Access to Health Services

Indore Journey Map Series 2018-2021

About This Series

Building Healthy Cities (BHC) is a USAID-funded learning project in four Smart Cities in Asia – Indore, India; Makassar, Indonesia; Da Nang, Vietnam; and Kathmandu, Nepal. BHC is testing how to successfully apply urban planning approaches that improve the social determinants of health in complex systems.

BHC uses exploratory data collection, multisectoral engagement, and citizen participation. This systems approach informs project activities and the prioritization of city-funded workplans. The combined impact should improve the lives of all residents in these three cities and reduce preventable mortality.

BHC is using several tools and processes to create coalitions and organize its approach in each city. One key process is systems mapping to illustrate the key dynamics (patterns underlying problems) and define key entry (or ‘leverage’) points to address social and environmental determinants of health. Another way that BHC is documenting citizen experiences in each city is through Journey Maps.

The Journey Maps apply ‘design thinking’ approaches, which are often used to tailor products to intended customers; citizens are like customers in that they pay taxes or fees to use city services. BHC has adapted this tool to document the experience (or ‘journey’) of citizens who are trying to overcome one service issue in each city, over time, updated on a quarterly basis. The specific topics were identified during the first year of activities in each city and fit within the larger context shown in the systems maps. BHC is using these Journey Maps to track citizen and city official perspectives, and to document change at the neighborhood level.

BHC is training people in each neighborhood to develop and use these Journey Maps and on grassroots advocacy techniques. By bringing the citizen experience directly to city planners, BHC hopes to better align municipal planning with community priorities such as safe water, clean air, hygiene, traffic safety, and other key components of healthy urban living.

Life of Project Journey Map Summary

BHC is concluding the Journey Maps in 2021. This process brought insights into day-to-day service availability for Indore residents, and created a regular dialogue with the community and city offices about the causes, consequences, and potential solutions to persistent urban health-related issues. Air quality was a major focus for the Smart City Mission over the course of this 3-year map. BHC procured, installed, and calibrated low-cost air quality sensors to collect data at the neighborhood level. BHC also recruited and trained neighborhood residents to be Clean Air Guides, who collect qualitative data on behaviors that cause air pollution. Pairing these two data sources allows neighborhood residents to target and decrease specific causes of air pollution. BHC also integrated this data into the Smart City Integrated Command & Control Center, making it available to the public and decision-makers.
Indore Journey Map #4 – Air Pollution

**YEAR 2** Air pollution levels have decreased in Indore since 2015, in part due to initiatives such as Swachh Bharat that focus on improving the environment. Indore Smart City Development Limited has also made reduction of air pollution a priority. Specific initiatives have included mechanical street sweeping to decrease dust, free left loop roads to reduce traffic congestion at key intersections, and improved solid waste collection and disposal to reduce household burning of trash. As a result of these combined efforts, Indore was declared India’s cleanest city in both 2017 and 2018. However, during interviews conducted for BHC’s 2017-2018 Health Needs Assessment, citizens did not mention air pollution as a barrier to healthy living. BHC has followed this issue and its impact on healthy living over time in Indore, monitoring changes in citizen knowledge around the effects of air pollution on health, and the city’s continued efforts to improve air quality.

**ACTION:** Large screens displaying current pollution data were installed in 3 new locations — Pataki Square, Rajeev Gandhi Square, and the airport.

"Reduction in air pollution is visible through the efforts made by IMC under Swachh Bharat Mission."
— IMC Commissioner, Dec. 2018

"Government has to share data of air pollution with us so that we can understand the level of pollution in our area."
— Resident, Dec. 2018

"Area is clean and regular sweeping has been done by the IMC but river near industrial area needs to be clean."
— Resident, Dec. 2018

There are only 3 air pollution measurement stations in the city.

**ACTION:** Three additional air pollution measurement stations are now fully functional and data are now available.

"Our industrial area is green so we are not finding any major air pollution concern. A display is also installed by pollution control board. It is useful that we can see levels of air pollution of our area."
— Traveler in Industrial Area

"We are maintaining this station and as per your suggestion we would call our technician to provide maintenance service regularly for accurate data."
— IPCA Laboratory Staff, June 2019

"Now Indore is on a good pace of development. We are number one in cleanliness and now we would be number one in all parameters. Thanks to administrators of Indore."
— Traveler

"We want to capture air pollution data from places where no permanent air pollution measuring station is located through low cost sensors linked with Integrated Command & Control Center (ICCC) for better policy making for the city."
— Ms. Aditi Garg, CEO, GCCL

"I have seen few display board that showing air pollution but I live in Sudama Nagar and no display screen installed there. I am interested to see data near my residence."
— Traveler

**ACTION:** Display boards now include public awareness information such as health effects of pollution.

In an interview with a person from the Madhya Pradesh Pollution Control Board, it was recommended that BHC support conducting a source apportionment study to assess source-wise contributions from industries, vehicles, households, road dust, construction sites, brick kilns, etc. These data will be useful to identify targeted interventions to further reduce air pollution in the city. The idea of using low cost sensors to get more information about levels of pollutants at strategic locations of Indore was appealing. However, authorization for the use of those sensors would need to be given by the Central Pollution Control Board, New Delhi.

**ACTION:** Three additional air pollution measurement stations are now fully functional and data are now available.

"We are not fully aware the permissible limits and norms of different indicators of pollution data. It would be useful if we can see the level of pollution of our city currently. It is not there."
— Traveler in Pataki Square

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“Due to COVID-19 pandemic, less number of vehicles are on the roads so vehicular emission is very low. I am working in a chartered accountant firm and I am going to office on alternate days.” — Traveler, Sept. 2020

“Due to lockdown, emission of gases is very low and emissions from traffic and industries is almost zero in the city. In the River Khan and Saraswati, oxygen levels rose to 5 from almost zero. The quality of bodies of water in Indore has improved. Noise pollution has also reduced during this period, and a decrease in temperature due to increased greenery has been noted. Normally the temperature rises to 46 degrees however it has not crossed 42 degrees yet. The increased greenery has been noted. Normally the temperature rises to 46 degrees however it has not crossed 42 degrees yet. The increased greenery has been noted. Normally the temperature rises to 46 degrees however it has not crossed 42 degrees yet. The increased greenery has been noted. Normally the temperature rises to 46 degrees however it has not crossed 42 degrees yet. The increased greenery has been noted. Normally the temperature rises to 46 degrees however it has not crossed 42 degrees yet. 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ACTION: A new low-cost air sensor was installed at the Smart City office.

“Now a days we are using masks while driving, as we are safe from air pollution also. Display boards are showing that air quality is bad, may be because of huge number of vehicles on the road.” — Traveler, Dec. 2020

ACTION: Low-cost air sensors were moved to their final locations. IMC raised funds for outdoor air pollution controllers in major squares.

“Now most of the times we are using masks while driving, we can also see the level of air pollution on the display boards.” — Traveler, March 2021

ACTION: PM2.5 and PM10 air pollution levels decreased dramatically during the COVID-19 lockdown in April-June 2021.

“Due to COVID restrictions, industrial activities and vehicular emission were less and it is visible in data also. MPPCB is continuously following the city action plan to reduce air pollution.” — MPPCB, June 2021

DATA POINT: Change in PM10 and PM2.5 levels in Chhoti Gwaltoli, Indore, April-June 2021.

“Due to COVID lockdown levels of air pollution in the city seems lower as we can see the clear sky and less dust in the environment. During this period we saw more birds flying in the sky and we felt that nature has its own balance system.” — Traveler, June 2021

“Now the road dust is very low due to rain and the clean India mission initiatives by the IMC. We are observing many more plants growing near road sides.” — Mr. Rishav Gupta, CEO Smart City, Sept. 2021

ACTION: BHC integrated data from low-cost air quality sensors into Smart City’s Integrated Command & Control Center (ICCC).

“This system is the brain of our city and we can do lot with the help of this ICCC. Data of air pollution is now integrated and that will be very useful for the city and administrators like us to take appropriate action to control air pollution in the city.” — Mr. Rishav Gupta, CEO Smart City, Sept. 2021

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Journey Map Summary

Air quality was a major focus for the Smart City Mission over the course of this 3-year map. BHC procured, installed, and calibrated low-cost air quality sensors to collect data at the neighborhood level. BHC also recruited and trained neighborhood residents to be Clean Air Guides, who collect qualitative data on behaviors that cause air pollution. Pairing these two data sources allows administrators like us to take appropriate action to control air pollution in the city.” — Traveler, Sept. 2021

In some neighborhoods, increased cremation rates due to COVID-19 deaths negatively impacted air quality.

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“In some neighborhoods, increased cremation rates due to COVID-19 deaths negatively impacted air quality.”

Source: MPPCB

PM10
PM2.5

0 5-Apr 5-May 100 200 5-Jun

0 5-Apr 5-May 10 200 4-Jun

BHC installed one low-cost air sensor at the Smart City office, with another 19 to follow. BHC also trained a group of Smart City interns on how to use the air sensor technology.

“City administration should work on the traffic management in the city to reduce air pollution and should also focus on plantation more trees.” — Traveler, Dec. 2020

“I have just seen this device and hope they will work properly. Indore is number one in cleanliness and IMC is doing good to keep this air pollution free.” — Traveler, March 2021

BHC installed all low-cost air sensors in their final locations after completing the calibration process. Skymet, the sensor manufacturer, developed a dashboard for community Clean Air Guides to see data for their location.

“IMC has installed these air pollution controllers but not sure that they are reducing air pollution. They should have some display screen with this device to see the levels of air pollution.” — Traveler, March 2021

IMC raised funds to install outdoor air pollution controllers (devices that absorb dust and vehicular emissions) in major squares in Indore to reduce air pollution.

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Biggest issue of Indore is traffic control and due this unorganized traffic, air pollution increases and harms our health but city government is not considering this as a big problem.” — Traveler, June 2021

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Low-cost air sensor during calibration (left) and in final location (center). Touring the ICCC during data integration testing (right).
How Does This Story Connect to the Indore Systems Map?

Loops 14 (Clean Indore) & 17 (Community Priorities)

The Clean Indore loop (14) states that when city health or environmental improvement initiatives are implemented well and begin to achieve positive outcomes, citizens experience personal improvements to their quality of life. They may also feel pride in the accomplishments of their city and want to be a part of it. As a result, they are more willing to support program efforts and adopt recommendations. When the value of a program is recognized, community participation accelerates the ability of programs to achieve their impact goals, resulting in greater recognition and success for that initiative, and therefore pride in that community. As a result, they are more willing to support program efforts and adopt recommendations.

Example: Under the Clean India Mission, effective solid waste management (collection, disposal and use in energy), better water supply, and other measures to improve the environment have led to measurable reduction in levels of air and water pollution and visibly improved sanitary conditions. BHC analyzed the annual average concentrations of sulfur dioxide, nitrogen oxides, and particulate matter (PM2.5 and PM10) from three air pollution measuring stations in Indore city during 2013-2017. A declining trend was observed in PM10 and PM 2.5 concentrations, possibly due to various measures taken by the Municipal Corporation and Indore Smart City Mission.

However, issues arise due to a lack of citizen knowledge, especially among vulnerable populations, regarding air pollution and its impact on human health. The Community Priorities loop (17) explains that when the community has a limited understanding of good health and safety practices, or these practices are not feasible in their circumstances, their demands and behaviors may not align with building a healthier community. Building a healthy city is a longer-term goal and can be trumped by short term goals like getting food to eat or being paid for work. Citizens are not prioritizing healthy and clean air because the efforts by the government have not been recognized. Without awareness raising, these communities will continue with unsustainable practices, like burning coal. In the absence of community awareness of air pollution, it is less likely that they will have the capacity to participate in community improvement efforts. Even if they can engage, they will likely have a limited understanding of what is needed to build a sustainable healthy community, and will focus their demands on short term goals.

Example: Indore has set up five ambient air quality monitoring stations at various locations. In the absence of much information about the Air Quality Index and its health implications, it might be difficult for citizens to participate in efforts to reduce air pollution and related impacts on human health in the city. This issue needs to be addressed by continuous public awareness campaigns for behavior change.