

MASTER OF PUBLIC HEALTH

A cooperative Program of

**JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH
&
INDIAN INSTITUTE OF HEALTH MANAGEMENT RESEARCH**

Capstone Project

By

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Capstone Project

On

*Examining Best Practices for alleviating the rising stress of
Urbanization on the Health and Well-being of the Urban
Populations*

By

Amrutha Anand

Under the guidance of

Dr. Barun Kanjilal

Master of Public Health

2014-16

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Amrutha Anand, a student of Master of Public Health Program offered by with Johns Hopkins Bloomberg School of Public Health, Baltimore in cooperation with the Institute of Health Management Research, Jaipur, has successfully completed her capstone project titled "Examining Best Practices for alleviating the rising stress of Urbanization on the Health and Well-being of the Urban Populations".

The student's approach to the study has been sincere, scientific and analytical. This Capstone is in fulfillment of the course requirements.

We wish her the best in all her future endeavors.



Dean, Academics and Student Affairs

IIHMR, Jaipur



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CERTIFICATE BY SCHOLAR

This is to certify that the Capstone Project titled **“Examining Best Practices for alleviating the rising stress of Urbanization on the Health and Well-being of the Urban Populations”** under the supervision of **Dr. Barun Kanjilal** for award of Master of Public Health embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.



Amrutha Anand

MPH 2014-16

Roll no. **IIHMR-JHU/MPH/2014-16/2-12**

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Abstract

The world is rapidly urbanizing. This phenomenon has brought with it heterogeneity, advancements in technology and infrastructure and huge economic developments. However, the most critical feature of this process has been the strong impacts it has on the health and wellbeing of the urban dwellers, both positive and negative. This paper aims to discuss the urbanization trend in the global and national context, leading to the process of urbanization and its impact on the health of people through an established framework, highlighting the distressing effects of urbanization the world over. Following this review, the paper presents several global 'best practices' in urban development that have been instrumental in alleviating the pressures of urbanization in several parts of the world in various resource settings. These include physical interventions, social interventions, governmental policies, public health interventions and technologies and global trends. Brief descriptions of the best practices are included in the tables. Of these, a few best practices are selected as per their relevance to the Indian scenario and discussed in detail. Lastly, the need for incorporating best practices in interventions in urban settings is highlighted and the gaps in knowledge and research are identified.

Table of Contents

Acknowledgement	1
Abstract	2
Introduction	4
Aim	4
Objectives	5
Background	5
Urbanization in India	6
Classification of Urban Centers.....	7
Impact of Urbanization on Health	9
<i>Factors which affect Urban Health</i>	10
<i>Emerging Health Risks due to Urbanization</i>	14
Benchmarks and their applicability in Healthcare.....	16
Methodology	18
Global Best Practices in Urban Settings	21
Select Case Studies relevant to the Indian setting	28
<i>Reduction in Traffic Fatalities- Bogotá, Colombia</i> ³³	29
<i>‘Progresas’- Conditional-Cash Transfer- Mexico</i> ³⁵	30
<i>Participatory Budgeting- Porto Alegre, Brazil</i> ⁴¹	31
Discussion	33
Key lessons learned	34
References	36
Appendix	41

Introduction

India and other developing countries in the world are urbanizing at such a rapid pace that by the year 2050, nearly 70% of the population of the world will reside in cities.¹ With this trend comes great economic advantage, as in the case of many developed countries reaping the benefits of establishing cities much earlier. There is scope for industries to be set up, ample opportunities for employment, and heterogeneity in the community and general elevation of the standard of living for urban residents. However, there are multiple pressures building on cities and a key aspect is the increased burden on the health of the people. For instance, the high population density and the overcrowding in cities is responsible for frequent occurrence of infectious diseases that spread rapidly and the congestion due to huge vehicular volume on the roads is contributing to air and noise pollution on the one hand and increasing the incidence of road accidents on the other. It is thus critical to alleviate the stress on the health of urban dwellers to ensure future cities are liveable and sustainable. To aid in this endeavor, several interventions or best practices from around the world can act as a guide for India and similar countries to adapt in order to develop comprehensive urban development strategies, keeping public health a high priority.

Aim

To identify global 'best practices' in policy, technology and governance that have relieved the rising stress on health and wellbeing of the populations in urban centers and to present few case studies of best practices most relevant to the Indian scenario.

Objectives

1. To describe the effects urbanization has on the health of people residing in cities through a comprehensive framework.
2. To identify 'best practices' (benchmarks) in policy, technology or governance that foster healthy living, through extensive literature review.
3. To select a few key best practices and showcase the features by means of brief case studies.

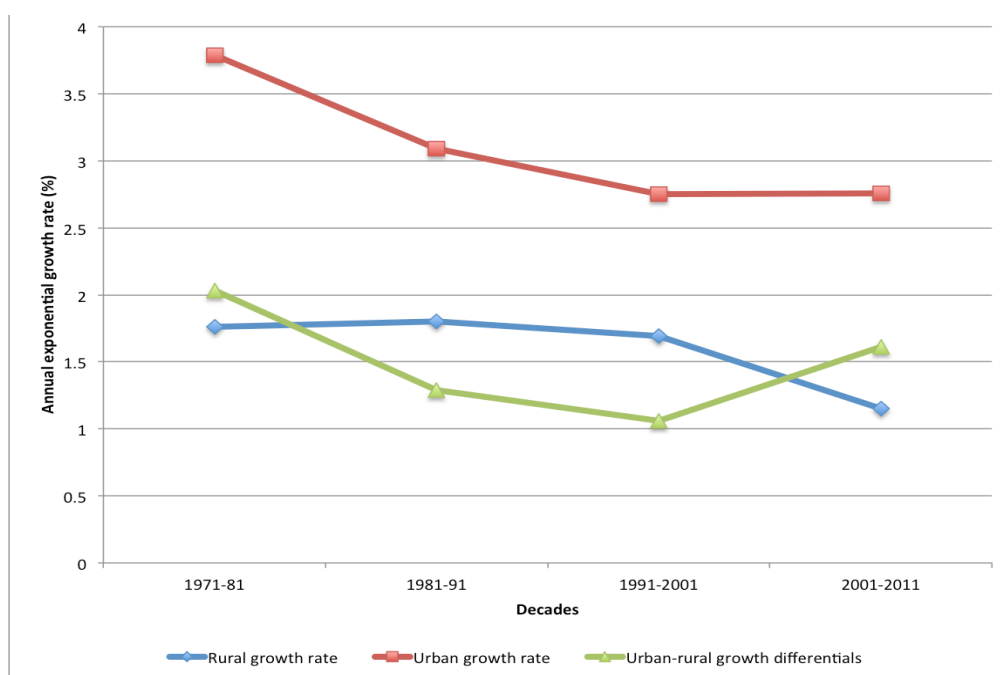
Background

The year 2007 is a milestone in the world's history- it marks the year when the global urban population surpassed the global rural population and this rift has only widened since.² *The World Urbanization Prospects: the 2014 Revision*,² compiled by the UN, Department of Economic and Social Affairs discusses the changes occurred and the projected changes in the different regions of the world. The report forecasts that, from nearly 75% of the world's population living in rural areas and the rest 25% in urban cities in 1950, the current trend of urbanization is expected to drive almost 70% of the world's population to urban cities by the year 2050. And, of the world's different regions, Asia is observed to be urbanizing at a rapid pace,³ with an annual average rate of the percentage urban (rate of urbanization) of 1.5% per annum; with China and India contributing to nearly 1/3rd of the global urban population increase in the next 35 years. Interestingly, India is the country with the highest rural population of 857 million (as of 2014) and has the second largest urban population of 410 million (as of 2014). However, these numbers are volatile; with the rural population set to decline by 52 million and the urban population likely to swell by 404 million by the year 2050.²

Urbanization in India

With only about 1830 urban centers in the country recorded in the 1901 census, the twentieth century has seen a quadruple increase in the urban centers in 2011,⁴ with nearly 32% of the total population living in these 7300 plus urban centers.⁵ Since 1981, there has been a steady decline in the annual urban population growth rate until 2011, when the Census recorded a growth rate of 2.76%, despite an expected decrease to 2.23% and that around 377 million people were living in urban centers.⁵ This urban growth rate is more meaningful when viewed along with the annual rural growth rate in the country. True urbanization occurs only when the urban growth rate exceeds the rural growth rate- the difference denoted by the urban-rural growth differential. The trend in the growth differentials is shown in Figure 1 below. Since independence, the urban growth rate has always been higher than the rural growth rate. It is only in the new millennium that the growth differential has jumped to 1.61%, which signifies a rapid urbanization in the country. This accelerated urbanization has been attributed to the economic growth observed at the start of the 21st century.

Figure 1: Urban-Rural Population Growth Differentials (1971-2011) ⁵



Source: Bhagat, RB (2011) Emerging Pattern of Urbanization in India.

Furthermore, the growth differential is a product of the difference in the natural increase between rural and urban areas (the net births and deaths in rural and urban centers), the net rural-urban classification (number of new rural or urban centers identified and registered) and the net rural to urban migration (people moving from rural centers to urban centers). Of these factors, the net people added (births minus deaths) to the population in rural and urban centers remained constant in the 1990s and 2000s. Hence, the speeding up of the urbanization process has been attributed to the increase in classification of urban centers and the increase in migration to urban centers. Additionally, it is observed that the pace of urbanization is associated with the level of urbanization in a country, with less urbanized countries urbanizing faster than more urbanized country.¹ Considering this principle in the current situation where India is growing at an annual rate of 1.2%⁶ and with only around 8000 urban settlements recorded in the 2011 Census, new cities will be formed at tremendous speed.

Classification of Urban Centers

The only established source of internationally comparable estimates of city and urban estimates and projections is the UN Population Division, which has conducted rigorous research since the 1970s. However, the major challenge faced by the analysts is the heterogeneity in the classification of cities in various countries.³ These classifications not only vary across regions but they also vary over time. The broad criteria used for the classification of any settlement as urban are either one or a combination of the following:¹

1. Administrative criteria
2. Population size or density
3. Economic criteria
4. Urban characteristics

Many countries categorize settlements as cities based on administrative norm where municipalities are classified as urban. Contrastingly, some countries categorize settlements as urban based on the minimum population threshold or density; proportion of population employed in non-agricultural activities or on the presence of infrastructure provisions like paved roads, sewer system, piped water or electricity and the presence of education and health services. These criteria are used differently, either stand-alone or in varied combinations, by different countries, over different time periods. In very rare cases, some countries use no definition to categorize a settlement as urban. Alternately, another issue with the classification is the inaccurate reporting of administrative boundaries of cities, by excluding the urbanized territory that extends beyond the administrative limit of the metropolitan region.¹ These factors have lead to inconsistent data regarding urbanization and the growth of urban population in the various parts of the world.

India categorizes a settlement as an urban area if it satisfies one of the two conditions listed below

1. *“All places with a municipality, corporation, cantonment board or notified town area committee, etc.*
2. *All other places which satisfies the following criteria:*
 - a. *A minimum population of 5,000;*
 - b. *At least 75% of the male main working population engaged in non-agricultural pursuits; and*
 - c. *A density of population of at least 400 persons per sq. km.”* ⁷

According to the Census of 2011,⁷ settlements that fall under the administrative criterion are called ‘Statutory Towns’, which are notified under law by the respective state or union territory Government, irrespective of the demographic characteristics.

All other towns that fall under the second category are called 'Census Towns'. Additionally, the Census of 2011 also defines settlements as 'Urban Agglomerations' that includes a statutory town and its adjoining outgrowths. This one continuous urban spread should have a population of not less than 20,000.

Impact of Urbanization on Health

Living in cities at a given point in time has both positive and negative impacts on the health of the people, a phenomenon referred to as 'urbanicity'.⁸ As more people steadily move to cities in the coming years, both in the developed and developing world, it is vital to study the impact urbanization has on the health of the urban dwellers and address these issues fittingly.

A key feature of life in cities is the 'urban health advantage' readily available to one and all, in terms of various social, environmental, cultural and clinical supports as well as municipal, state, federal and private sector programs improving the health of the residents.^{9,10} Several studies have shown that urban dwellers display healthier habits, diets and practices than their rural counterparts. Vlahov et al.¹⁰ review some of the urban health advantages offered to urban dwellers in their research paper. Firstly, the heterogeneity in an urban setting and the close proximity of affluence and poverty has been seen to be beneficial to the disadvantaged. The affluent members in society may draw the attention of the government and other organizations and ensure provision of essential services to the entire community. Secondly, there is a high level of social support and great social cohesion available in urban settings, which are associated with many positive health outcomes. Thirdly, cities offer easy access to the necessities in life to all its residents, as the market is filled with competitors offering their products/services to a dynamic and ever-growing customer base. Most importantly, cities are expected to provide physical environments that are

conducive to health. Lastly, the sheer size and volume of urban centers offers the potential for political mobilization and social movements, thereby empowering citizens to better care for themselves.

Unfortunately, along with the standard high economic activity and other positive features, urban settings are typically characterized by wide income inequality and high concentration of vulnerable populations, such as single parent families, racial and ethnic minorities, immigrants and refugees, the poor and the homeless and the elderly.⁹ Each of these groups has their own health-related susceptibilities and disease patterns. As a result of this mixing of people in unhealthy environments, there is a concept of 'urban health penalty' ^{11,12} which refers to the situation where the poor and vulnerable are concentrated in cities and experience disproportionate burden of health problems more frequently than the rural residents in a country.

Factors which affect Urban Health

The conflicting conditions present in an urban setting establish that urban health is a complex web, with many different determinants playing vital roles in shaping the health status of the people. Vlahov and Galea ^{8,9,13,14} have identified three key domains that describe how urban living can negatively impact an individual's health, which are:

1. Physical environment

There is evidence to prove that in addition to people's characteristics, the nature of the area that they reside in also determines their morbidity and mortality risks. It is obvious that the built environment and the air, water and noise pollution levels in cities affect urban health. Equally important are the geological and climatic conditions of the urban landscape and the increased influence humans have had on the natural environment. Other vital factors

include urban infrastructure, water and sanitation; access to green space and urban climate.

2. Social environment

This factor has a very strong effect on the health of the urban dwellers. With people of extreme economic scale living in close quarters; as in the case of the city of Mumbai where slums share borders with posh localities; strong contrasts develop where complex social matrices exist with racial and ethnic segregation, disparities in education levels and socio-economic status, stark differences in the quality of physical environment in terms of place of residence and widening disparities in health status and life expectancy.¹⁵

3. Access to/Provision of health and social services

The availability of health and social services depends on the municipal policy, which is in turn linked to the state and central priorities. In cities with disparities in wealth among the citizens, there exists a disparity in the quality of healthcare. It is the interaction between the availability of resources, the quality of care, the pressure on the health system brought on by the vulnerable and marginalized sections of the population and their physical accessibility to the services that will determine the health status of the urban dwellers.

Furthermore, the authors present a simple framework consisting of the abovementioned three determinants and the two domains of urbanization and urbanicity to guide better understanding of the concept of urban health. The domains signify the different perspectives of the determinants listed; urbanicity provides a

Examining Best Practices for alleviating the rising stress of Urbanization on the Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

static view (at a given point in time) while urbanization is a dynamic process changing over time. The table below provides an idea of how this simple matrix can be used.

Table 1: Urban Health Framework ⁸

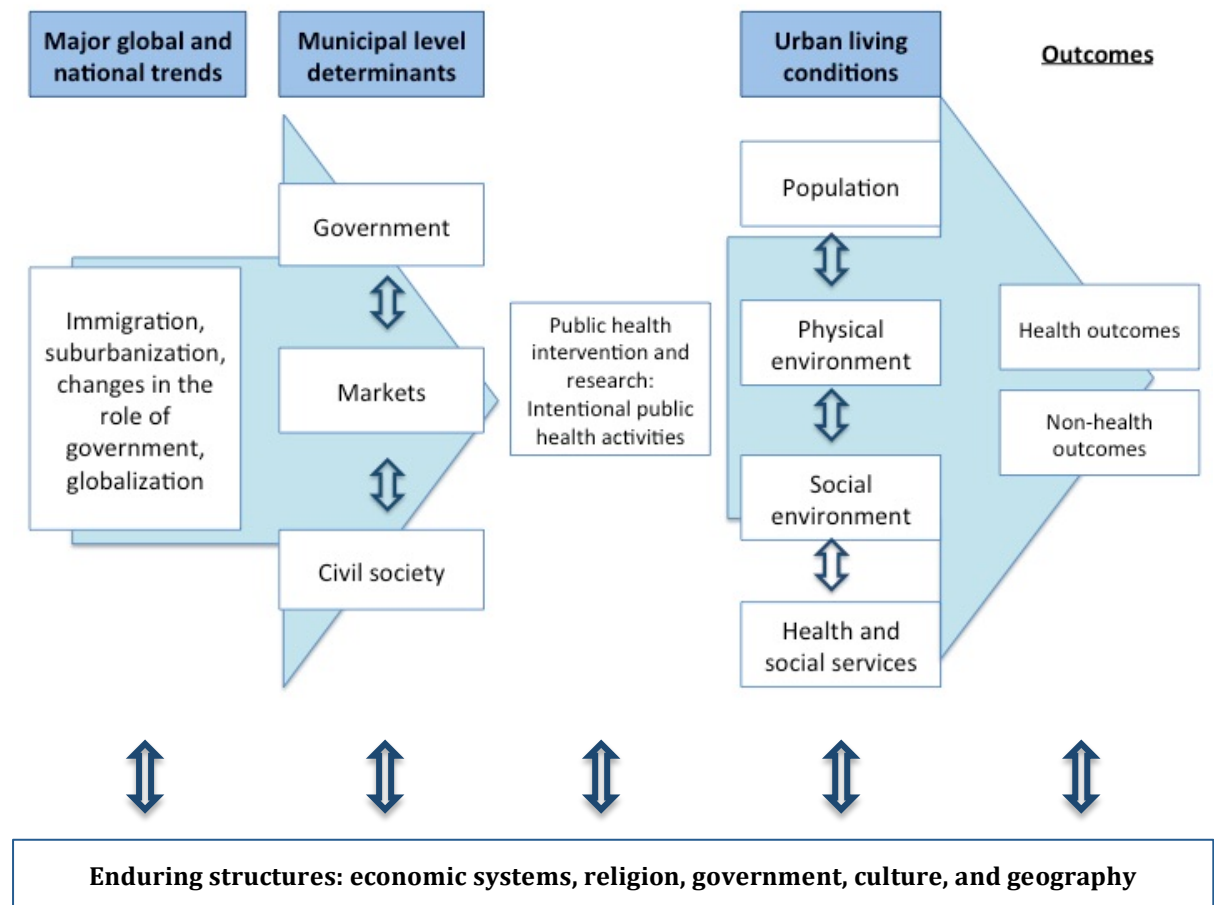
Determinants	Urbanicity	Urbanization
Physical environment	<i>Pollution</i>	<i>Industrialization</i>
Social environment	<i>Poverty</i>	<i>Out-migration or emigration</i>
Health and social services	<i>Limited access to care</i>	<i>Changing fiscal policies</i>

Alternately, Galea and colleagues¹⁶ in their paper published in the journal *Social Science & Medicine* present a unique conceptual framework (Figure 2) that traces the inter-relationships between various determinants at various levels and their cumulative impact on urban health. This framework is built on the core concept that the physical and social environments that define an urban settlement are determined by the existing municipal factors like government and civil society in addition to the national and global trends that in turn affect the local factors.

Examining Best Practices for alleviating the rising stress of Urbanization on the Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Figure 2: A Conceptual Framework for Urban Health ¹⁶



Source: Galea et al. (2005) Cities and Population Health

The enduring structures and conditions incorporate the political, social and economic systems prevailing in a country. The political system in a country and the prevailing market economics has a huge role in determining the social conditions of the residents. Though these factors cannot be changed over short notice, it is critical to include them during the analysis of urban health. In the case of the farthest factors of influence; which are the global and national social, economic and political trends; determinants like migration and immigration, suburbanization- the movement of people from city centers to surrounding areas that has seen the blossoming of 'urban sprawls', the changing role of government which can affect the financial and political

support given to municipal governments and globalization have a profound impact on the health status of the urban dwellers.

Moving closer to the health outcomes, the municipal level determinants include all activities of the government (policies and practices at all levels as implemented in cities), markets (which include food, housing, labor and other goods) and the actions of the civil society (like community organizations, community capacity and social movements), which impact urban health. The direct impact factors contain those characteristics that shape the daily lives of urban residents. Three of the four have been discussed in the earlier segment of this paper, while the fourth and most basic aspect is the individual behavior and demographics (race, ethnicity, socioeconomic status). These characteristics are the pre-existing condition and yet also the intermediate outcomes that targeted public health interventions seek to change.

Emerging Health Risks due to Urbanization

Abdel Omran's path breaking paper on the Epidemiological Transition¹⁷ showcased the three stages of transition witnessed over centuries in every country. This shift was attributed to the changing predominant causes of mortality and morbidity in a country as life expectancy increased. India, like every other country in the world, has shown a shift from infectious/communicable diseases (Group I causes) towards non-communicable diseases (Group II causes) and injuries and accidents (Group III causes).¹⁸ In terms of the epidemiological stage, India is currently moving through the Age of Receding Pandemics and the Age of Degenerative and Man-Made Diseases.¹⁹ What this translates into is that India has a dual burden of diseases, with longer periods of chronic illness due to increased lifespan of the people. Given the rapid urbanization and the swelling of cities with people from rural areas, the burden

of these diseases will be most felt in the existing urban centers and the growing cities.²⁰

The positive impact urban living has on the city dwellers has already been discussed. It is the negative effects of urban living that needs focus; to aid formulation of appropriate policies, setup much needed infrastructure or alter existing ones, and to mobilize urban residents to improve their health status. The physical environment as a determinant of urban health affects the health of people profoundly wherein it has been found that the density of development, mix of land uses, availability of green space and esthetic qualities affect physical activity which in turn increase the risk of depression, obesity and cardiovascular diseases.^{9,21} Other features of the urban infrastructure like the quality of water, methods of garbage disposal, unsafe hazardous landfilling practices, and air pollution from increased vehicular traffic due to the unavailability of public transportation system are all associated with health risks, causing severe respiratory diseases, pediatric asthma and atherosclerosis.⁹ A relatively newer concern is the urban 'heat island' effect, where cities become warmer than the surrounding countryside due to the dense built environment and the deforestation to accommodate the same. In the past couple of decades, there have been numbers of hospitalizations and even deaths due to the heat in many cities, especially among the socially disadvantaged and the urban elderly.⁹ Injuries due to traffic accidents are another concern, which vary with urban growth and poses the maximum risk for the poor, homeless and the elderly.²¹ With regards to the social environment, violence and crime is on the rise as a result of unsafe neighborhoods and the disparities in the socio-economic status among the people in cities and due to high rates of unemployment.²¹ The socioeconomic status plays a very important part in the level of health-related knowledge an individual has and the protective and modifying interventions one can willing adopt.⁹ A large section of a city's residents

live in slums and these 'urban poor' are most vulnerable to poor nutritional status due to their economic burdens and due to lack of any means of farming to sustain themselves; infectious diseases and accidents due to overcrowding; respiratory diseases and diarrhea due to environmental hazards at the workplace or at home; mental illnesses due to fragile and fragmented social networks; and homicide, injuries and death due to increased incidence of crime, violence, traffic accidents and natural calamities.²⁰

There is evidence that despite the 'urban living advantage' of better health and lower infant mortality rates and fertility rates in cities, the forces of health services do not operate uniformly everywhere around the world; the benefits of urbanization are not uniformly distributed and there is considerable doubt as to whether the benefits match the health risks of urban living.²² To further support these claims, in the year 2013, Kroll, Bharucha and Krass²³ carried out a study in the city of Pune in Western India, a recently urbanized center due to rapid economic and population growth since the 1990s. The aim of the study was *'to analyze the changing disease burden and health disparities between different socioeconomic groups in the emerging megacity of Pune'*. The results were conclusive that the rising burden of NCDs among all socioeconomic groups and the persistence of infectious diseases contributed to the widening of the health inequality in the city.

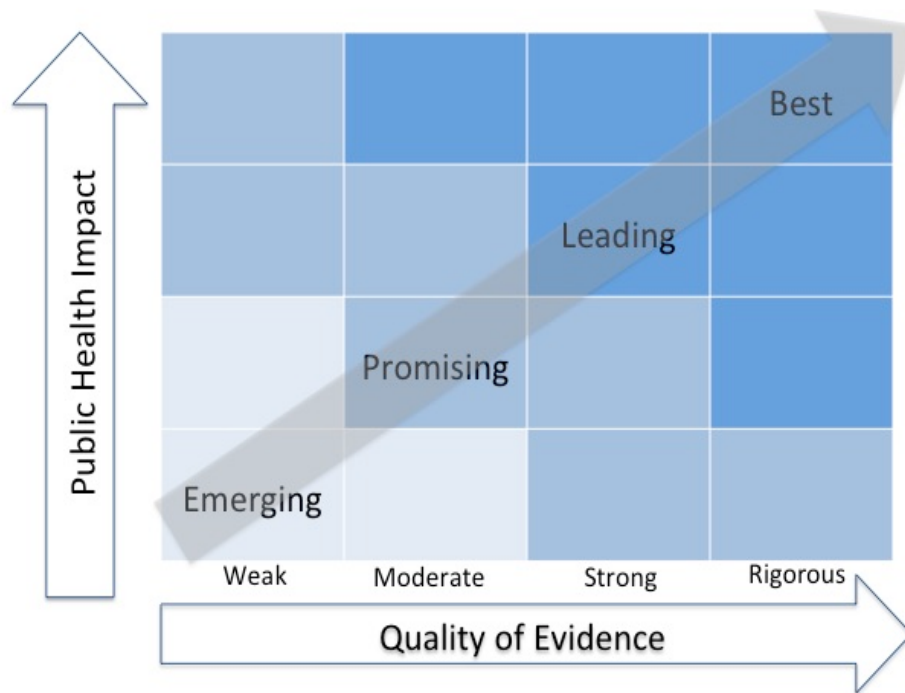
Benchmarks and their applicability in Healthcare

Benchmarking is a process of identifying the best performance achieved by an individual organization or an entire industry, in order to set a competitive target for oneself.²⁴ It is a complex procedure that answers the question 'what' and 'how'. It focuses on best practices in the particular industry, is a continuous improvement exercise and once identified, these best practices are then customized to better suit

the organization. The three types of benchmarking popularly carried out are- internal benchmarking, where a company has already identified and proven best practices and simply has to make them public; competitive benchmarking, where an organization evaluates itself with the other competitors in the particular industry; and strategy benchmarking, which is the most robust technique wherein an organization identifies and analyses world-class performance.

This Total Quality Management (TQM) technique is being practiced with great fervor in healthcare since the last decade, as more healthcare organizations are striving to reach the highest quality standards in the most cost-effective ways.²⁵ In an effort to promote evidence-based best practices in healthcare, the Centre for Disease Control and Prevention (CDC), USA created a conceptual framework²⁶ for planning and improving evidence-based practices by adapting and extending several streams of existing work related to developing a continuum of evidence. After much discussion, the term 'best practices' was defined as *"a practice supported by a rigorous process of peer review and evaluation indicating effectiveness in improving health outcomes, generally demonstrated through systematic review"*. The framework (Figure 3) developed by the working group consists of two interrelated components- public health impact and quality of evidence. Each of these elements is divided into sections; public health impact with five elements- effectiveness, reach, feasibility, sustainability, transferability; and quality of evidence rated on four continuous levels- from weak, to moderate, strong and rigorous.

Figure 3: Conceptual Framework for Planning and Improving Evidence-based Practices ²⁶



Source: Spencer et al. (2013) A Conceptual Framework for Planning and Improving Evidence-based Practices

Methodology

To identify best practices in the urban settings, which have helped protect and promote the health of urban dwellers, an extensive literature review was conducted. Initially, a PubMed search was carried out using MeSH terms like “Benchmarking” and “Urban Health”. However, due to a lack of peer-reviews literature, the search was shifted to other sources. The Journal of Urban Health was a significant source for the description of several urban health interventions but failed to provide detailed descriptions about specific programs. Ultimately, a Google Scholar search for “Best Practices in Urban Health” was done which offered many reports that discussed

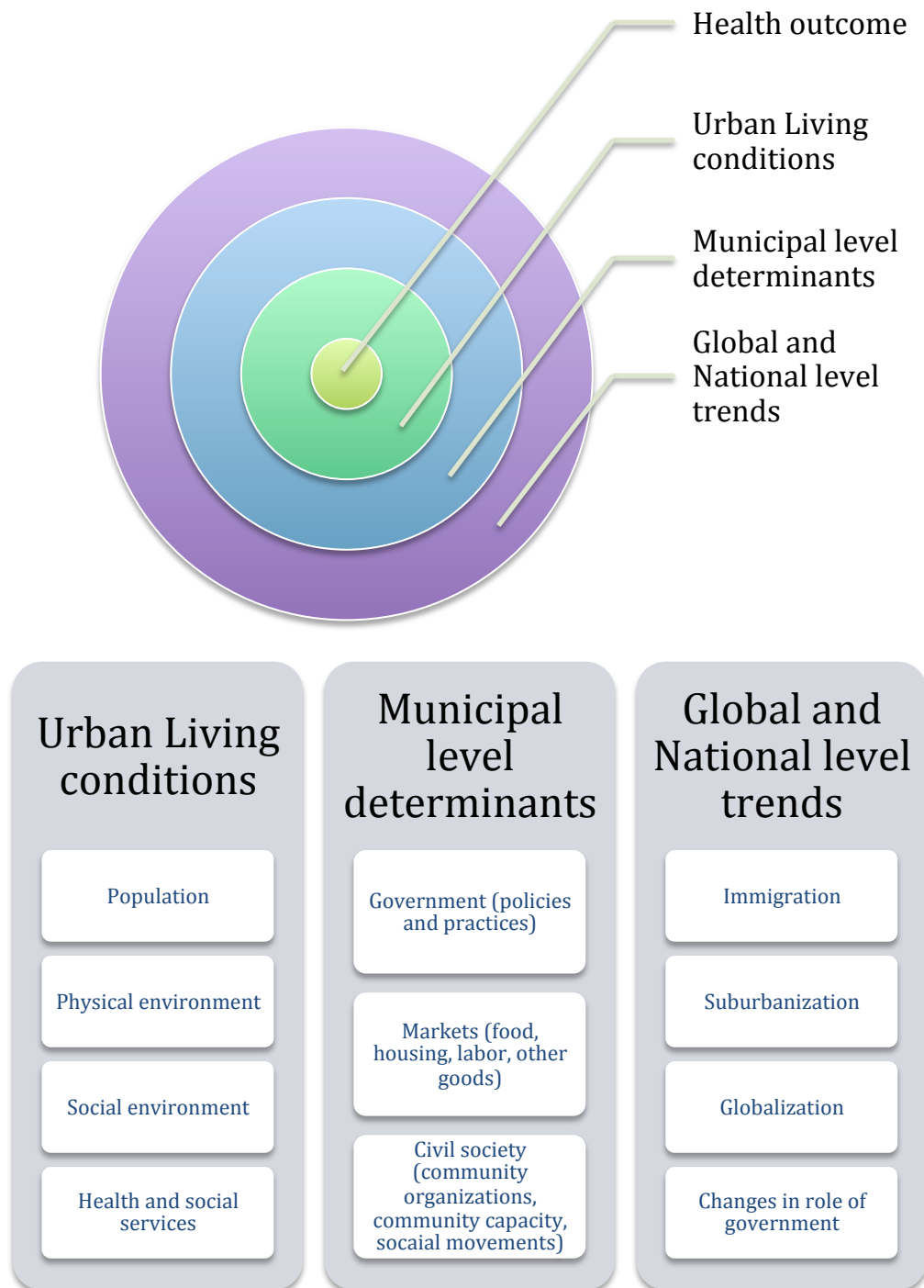
several interventions implemented around the world to aid the process of urbanization, each of which have an impact on health of the urban residents. Lastly, the most exhaustive source of the best practices was the UN-HABITAT Best Practices database.²⁷

With the search bearing rich information on the specific programs and interventions, the conceptual framework as developed by Galea and colleagues¹⁶ was used to organize all the best practices. The framework has been redesigned (Figure 4) to denote the levels of impact each domain has on the health outcomes of urban residents in concentric circles, with the magnitude of impact decreasing as one moves outwards from the innermost circle. As per the original framework, most of the public health interventions implemented in urban settings or the urban development and management strategies are targeted to improve the impact of the components of the 'Urban living conditions' domain, which includes the physical environment, social environment, population demography, characteristics and behavior and the health and social services provision. The best practices are categorized according to these determinants and also the other two domains in the framework. Following the tabulation of all the identified best practices, a few case studies are presented which discuss the success and impact of the best practices in their respective settings.

Examining Best Practices for alleviating the rising stress of Urbanization on the Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Figure 4: Redesigned Conceptual Framework for Urban Health



Source: Adopted from Galea et al. (2005) Cities and Population Health

Global Best Practices in Urban Settings

Best Practice		Location	Domain of framework in which applicable	Description of the intervention
Urban Health Observatories (UHO) ²⁸	London Health Observatory	London, England	<i>Municipal level (Government policy)</i>	- Monitor urban health conditions and social determinants of health - Routine data collection and turning into health intelligence for evidence-based decision-making - Develop health knowledge for empowering and capacity building
	Observatório de Saúde Urbana de Belo Horizonte	Belo Horizonte, Brazil		
	Observatorio del Derecho a la Salud	Lima, Peru		
	Nairobi Urban Health and Demographic Surveillance System	Nairobi, Kenya		
	Observatori de la Salut Pública	Barcelona, Spain		
	Bangladesh Urban Health Network	Dhaka, Bangladesh		
	Observatorio de Salud Urbana-Guatemala	Guatemala City, Guatemala		
Disaster Response Matrix ²⁹	London Emergency Services Liaison Panel	UK	<i>Municipal level (Government policy)</i>	- Matrix which consists of the law enforcement, fire, emergency medical services and public health agencies - Mitigate the impacts of disasters on the public and on the affected elements of physical infrastructure
	Federal Emergency Management Agency	USA		

Examining Best Practices for alleviating the rising stress of Urbanization on the
Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Best Practice		Location	Domain of framework in which applicable	Description of the intervention
Liuyun Xiaoqu neighborhood (Walkable, mixed use neighborhoods) ³⁰		Guangzhou, China	<i>Physical environment</i>	- Sustainable neighborhood with commercial space on ground floor of buildings - Mixed-use development, public space improvements, improved transit connections
Hammarby neighborhood (Reducing environmental footprint) ³⁰		Stockholm, Sweden	<i>Physical environment</i>	30-40% lower environmental impact - Improved livability and environmental performance
Vauban (Car-free zone) ³⁰		Freiburg, Germany	<i>Physical environment; Social environment</i>	- Promotes transit, walking, biking - Deprioritized cars - Safe streets, outdoor recreation opportunities
Innovative Public Space ³¹	Superkilen	Copenhagen, Denmark	<i>Physical environment; Social environment</i>	- Public spaces include playgrounds, parks, squares, spaces for amenities - Promotes safety and healthy living of urban residents
	High-Line Garden	New York City, USA		
	Glasgow Square	Glasgow, Scotland		
	Tel Aviv Port	Tel Aviv, Israel		
	London Olympic Park Public Space	London, England		

Examining Best Practices for alleviating the rising stress of Urbanization on the
Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Best Practice	Location	Domain of framework in which applicable	Description of the intervention
Dongtan Eco-city ³²	China	<i>Physical environment; Social environment</i>	- World's first carbon-neutral urban development - Make better use of resources-energy, water and materials - Holistic approach that impacts many spheres
Reduction in traffic fatalities ³³	Bogota, Columbia	<i>Physical environment</i>	- Innovative education campaigns - Overhaul of public transportation system- 'TransMilenio', 'CicloRuta' - Strict law enforcement - Redesign of streets and highways
Congestion charges ³⁴	London, England	<i>Physical environment; Municipal level (Government policy)</i>	- Tax on vehicle entering city center - Reduction in traffic jams
Conditional Cash Transfer ³⁵	Mexico	<i>Social environment; Municipal level (Government policy)</i>	- Using census data and surveys to identify the poorest households - On condition that they keep their children in school and get regular checkup

Examining Best Practices for alleviating the rising stress of Urbanization on the
Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Best Practice		Location	Domain of framework in which applicable	Description of the intervention
Clean water and Sanitation ³⁶⁻³⁸		Durban, South Africa	<i>Physical environment; Health and social services</i>	- National policy to provide a daily 200-litre water ration - Urine-diversion double pit toilets
		Salvador, Brazil		- Sewage hookups; covered sewer - Basic-well designed latrines
		Phnom Penh, Cambodia		- High water prices to ensure self-sustenance - Regulated water supply and extended service
	The Healthy Exercise for All Campaign	China, Hong Kong SAR		
	Muevete Bogotá	Bogotá, Columbia		
	Move for Health Fiji	Fiji		
	Workplace-based Health Education Intervention	India		
	The Isfahan Exercise Project	Iran		
	The National Healthy Lifestyle Programme; The Trim and Fit Programme	Singapore		

Examining Best Practices for alleviating the rising stress of Urbanization on the
Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Best Practice		Location	Domain of framework in which applicable	Description of the intervention
Promoting Physical Activity ³⁹ (contd.)	Healthy Lifestyle Campaign	Malaysia	<i>Physical environment; Health and social services</i>	• Create supportive environments that facilitate physical activity • Give recognition or awards to individuals who live healthy lifestyles
	Healthy Lifestyle Campaign	Malaysia		
	Slovenia on the Move- Move for Health	Slovenia		
	The NEWS Heartlife Public Awareness Campaign and the Learn to Live Longer Campaign	Pakistan		
	The National Healthy Lifestyle Programme and the Mag HL Tayo Campaign	Philippines		
	The Revitalize your Heart Intervention	Poland		
	Vodka South Africa- Move for your Health Campaign	South Africa		
	Physical activity Interventions within Empowerment for Health and Exercise for Health	Thailand		

Examining Best Practices for alleviating the rising stress of Urbanization on the
Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Best Practice	Location	Domain of framework in which applicable	Description of the intervention
Contextualizing Urban Governance ⁴⁰	South Africa	<i>Global or National trends (Governance)</i>	- Progressive constitution - Pro-equity policies and programmes; with effective partnerships and participation - Legal framework aimed at reinforcing democracy and social and economic delivery
Participatory Budgeting ^{40,41}	Porto Alegre, Brazil	<i>Social environment; Municipal level (Civil society)</i>	- Referendum for identifying priorities for urban public investments - Participatory budgeting initiative-shifting political power and decision-making structures
Niagara Prosperity Initiatives ⁴⁰	Niagara, Canada	<i>Municipal level (Civil society)</i>	- Mobilizing resources - Guide for prioritization of initiatives
Changing Governance ⁴⁰	Brazil	<i>Global or National trends (Changing role of government)</i>	- Greater role of private sector - Corporate philanthropic activity - Good governance

Examining Best Practices for alleviating the rising stress of Urbanization on the
Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Best Practice	Location	Domain of framework in which applicable	Description of the intervention
Comites Comunaes de Proteccion Civil ⁴⁰	Acajutla, Brazil	<i>Social environment</i>	Vulnerable communities organized their own committees for civil protection
The Network of Healthy Communities ⁴⁰	Rio de Janeiro, Brazil	<i>Municipal level (Civil society)</i>	Mix of community based organizations working on empowerment and health equity
Environmental Health Planning ⁴⁰	San Francisco, USA	<i>Municipal level (Government policy; Civil society); Physical environment</i>	- Building new institutions and transforming environmental health practices - Improved access to nutritional food
Self-Employed Women's Associations ⁴⁰	India	<i>Social environment; Municipal level (Civil society)</i>	Improving social conditions through female working conditions
COBRACE (Brussels Air, Climate and Energy Code) ⁴²	Brussels, Belgium	<i>Municipal level (Government policy)</i>	Ambitious new standards for resource utilization
E-ticket scheme ⁴²	Kaunas, Lithuania	<i>Physical environment</i>	- Pre-paid journey by public transportation - Low-floor vehicles; real-time information system

Examining Best Practices for alleviating the rising stress of Urbanization on the
Health and Well-being of the Urban Populations

Amrutha Anand, MPH 2014-16

Best Practice	Location	Domain of framework in which applicable	Description of the intervention
Strategic Green Infrastructure Framework ⁴²	Bristol, England	<i>Physical environment; Municipal level (Market; Government policy)</i>	- Ensures strategic housing, transport and green infrastructure - Protect and enhance green corridors and green areas with rivers and wildlife
Dublinked ⁴²	Dublin, Ireland	<i>Municipal level (Government policy)</i>	Innovative approach to putting air-quality data through an open data platform
Urban Ecological Zone ⁴²	Ljubljana, Slovenia	<i>Municipal level (Government policy)</i>	- Establishments of quiet zones - Closure to motor vehicles

Select Case Studies relevant to the Indian setting

Despite numerous areas to focus on, in order to protect the health of the urban residents, selected areas demand immediate attention, wherein interventions could possible alter the statistics currently observed. From the table above, three case studies are discussed, with emphasis on the means and the impact that these best practices have brought about in their respective countries. Apart from the relevance in terms of needs, these practices are from countries similar to India in terms of resource availability and urbanization rate. The three countries- Colombia, Mexico and Brazil- are comparable to India. The annual population growth rate of the four countries lies between 0.9-1.3%, yet the urban population (as a percentage of total

population) is much greater in the three countries in the Americas than in India (refer Appendix). It is reasonable to assume that the success of the best practices in each of these countries has had significant impact on the urban population growth and also that India, with its current urbanization trend, can adapt these best practices to maintain sustainable urban development.

*Reduction in Traffic Fatalities- Bogotá, Colombia*³³

In the year 2010, the Ministry of Road Transport and Highways reported that almost 12 deaths per 100,000 population were due to road accidents in India, with fatalities as high as 133,938 deaths recorded.⁴³ These numbers are incomplete as not all deaths or injuries are reported. What is alarming is the lack of road safety interventions that should be implemented, to support the legislations recently passed by the Parliament, like the laws to ensure usage of safety belts and to punish drunken driving. Overpopulation, exponential increase in the vehicular traffic, disregard for traffic rules and regulations and poor roads have been identified as some of the reasons for persistent road accidents and injuries.⁴⁴ In the year 2012, a national daily The Hindu published an article⁴⁵ that mentioned the task before the Parliamentary Standing Committee on Transport, Tourism and Culture in the Rajya Sabha of reviewing and recommending international best practices to promote road safety and traffic management. The following case study offers an insight into how the city of Bogotá dealt with worrying figures of road accidents.

Known as one of the world's most dangerous cities, Bogotá had a history of crime and murder and an equally worrying reputation of traffic related injuries and deaths. As much as 52,764 accidents, 914 deaths and 21,053 injuries occurred in the year 1998 due to poor road safety. With a problem that was rampant all over the world,

the mayors of this city came up with a unique and creative solution. Antanas Mockus and Enrique Peñalosa were the two masterminds behind this successful campaign. Mockus' strategy included creative activities like employing mimes at zebra crossings to discourage bad behavior of overshooting stop line at red and also a serious step of firing almost 2000 traffic cops for being corrupt. Following Mockus, Peñalosa hired volunteers to target pedestrians who disobeyed traffic rules, and curb drunken driving. The city also saw the installation of cycle-only lanes called CicloRuta and new traffic signals and restricted car access to the city center. A new rapid transportation system called the TransMilenio was implemented which relieved the stress on roads and removed old obsolete buses that emitted fumes. With these small changes, the accidents and traffic related injuries plummeted by the year 2006 and this project undertaken by the city of Bogotá has come off as a big success story that can be replicated in any low-resource setting country.

'Oportunidades' (Progres)- Conditional-Cash Transfer- Mexico ³⁵

The latest Census conducted in 2011 documented 31.14% of the total population as residing in urban centers⁴⁶ and this proportion is set to increase tremendously in the future, what with existing cities expanding and new cities flourishing all over the country. A worrying component of the urbanization process is the poverty associated with urban centers. In 2004-05, around 80.8 million urban residents were living below the poverty line, which was then defined as a monthly consumption of less than Rs.538.60.⁴⁷ A recent article in a national daily has estimated that about 35% of the urban households still live below the poverty line,⁴⁸ which amounts to nearly 22 million of the total 63 million households in cities. With no concrete action from the Ministry of Housing and Urban Poverty Alleviation apart from the many programs already functional, like the Swarna Jayanthi Shahari Rozgar Yojana or the Integrated Housing and Slum Development Programme or the Rajiv Awas Yojana, there is a

need to adopt best practices to alleviate urban poverty so as to mobilize the urban poor. The programme implemented in Mexico is one such example.

In a global scenario of economic crisis, the Government of Mexico provided food subsidies to all its citizens by which those who could afford the goods also benefitted from this initiative and wasted the limited resources present. There was a need to target their subsidies and interventions to the needy in order to efficiently use available resources. A drastic change in the policy was to scrap food subsidies being provided to all citizens and identifying the poorest households who would be the ideal beneficiaries for the same by census data and surveys. And the clause attached to the cash was that the poor households would send their children to school and get regular health checkups. After comprehensive research, it was determined that mothers would receive the money and that children would also get nutritional supplements to keep them in school. By this programme, the government aimed to reduce the urban poverty levels in the next few decades. Despite initial resistance, this programme has resulted in higher enrolment levels in schools and healthier children in urban areas. This has been regarded as one the most effective and innovative programs to reduce Third World poverty and has found takers in Rio de Janeiro and Istanbul. The critical element in this conditional cash transfer programme has been the linking of lifetime earnings, health, nutrition and education. New York City's 'Opportunity NYC' tries to imitate this programme by paying families for reaching targets of education, health and work.

Participatory Budgeting- Porto Alegre, Brazil ⁴¹

One rule to good governance is through civic engagement. Public participation in any decision-making process will ensure meeting the actual needs of the people, which

would in turn mean sustained programs, but is only possible in a conducive, decentralized political environment.⁴⁹ The pioneer in the enactment of participatory budgeting to aid in sustainable urban development is the city of Porto Alegre in Brazil. There has always been a significant involvement of citizens in the administration in Brazil, but with the change in the Constitution in 1988 this process found renewed support. A critical first step to successful participatory budgeting was the contracting of community organizers within the administration, who would then be responsible for mobilizing the poor in various neighborhoods and spreading information about the process. The Porto Alegre model involves district and thematic plenary assemblies that gather in different parts of the city to participate in budget writing. By means of structured meetings; where first the government officials present the city budget to the people, which is followed by meetings among people in every neighborhood where they list the priorities, and lastly the people respond by negotiating the needs with the government; it is the citizens' collective voice that decides how the government should spend the money allocated to it by the center. There is hence an attempt to match the perceived and actual needs. What started off as a process for physical planning was restructured in 1994 to include five sectoral themes-

1. Urban planning and development
 - a. Environment and sanitation
 - b. City planning and housing
2. Traffic management and public transport
3. Health and social welfare
4. Education, culture and recreation
5. Economic development and taxation

The results achieved through this dynamic process have been increased government transparency and accountability. Increased citizen participation has mobilized greater participation in other parts of the country and led to integrated environmental management.

Interestingly, three cities in India have experimented with the process of participatory budgeting- namely, Bengaluru, Mysore and Pune. Though the project ran into the ground in the cities of Karnataka, the Pune experiment has been successful since its initiation in 2006.⁵⁰ This was due to the leadership and support of the then Commissioner of the Pune Municipal Corporation. This programme has been named 'Janwani', which translates to the people's voice and is running successfully to make Pune a better city to live in.

Discussion

The world is currently shifting from a stage where the Millennium Development Goals (MDGs) were the targets to be achieved, into a phase of the more comprehensive and all-inclusive Sustainable Development Goals (SDGs).⁵¹ The 17 SDGs are interdisciplinary, thus requiring concerted efforts from various sectors to succeed; and the targets are more rigorous than the MDGs, which every member nation will strive to attain once it ratifies. On a national level, India has to develop strategies to continue its journey to reach these targets, and more importantly concentrate on growing cities and up-and-coming urban settlements to improve the standards of living of all citizens. The best practices discussed in this paper intend to provide a clear picture of the interventions available globally, that have proved to be effective and can be replicated in India following customization. These benchmarks not only provide a start to the planning and implementation process but also save resources and are efficient.

Key lessons learned

- In order to develop robust and sustainable urbanization processes, the involvement and continued support of the government, formulation of strategic policies and empowerment of citizens are essential, as in the case of Brazil, Mexico and Colombia. It is critical to have the backing of the government so to ensure accountability and transparency. Even the initiative of public participation in urban planning and development is effective with political will and support.
- Though most of the best practices are simple and familiar activities, they are successful with proper enforcement and regulation. Especially in the Indian context, there needs to be an independent, autonomous regulator and enforcer to verify the implementation and monitor the best practices and other interventions.
- Innovation is a key component of many best practices listed in the earlier section. As this is a feature in many sectors today, it is applicable in urban development also. By involving the citizens and by empowering them to participate, there are more chances of identifying easier, effective strategies or better adaptations to the established ones.
- Most importantly, there needs to be a concerted effort to prioritize health as an issue while planning and developing cities. While some of the best practices identified in this paper have direct link to health, most of the best practices benefit the health of the urban population indirectly. With the stress on health of the urban dwellers rising, it is critical for the government to ensure all policies and technologies are intended to protect the health of the population that will reside and grow in these centers. With initiatives like that

of the Bloomberg Philanthropists⁵², which supports India's mission of building Smart Cities⁵³, these best practices will be a source from which to develop appropriate and relevant practices.

There are several drawbacks and subsequent recommendations that arise out of this study. Firstly, there is a need for standardization in terms of how urban centers are classified around the world. Further research needs to be done in order to establish a more globalized criterion for classification of urban centers. Secondly, in the national context, there has to be a systematic urbanization plan that can be used across the country. This will ensure comparability among cities in terms of features and help in identifying the differences between them. Lastly, it is essential for all urban development and management policies to prioritize health as a factor, in accordance to the Helsinki Statement (Health in All Policies).⁵⁴ This can lead to cities being protective of its people, thus making them liveable and sustainable.

References

1. Department of Economic and Social Affairs Population Division. *World Urbanization Prospects: The 2014 Revision*.; 2015.
2. Department of Economic and Social Affairs Population Division. *World Urbanization Prospects: The 2014 Revision, Highlights*. New York: United Nations; 2014. doi:10.4054/DemRes.2005.12.9.
3. Montgomery MR. The Urban Transformation of the Developing World. *Science (80-.)*. 2008;319(5864):761-764. doi:10.1126/science.1153012.
4. Kundu A. *Trends and Processes of Urbanisation in India*.; 2011.
5. Bhagat RB. Emerging Pattern of Urbanisation in India. *Econ. Polit. Wkly*. 2011;46(34):10-12.
6. The World Bank. Population growth (annual %) | Data | Graph. Available at: <http://data.worldbank.org/indicator/SP.POP.GROW/countries/IN?display=graph>. Accessed September 26, 2015.
7. Government of India Ministry of Home Affairs. *Census of India 2011 Provisional Population Totals: Urban Agglomerations and Cities*. New Delhi; 2011.
8. Vlahov D, Galea S. Urbanization, Urbanicity, and Health. *J. Urban Heal. Bull. New York Acad. Med.* 2002;79(4 Suppl 1):S1-S12. doi:10.1093/jurban/79.suppl_1.S1.
9. Barondess JA. Health Through the Urban Lens. *J. Urban Heal. Bull. New York Acad. Med.* 2008;85(5):787-801. doi:10.1007/s11524-008-9300-0.
10. Vlahov D, Galea S, Freudenberg N. The Urban Health "Advantage." *J. Urban Heal. Bull. New York Acad. Med.* 2005;82(1):1-4. doi:10.1093/jurban/jti001.
11. American College of Physicians. Inner-City Health Care. *Annu. Intern. Med.* 1997;127:485-490.
12. Wasylenki DA. Inner city health. *Can. Med. Assoc. J.* 2001;164(2):214-215.
13. Galea S, Vlahov D. Urban Health: Evidence, Challenges, and Directions. *Annu. Rev. Public Health* 2005;26:341-65. doi:10.1146/annurev.publhealth.26.021304.144708.

14. Vlahov D, Freudenberg N, Proietti F, et al. Urban as a Determinant of Health. *J. Urban Heal. Bull. New York Acad. Med.* 2007;84(1):16-26. doi:10.1007/s11524-007-9169-3.
15. Ompad DC, Galea S, Caiaffa WT, Vlahov D. Social Determinants of the Health of Urban Populations: Methodologic Considerations. *J. Urban Heal. Bull. New York Acad. Med.* 2007;84(1):42-53. doi:10.1007/s11524-007-9168-4.
16. Galea S, Freudenberg N, Vlahov D. Cities and Population Health. *Soc. Sci. Med.* 2005;60(5):1017-1033. doi:10.1016/j.socscimed.2004.06.036.
17. Omran AR. The epidemiologic transition: a theory of the epidemiology of population change. 1971. *Milbank Q.* 2005;83(4):731-57. doi:10.1111/j.1468-0009.2005.00398.x.
18. Department of Economic and Social Affairs Population Division. *Changing Levels and Trends in Mortality: The Role of Patterns of Death by Cause.* New York; 2012.
19. Yadav S, Arokiasamy P. Understanding epidemiological transition in India. *Glob. Health Action* 2014;7(SUPP.1):1-14. doi:10.3402/gha.v7.23248.
20. Harpham T. Urban health in developing countries: What do we know and where do we go ? *Health Place* 2009;15:107-116. doi:10.1016/j.healthplace.2008.03.004.
21. Campbell T, Campbell A. Emerging Disease Burdens and the Poor in Cities of the Developing World. *J. Urban Heal. Bull. New York Acad. Med.* 2007;84(1):54-64. doi:10.1007/s11524-007-9181-7.
22. Dye C. Health and Urban Living. *Science (80-.).* 2008;319(5864):766-769. doi:10.1126/science.1150198.
23. Kroll M, Bharucha E, Kraas F. Does rapid urbanization aggravate health disparities? Reflections on the epidemiological transition in Pune, India. *Glob. Health Action* 2014;7.
24. iSixSigma. Understanding the Purpose and Use of Benchmarking. Available at: <http://www.isixsigma.com/methodology/benchmarking/understanding-purpose-and-use-benchmarking/>. Accessed September 27, 2015.
25. Benson HR. An Introduction to Benchmarking in Healthcare. *Radiol. Manage.* 1994;16(4):35-39.

26. Spencer LM, Schooley MW, Anderson L a, et al. Seeking best practices: a conceptual framework for planning and improving evidence-based practices. *Prev. Chronic Dis.* 2013;10(6):E207. doi:10.5888/pcd10.130186.
27. UN-HABITAT. UN-HABITAT Best Practices Database: Award Winners. Available at: <http://mirror.unhabitat.org/bp/bp.list.aspx>. Accessed September 28, 2015.
28. Caiaffa WT, Friche AAL, Dias MAS, et al. Developing a Conceptual Framework of Urban Health Observatories toward Integrating Research and Evidence into Urban Policy for Health and Health Equity. *J. Urban Heal. Bull. New York Acad. Med.* 2013;91(1):1-16. doi:10.1007/s11524-013-9812-0.
29. Kahn LH, Barondess J a. Preparing for Disaster: Response Matrices in the USA and UK. *J. Urban Heal. Bull. New York Acad. Med.* 2008;85(6):910-922. doi:10.1007/s11524-008-9310-y.
30. Sustainable Cities Collective. People Oriented Urbanization and City Best Practices. Available at: <http://www.sustainablecitiescollective.com/cc-huang/1034916/three-worlds-best-cities-people>. Accessed September 28, 2015.
31. Sustainable Cities Collective. 5 Inspiring Stories of Public Space. Available at: <http://www.sustainablecitiescollective.com/futurecapetown/130731/5-inspiring-stories-public-space>. Accessed September 28, 2015.
32. Normile D. China's Living Laboratory in Urbanization. *Science (80-.).* 2008;319(5864):740-743. doi:10.1126/science.319.5864.740.
33. Cohen J. Calming Traffic on Bogota's Killing Streets. *Science (80-.).* 2008;319(5864):742-743. doi:10.1126/science.319.5864.742.
34. Quill E. Unclogging Urban Arteries. *Science (80-.).* 2008;319(5864):750-751. doi:10.1126/science.319.5864.750b.
35. Kaiser J. Money-with Strings- to Fight Poverty. *Science (80-.).* 2008;319(5864):754-755. Available at: <http://www.jstor.org/pss/20053308>.
36. Cohen J. Pipe Dreams Come True. *Science (80-.).* 2008;319(5864):746-747. doi:10.1126/science.319.5864.746.
37. Stokstad E. Rebuilt From Ruins, a Water Utility Turns Clean and Pure. *Science (80-.).* 2008;319(5864):746-747. doi:10.1126/science.319.5864.746.

38. Koenig R. Durban's Poor Get Water Services Long Denied. *Science* (80-.). 2008;319(5864):744-745. doi:10.1126/science.319.5864.744.
39. Bauman A, Schoeppe S, Lewicka M, Armstrong T, Canadeias V, Richards J. *Review of Best Practice in Interventions to Promote Physical Activity in Developing Countries*; 2005.
40. Global Research Network on Urban Health Equity. *Improving Urban Health Equity through Action on the Social and Environmental Determinants of Health*. London; 2010.
41. The Cities Alliance. *Liveable Cities- The Benefits of Urban Environmental Planning*; 2007. Available at: www.unep.org/urban_environment/PDFs/LiveableCities.pdf.
42. O'Neill K, MacHugh I. *Urban Environment Good Practice & Benchmarking Report*; 2015.
43. WHO. *Road Safety Statistics*; 2010.
44. Singh D, Singh SP, Kumaran M, Goel S. Epidemiology of road traffic accident deaths in children in Chandigarh zone of North West India. *Egypt. J. Forensic Sci.* 2015. doi:10.1016/j.ejfs.2015.01.008.
45. Editor. The road to safety. *The Hindu* 2012. Available at: <http://www.thehindu.com/opinion/editorial/article3559592.ece>. Accessed September 29, 2015.
46. Census of India. Final Population Totals. 2011. Available at: http://www.dataforall.org/dashboard/censusinfoindia_pca/. Accessed September 29, 2015.
47. Steering Committee on Urbanization. *Report of the Working Group on Urban Poverty, Slums, and Service Delivery System*. New Delhi; 2011.
48. Nair S. 35 per cent urban India is BPL, says unreleased data. *The Indian Express* 2015. Available at: <http://indianexpress.com/article/india/india-others/35-per-cent-urban-india-is-bpl-says-unreleased-data/>. Accessed September 29, 2015.
49. International Association for Public Participation. Good Public Participation results in Better Decision. *IAP2*. Available at: <http://www.iap2.org/>. Accessed September 29, 2015.
50. Keruwala N. Participatory Budgeting in India: The Pune experiment. *OneWorld.net* 2013. Available at:

- <http://southasia.oneworld.net/news/participatory-budgeting-in-india-the-pune-experiment#.VgpHaROqqkp>. Accessed September 29, 2015.
51. Sustainable Development Knowledge Platform. Sustainable Development Goals. *UN Dep. Econ. Soc. Aff.* 2015. Available at: <https://sustainabledevelopment.un.org/topics>. Accessed September 29, 2015.
 52. Bloomberg Philanthropists. India Smart Cities Challenge. Available at: <http://www.smartcitieschallenge.in/challenge-overview>. Accessed October 2, 2015.
 53. Ministry of Urban Development Government of India. *Mission Statement & Guidelines for Smart Cities.*; 2015. doi:10.4324/9780203076224.
 54. WHO. *Health in All Policies: Helsinki Statement. Framework for Country Action.*; 2014.

Examining Best Practices for alleviating the rising stress of Urbanization on the Health and Well-being of the Urban Populations

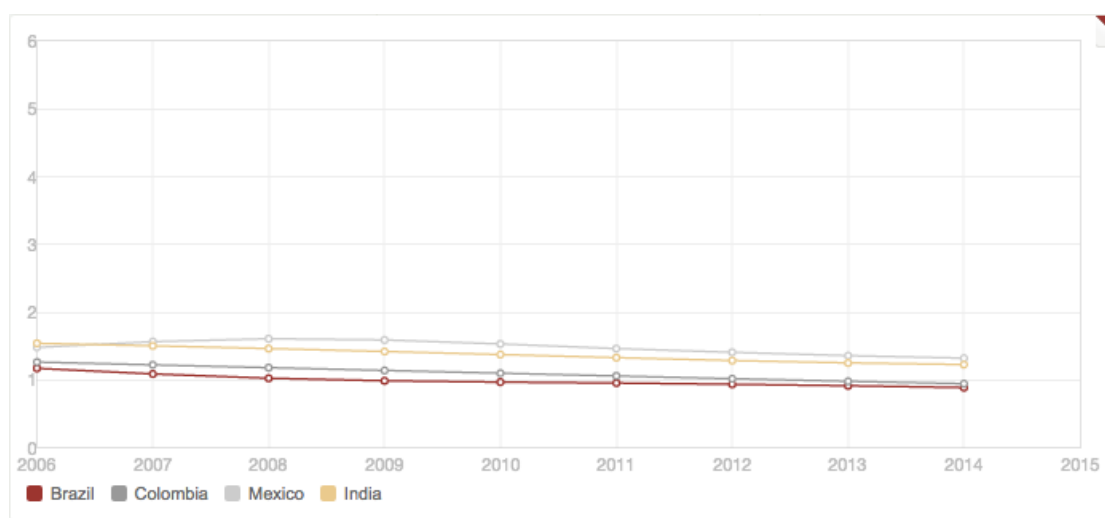
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Appendix

Comparison of countries:

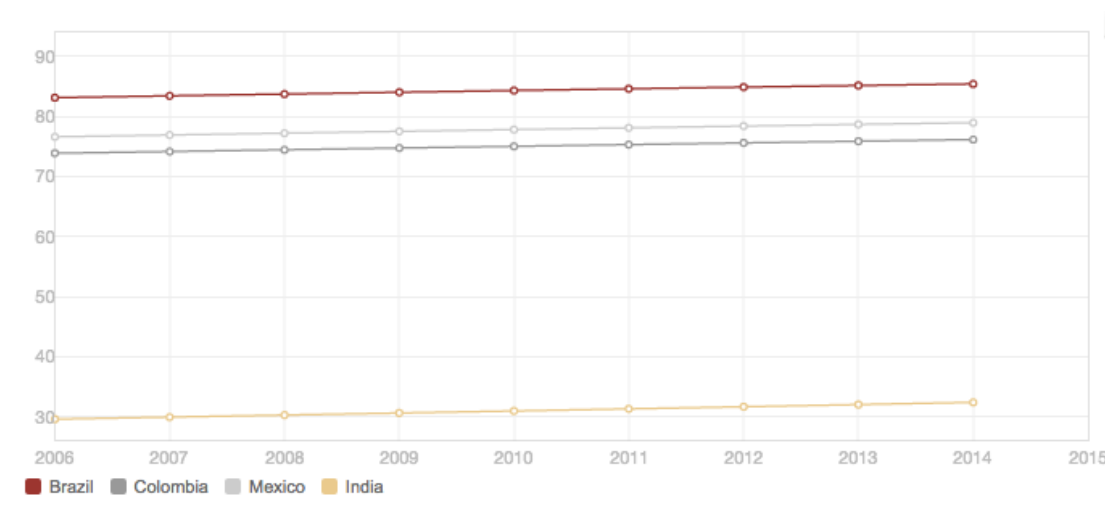
India, Brazil, Mexico and Colombia

Figure 5: Population growth rate (annual %)



Source: World Bank Data

Figure 6: Urban population (% of total)



Source: World Bank Data