> <li>» Education level</li> <li>» Marital status</li> </ul>	<p><b>Health and Risk Factors</b></p> <table border="0"> <tr> <td data-bbox="416 858 668 965"> <p>Diabetes</p> <ul style="list-style-type: none"> <li>» Diabetes</li> <li>» Treatment</li> </ul> </td> <td data-bbox="693 858 945 998"> <p>Body Measures</p> <ul style="list-style-type: none"> <li>» Height</li> <li>» Weight</li> <li>» BMI</li> </ul> </td> <td data-bbox="987 858 1256 1030"> <p>Diet &amp; Nutrition</p> <ul style="list-style-type: none"> <li>» <b>Fruit and vegetable consumption</b></li> <li>» <b>Sugary beverage consumption</b></li> </ul> </td> </tr> <tr> <td data-bbox="416 987 668 1127"> <p>Hypertension</p> <ul style="list-style-type: none"> <li>» Hypertension</li> <li>» Treatment</li> <li>» Blood pressure</li> </ul> </td> <td data-bbox="693 1019 945 1181"> <p>Physical Activity</p> <ul style="list-style-type: none"> <li>» Global</li> <li>» Transport</li> <li>» Leisure time</li> <li>» Walking</li> </ul> </td> <td data-bbox="987 1062 1256 1235"> <p>Urban Form &amp; Population</p> <ul style="list-style-type: none"> <li>» Population</li> <li>» Neighborhood centrality</li> </ul> </td> </tr> <tr> <td data-bbox="416 1149 668 1246"> <p>General Health</p> <ul style="list-style-type: none"> <li>» General health status</li> </ul> </td> <td data-bbox="693 1203 945 1310"> <p>Mental Health</p> <ul style="list-style-type: none"> <li>» Depressive symptoms</li> </ul> </td> <td data-bbox="987 1256 1256 1429"> <p>Urban Landscape</p> <ul style="list-style-type: none"> <li>» Area</li> <li>» Shape</li> <li>» Fragmentation</li> <li>» Isolation</li> </ul> </td> </tr> </table>			<p>Diabetes</p> <ul style="list-style-type: none"> <li>» Diabetes</li> <li>» Treatment</li> </ul>	<p>Body Measures</p> <ul style="list-style-type: none"> <li>» Height</li> <li>» Weight</li> <li>» BMI</li> </ul>	<p>Diet &amp; Nutrition</p> <ul style="list-style-type: none"> <li>» <b>Fruit and vegetable consumption</b></li> <li>» <b>Sugary beverage consumption</b></li> </ul>	<p>Hypertension</p> <ul style="list-style-type: none"> <li>» Hypertension</li> <li>» Treatment</li> <li>» Blood pressure</li> </ul>	<p>Physical Activity</p> <ul style="list-style-type: none"> <li>» Global</li> <li>» Transport</li> <li>» Leisure time</li> <li>» Walking</li> </ul>	<p>Urban Form &amp; Population</p> <ul style="list-style-type: none"> <li>» Population</li> <li>» Neighborhood centrality</li> </ul>	<p>General Health</p> <ul style="list-style-type: none"> <li>» General health status</li> </ul>	<p>Mental Health</p> <ul style="list-style-type: none"> <li>» Depressive symptoms</li> </ul>	<p>Urban Landscape</p> <ul style="list-style-type: none"> <li>» Area</li> <li>» Shape</li> <li>» Fragmentation</li> <li>» Isolation</li> </ul>	<p><b>Built Environment</b></p> <p>Street Design &amp; Connectivity</p> <ul style="list-style-type: none"> <li>» Street density</li> <li>» Intersection density</li> <li>» Street network and length structure</li> </ul> <p>Transportation</p> <ul style="list-style-type: none"> <li>» Bus rapid transit</li> <li>» Metro, light rail, and/ or elevated train</li> <li>» Aerial tram</li> <li>» Bicycle facilities</li> <li>» Urban travel delay index</li> <li>» Gasoline price</li> </ul> <p>Air Pollution &amp; Green Spaces</p> <ul style="list-style-type: none"> <li>» Parks and green space</li> <li>» <b>PM10, SO4, O3</b></li> <li>» PM2.5, NOx</li> </ul> <p>Food Environment</p> <ul style="list-style-type: none"> <li>» <b>Density of chain supermarkets</b></li> <li>» <b>Density of chain convenience stores</b></li> </ul>
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<p><b>Mortality</b></p> <p>General</p> <ul style="list-style-type: none"> <li>» Cause-specific mortality</li> <li>» Life expectancy</li> </ul> <p>Infant and Child</p> <ul style="list-style-type: none"> <li>» Infant mortality</li> <li>» Neonatal and post-neonatal mortality</li> <li>» Mortality of children under 5 years of age</li> </ul>	<p><b>Social Environment</b></p> <table border="0"> <tr> <td data-bbox="416 1526 685 1731"> <p>Education</p> <ul style="list-style-type: none"> <li>» 15-17 years old in school</li> <li>» Adults with secondary education or more</li> </ul> </td> <td data-bbox="693 1526 962 1666"> <p>Violence &amp; Disorder</p> <ul style="list-style-type: none"> <li>» Violent deaths</li> <li>» <b>Crime and safety</b></li> <li>» <b>Social disorder</b></li> </ul> </td> <td data-bbox="987 1526 1256 1666"> <p>Informal Settlements</p> <ul style="list-style-type: none"> <li>» Water connection</li> <li>» Sewage connection</li> <li>» Overcrowding</li> </ul> </td> </tr> <tr> <td data-bbox="416 1752 685 1989"> <p>Gender Empowerment</p> <ul style="list-style-type: none"> <li>» Female labor force participation</li> <li>» <b>Female government participation</b></li> </ul> </td> <td data-bbox="693 1688 962 2020"> <p>Social Cohesion &amp; Social Capital</p> <ul style="list-style-type: none"> <li>» <b>Election participation</b></li> <li>» <b>Community organization membership</b></li> <li>» <b>Neighborhood connectedness</b></li> <li>» <b>Discrimination</b></li> </ul> </td> <td data-bbox="987 1688 1256 1882"> <p>Government, Institutional &amp; Organizational</p> <ul style="list-style-type: none"> <li>» <b>Governance</b></li> <li>» <b>Social services &amp; health care</b></li> </ul> </td> </tr> </table> <p>Poverty, Income, &amp; Inequality</p> <ul style="list-style-type: none"> <li>» Poverty</li> <li>» Income-based GINI Index</li> </ul> <p>Employment</p> <ul style="list-style-type: none"> <li>» Unemployment</li> <li>» Labor force participation</li> </ul>			<p>Education</p> <ul style="list-style-type: none"> <li>» 15-17 years old in school</li> <li>» Adults with secondary education or more</li> </ul>	<p>Violence &amp; Disorder</p> <ul style="list-style-type: none"> <li>» Violent deaths</li> <li>» <b>Crime and safety</b></li> <li>» <b>Social disorder</b></li> </ul>	<p>Informal Settlements</p> <ul style="list-style-type: none"> <li>» Water connection</li> <li>» Sewage connection</li> <li>» Overcrowding</li> </ul>	<p>Gender Empowerment</p> <ul style="list-style-type: none"> <li>» Female labor force participation</li> <li>» <b>Female government participation</b></li> </ul>	<p>Social Cohesion &amp; Social Capital</p> <ul style="list-style-type: none"> <li>» <b>Election participation</b></li> <li>» <b>Community organization membership</b></li> <li>» <b>Neighborhood connectedness</b></li> <li>» <b>Discrimination</b></li> </ul>	<p>Government, Institutional &amp; Organizational</p> <ul style="list-style-type: none"> <li>» <b>Governance</b></li> <li>» <b>Social services &amp; health care</b></li> </ul>				
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# Uses of Data

Data are being used to describe differences in health between cities and between neighborhoods within them. Data will be used to explore relationships between social and physical characteristics of urban environments and health and the contributions of these factors to health inequities. Trends and changes over time will also be investigated, as well as the factors related to these changes. Where feasible, data will also inform evaluations of the health impacts of diverse urban policies and interventions.

## Example Studies Underway

- » Income Disparities in Access to Mass Transit and Bicycle Infrastructure in Six Latin American Cities
- » Variation in Mortality and in Social Inequalities in Mortality Across Latin American Cities
- » Air Pollution in Latin American Cities: Levels, Trends, Population Exposure and Inequalities
- » Road Traffic Mortality in Latin American Cities with >100,000 Inhabitants: Individual and Area-Level Determinants

## What can (and can't) this data tell us?

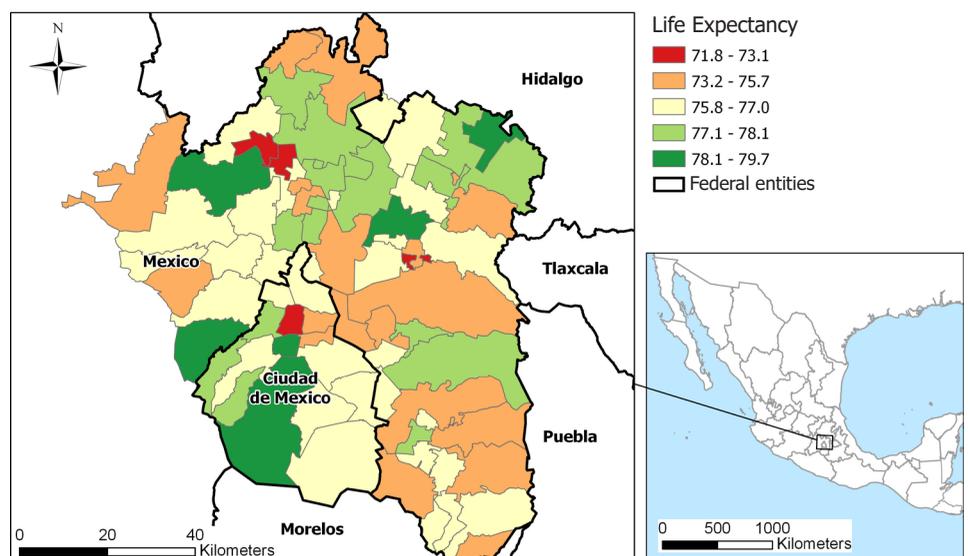
Analyses using SALURBAL data can reveal important associations between distinct characteristics of the urban environment and health (e.g., how the built urban environment and the availability of green space is associated with prevalence of physical activity and health outcomes such as diabetes). We can study the impact of individual-level factors, neighborhood factors and city factors. We can also study, for example, what characteristics of cities are associated with larger or smaller health inequalities. In some cases, data can be used to evaluate the health impacts of actions implemented by cities, such as new transportation initiatives, the redevelopment of certain neighborhoods, new taxes on food, or other actions.

Because of the way it was collected, data cannot always be used to estimate prevalences or other indicators for a specific neighborhood or city. The availability and quality of data is heterogeneous. The availability of data over time is also variable. In many cases, certain indicators only have one or two data points available over an extended period of time. It can be difficult to draw casual conclusions from some analyses.

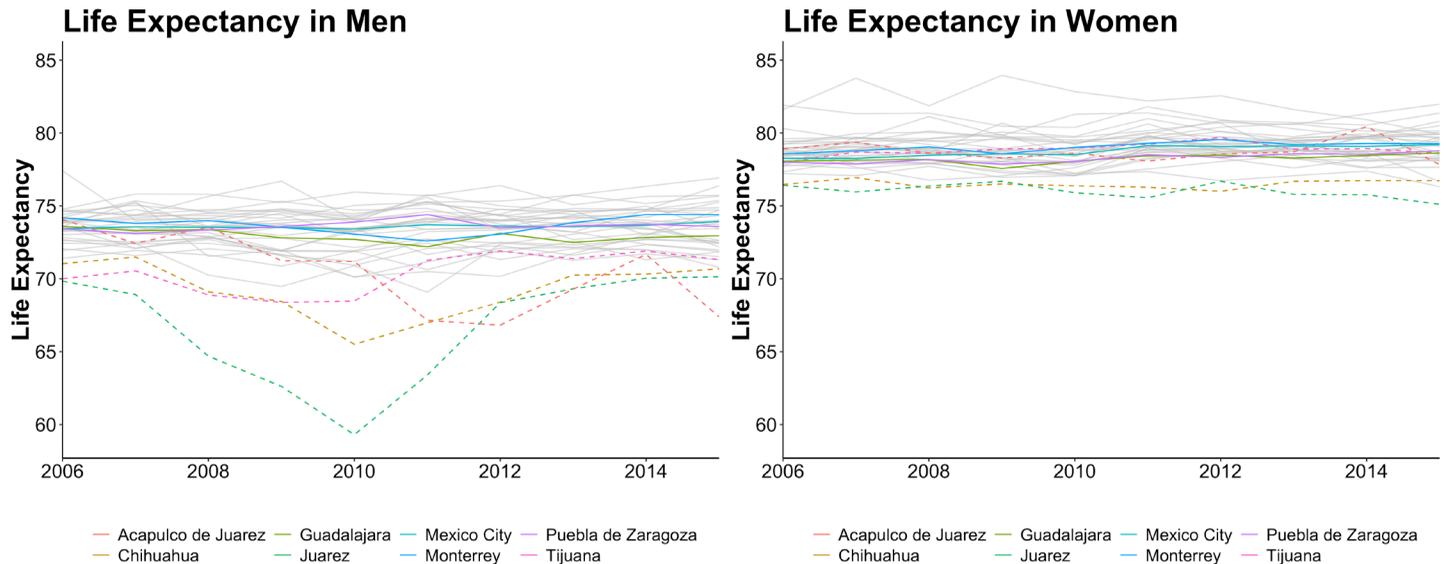
Nevertheless, analyses using SALURBAL data can point to important differences and inequities that exist and show how health and health inequities relate to characteristics of urban environments. Governments and various social actors can use this knowledge to justify, promote, and design policies and interventions that improve health in the region's cities. Furthermore, we hope that the availability of these data promotes their use to evaluate future policies and interventions.

## In Practice: Mexican Cities

### Differences in Life expectancy in Municipalities of the Mexico City Metropolitan Area (2011-15)



## Differences between cities and change over over time



Upon project completion, data will be made publicly available to the extent allowed by law.

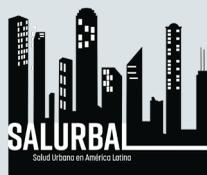
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The Urban Health Network for Latin America and the Caribbean (LAC-Urban Health) seeks to promote regional and multisectoral collaboration in order to generate evidence on the drivers of urban health and health equity and translate this evidence into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

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. Our objective is to create cities that are healthier, more equitable, and environmentally sustainable. SALURBAL is funded by the Wellcome Trust.

Learn more about LAC-Urban Health and SALURBAL