

**Urban Health Status in Ahmedabad city:
GIS based study of Baherampura, Kubernagar, and Vasna wards**

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Abstract:

Urbanization is an important demographic shift worldwide. Today, nearly half the world population is urban. In the 1991-2001 decade, Indian population grew by 2 %, urban India by 3 %, mega cities at 4 %, and slum population by 5 % (2-3-4-5 syndrome). Slum growth in future is expected to surpass the capacities of civic authorities to respond to health and infrastructure needs of this population group. Managing urban health, thus assumes critical importance to achieve better health outcomes in the country. Historically, Government of India's focus has been on development of rural health system. However, since the 9th Five year Plan, Government has started giving priority to urban health as well, but hardly any progress has been achieved in this area.

In this working paper, we discuss our initiatives in a pilot study of urban health management in Ahmedabad city, the seventh largest mega city in India with a population of 3.5 million consisting of 1.5 million people living in slums and slum-like conditions. Our objective is to understand the nature, magnitude, and complexity of issues in the management of urban health. Towards this, our pilot study focuses on three wards, in three different parts (zones) of Ahmedabad. Our GIS based analysis provides some very interesting insights into the status of health in the selected wards. Our next task is to understand private health care in Ahmedabad, analyze existing public private partnerships in the city, and thereby build a Model Urban Health Centre with Public private Participation.

Keywords: Urban health, management, Public-private partnership

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Urban Health Status in Ahmedabad city: GIS based study of Baherampura, Kubernagar, and Vasna wards

1. Urbanization:

Urbanization is an important demographic shift worldwide. In the year 2000, urban population accounted for nearly 45 % of the world population. Today, nearly half the world population is urban and the urban population is growing by 60 million persons per year, about 3 times the increase in the rural population [1]. Growing urban poverty is becoming a major concern; nearly 500 million urban poor in developing countries are estimated to be living on less than US\$ 1 a day [2]. There has to be therefore a new focus on city management, with a special focus on urban poor.

India's urban population of 285 million represents 28 % of its total population [3]. Population projections indicate that by 2015, about 40 % of India's population will be urban. Slum population growth will continue to outpace growth rates of India, urban India, and mega cities. In the 1991-2001 decade, Indian population grew at the rate of 2 %, urban India grew at 3 %, mega cities at 4 %, and slum population at 5 %. This is commonly referred to as the 2-3-4-5 syndrome. Current slum populations in India estimated at 60 million, account for 21 % of the total urban population as per official data. Population projections postulate that slum growth in future is expected to surpass the capacities of civic authorities to respond to the health and infrastructure needs of this population group. Managing urban health, thus assumes critical importance in the overall objective to achieve better health outcomes in the country.

2. Urban Health:

Historically, the Government of India's focus has been on development of rural health system, having a three tier health delivery structure (determined on the basis of population) to cater to the largely rural population. However, over the last decade, Urban Health has emerged as a priority in recent Government of India policies and plans. The 9th Five-year plan (1997-2002) envisaged the development of a well structured network of urban primary care institutions providing health and family welfare services to the population within 1 to 3 km of their dwellings [4]. Though there are several small success stories, hardly any progress has been achieved in the overall task of restructuring the urban primary health centre, linked to secondary and tertiary care. The task of restructuring urban health centres is expected to be completed in the 10th Five Year Plan: 2002-2007 [5]. Recognizing the urgent need to focus on the health of the vulnerable urban populations, the World bank supported a Family Welfare urban slums project [6], to improve health outcomes of the urban poor population in four Indian cities; Bangalore, Delhi, Hyderabad, and Calcutta. The Union Budget (2005) of the Government of India provides a substantial amount of financial resources for improvement of urban health in seven Indian mega cities: Bombay, Calcutta, Delhi, Chennai, Hyderabad, Bangalore, and Ahmedabad [7].

In this working paper, we analyze the state of urban health in Ahmedabad city in the state of Gujarat. It is important to mention here that Government of Gujarat has declared the year 2005 as the "Year of Urban Development".

3. Ahmedabad City:

Ahmedabad City (also known as Ahmedabad Municipal Corporation, AMC) is the largest city in Gujarat State and the seventh largest city in India with a population of 3.5 million, spread across 192 sq. km. The population growth in Ahmedabad over the last 5 decades is given in Table 1 below.

Table 1
Population Growth in Ahmedabad

Census Year	Population	Decadal Growth Rate
1951	837,163	41.59 %
1961	1,149,918	37.36 %
1971	1,586,544	37.88 %
1981	2,059,725	29.90 %
1991	2,876,710	20.80 %
2001	3,515,361	22.20 %

Source: AMC Urban RCH project report [8]

The city of Ahmedabad has nearly 7 million dwelling units, of which almost 50 % are situated in 2500 slums (and chawls) housing approximately 1.5 million people. This is the most vulnerable group of the society which needs a special attention.

The civic affairs of the city are governed by Ahmedabad Municipal Corporation (AMC). Besides standard civic amenities such as water supply, waste disposal, maintenance of roads, provision of street lights etc, AMC also provides several additional services. Some of the additional services are City transport, and medical services through a network of Family Welfare centres, Dispensaries, Maternity Homes, Referral hospitals, and four large teaching hospitals (VS, LG, SCL, and Nagri hospitals).

Administratively, AMC is divided into 43 Municipal Election Wards across 5 zones, with each ward having an average population of 80,000 people (See Exhibit 1 for a few AMC Statistics). These 43 wards elect a total of 129 corporators, who in turn elect a Mayor. Mayor is the chairman of AMC Board which takes all policy decisions. The Mayor is assisted by a Deputy Mayor, three statutory committees and thirteen sub committees. The Municipal Commissioner, who is a civil servant from the Indian Administrative Service, is responsible for executing all the decisions taken by the AMC Board. He is assisted by 9 Deputy Municipal Commissioners: 5 Deputy Municipal Commissioners for the 5 zones (Central, East, West, North, and South) and one Deputy Municipal Commissioner each for Engineering, Security, Administration, and Finance. One of the zonal deputy municipal commissioners is given the additional charge of Health Department. The organizational chart of the Health Department at AMC is shown in Exhibit 2.

4. Urban Health in Ahmedabad:

AMC attaches considerable significance to healthcare, allocates 10-12 percent of its annual budget to the health sector (See Table 2 below), and subsidizes the cost of healthcare by offering its services through its network of 70 centres consisting of family welfare centres, dispensaries, maternity homes, and general hospitals [9].

Table 2
AMC Budget (Revenue Expenditure- Rs. in Crores)

	2001-02	2000-01	1999-2000	1998-99	1997-98
Primary health	10.17	11.96	10.92	9.71	8.77
Therapeutic health					
Dispensaries	1.57	1.84	1.73	1.68	1.42
Maternity homes	2.54	3.04	2.88	2.61	2.28
Referral hospitals	0.59	0.59	0.40	0.36	0.29
V.S Hospital	25.48	24.97	24.59	21.00	21.76
L.G Hospital	8.76	9.63	8.97	7.56	6.35
S.C.L Hospital	8.98	9.79	9.02	7.40	5.89
Nagari hospital	1.47	1.62	1.54	1.39	1.06
T.B. Hospital	0.41	0.52	0.55	0.42	0.38
Infectious Disease Hospital	0.37	0.46	0.36	0.33	0.27
Total	50.17	52.45	50.03	42.74	39.71
Total of Health Sector	60.34	64.41	60.95	52.45	48.48
Total of AMC	559.54	561.20	518.30	418.91	361.38

The state government of Gujarat has a large Civil Hospital of more than 2000 beds in Ahmedabad city. The Employee State Insurance (ESI) Corporation of the Government of India administers its scheme through 50 ESI dispensaries and 2 ESI hospitals in Ahmedabad. Over and above the public healthcare facilities (offered by the AMC, State and Central Governments), Ahmedabad city also has a large network of more than 3000 private healthcare facilities.

Even with such a large network of health facilities, health indicators of Ahmedabad City are not very satisfactory. There are wide variations in the quality of healthcare services in various parts of the city, due to poor locations of health facilities, varying demand for health needs from a heterogeneous group of population, and poor infrastructure. Most of the health facilities are confined to the original 100 sq. km area of Ahmedabad city, the additional area of 92 sq. km added to the city limits in 1986 is still very poorly served. Also the community needs for health services are very different based on the socio-economic and cultural differences between various segments of the urban population (about 40 percent of Ahmedabad population live in slums). The large influx of migratory population into the city puts enormous pressure on the limited public health facilities leading to further deterioration of the health status of Ahmedabad residents.

In the following sections, we present a GIS based study of health status in three wards of Ahmedabad, namely, Baherampura ward in the South Zone, Kubernagar ward in the North Zone, and Vasna ward in the West Zone.

5. Methodology to estimate urban health status:

5.1 A Conceptual Framework:

A clear understanding of the health challenges faced by the population is essential in order to improve the delivery of health services. Unfortunately, policy makers at the local, national, and international levels do not have enough information on the health conditions of the urban poor. Published data on urban health has three major drawbacks [10]:

- (a) Health data is usually aggregated to provide an average of all urban residents, rich and poor. It therefore masks the health conditions of the urban poor.
- (b) Urban poor are almost always overlooked. The informal or often illegal status of low-income urban settlements contributes to the fact that public health authorities often do not have the means or the mandate to collect data on urban poor population.
- (c) It is not easy to identify the urban poor. Policy makers have to define urban poor differently from rural poor.

Primary data collection is therefore necessary to correctly comprehend the status of urban health.

It is now fairly well established that the key factors affecting health in cities can be considered within three broad themes: the physical environment, the social environment, and access to health and health services [11]. Our methodology to study the health status of the above three wards of Ahmedabad, therefore consists of the following activities:

Household Survey: A household survey on the socio-economic and cultural status, public health facilities, and the current practice of seeking health services in the selected wards

Health Facilities Survey: A survey of all public and private health facilities offering outpatient and inpatient services.

GIS based analysis: A Statistical and GIS based analysis to estimate the health status.

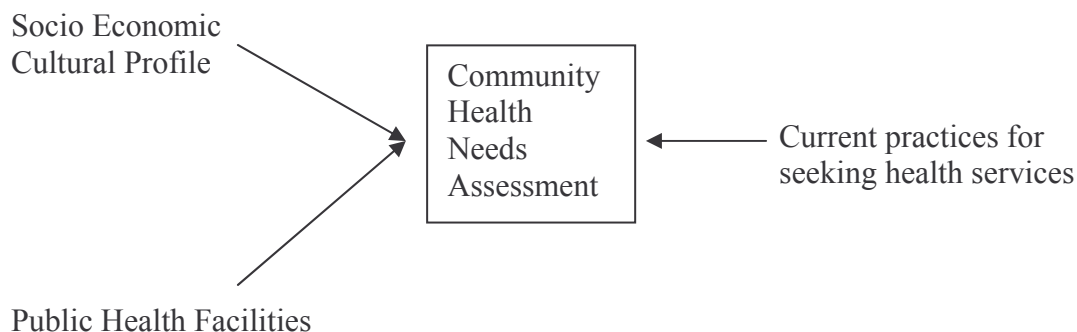
We describe each of these activities below in detail.

5.2 Household Survey:

The objective of our household survey is to relate the health Assessment needs with socio-economic cultural status, quality of public health facilities, and the current practice of seeking healthcare services.

5.2.1 Survey Design: The design of our household sample survey is based on the following determinants of health needs:

- Socio Economic and Cultural background
- Quality of Public Health Facilities
- Current practice of seeking health services



5.2.2. Target Population: Our target population for the household surveys consists of

- Slum Population (includes those living in chawls also), and
 - Non-Slum population living in LIG, MIG, and HIG flats
- LIG: Low Income group; MIG: Middle Income Group,; HIG: High Income group

Urban population is very heterogeneous, and it is also difficult to identify urban poor. We include in the household survey, all strata of urban population, so as to understand the health needs of each strata of urban population. We therefore included residents who are living in slums as well as apartments/houses classified under LIG, MIG, and HIG.

5.2.3. Sample Size: As the majority of urban poor live in slums and chawls (hereafter we use the term slums to include chawls also), we decided to sample more households from the slums than from the LIG/MIG/HIG areas. Based on cost, time, and the feasibility of data collection, we arrived at the following sample size:

- 200-250 households from Slums (nearly 4-5 % of slum population)
- 50-75 households from Non-Slum areas (LIG, MIG, HIG houses)

Relying on the AMC data on slum population, we chose a few big slums and decided on “Systematic Sampling” to identify slum households from each slum pocket. Selection of LIG, MIG, and HIG houses was done using “Simple Random Sampling”.

5.2.4 Participation with NGOs: In order to collect reliable data from slum and slum-like poor households, it is necessary to rely on local NGOs who are very active in the selected wards and are acceptable to the local community. We collaborated with the following NGOs.

SANCHETNA: A voluntary organization working with poor urban communities residing in the slums of Ahmedabad.

SAATH: An NGO working with AMC on Slum Networking Project to provide physical and social infrastructure in slums.

5.3 Health Facilities Survey:

The objective of our survey of all health facilities in the selected wards is to estimate the quality and nature of health services.

5.3.1 Survey Design: Our survey of all public and private healthcare facilities offering outpatient and inpatient services, allopath and AYUSH, is aimed at capturing the nature and types of health services available in the selected wards. The survey questionnaire is therefore focused on collecting data on all resources in the health facilities and their utilization, such as

- Human Resources (doctors, nurses, para medical staff)
- Specialty services offered (general practitioner, orthopedic surgeon, etc)
- Number of beds (indoor services)
- Number of patients served (indoor, and outpatient)
- Laboratory and Radiology investigations advised

5.3.2 Participation with AMC: Working with AMC is very crucial in order to understand the extent of services offered by the public and private sector. While some data on government health facilities can be obtained from government sources, there is no data available on private healthcare services. This is because, there is no uniform nationwide system of registering either practitioners or institutions providing healthcare in the private/voluntary sector. There is no mechanism either for obtaining and analyzing information on health care infrastructure and manpower in these sectors at the district level. Participation with AMC enabled us to utilize the services of AMC ward tax collectors in locating the private health facilities, and thereby facilitated survey.

5.4 Statistical and GIS Based Analysis:

Below we give a framework of Statistical and GIS based analysis of our surveys on households and health facilities.

5.4.1 Creating a Computerized Data Base: Before undertaking any analysis, it is necessary to organize the data logically in a computer, so as to facilitate data retrieval for analysis. Transferring the survey data from questionnaires into a computer data base requires data editing, i.e. the process of data entry, checking for data inconsistency and correcting the erroneous data. The database design should also ensure data integrity.

Data base Organization: Design of a data base organization is very critical in dealing with data analysis from large sample surveys. The data base design should support the needs of the researchers for any type of analysis they may wish to perform. Towards this, the data base design should facilitate data retrieval as and when required.

5.4.2 GIS Mapping: This activity calls for the following steps:

- Digitizing the map of AMC showing the zone and ward boundaries
- Locating all the slum pockets in the above map
- Digitizing the street level maps of selected wards
- Locating the health facilities on the street level GIS maps of selected wards

5.4.3 Data analysis: We summarize below some of the statistical and GIS based analysis of data from sample surveys:

- Availability of services: Number of outpatient clinics per 1000 population
Number of beds per 1000 population
- Access to services: Distance of each slum pocket from the nearest health facility (public Vs private) offering outpatient services

Distance of each slum pocket from the nearest health facility (public Vs private) offering inpatient services
- Affordability: Average expenses per household for outpatient and Inpatient services
- Equity of services: Probability distributions of distances to the nearest Outpatient service facility

Probability distribution of distances to the nearest Inpatient service facility

6. Conducting the Sample Surveys:

6.1 Household survey: We first designed a questionnaire in English and translated it into Gujarati language. We chose Baherampura ward to initiate our sample survey. We trained the sample survey team from SANCHETNA on the various aspects of our design and the relevance of each question to the project objectives. A pilot testing of the survey questionnaire was done by SANCHETNA survey team jointly with the IIMA research team on a small group of 10-20 slum households. Based on our experience, we revised the questionnaire and finalized it for the actual survey in Baherampura ward. Sample survey in Baherampura ward took almost 3 weeks to complete.

Based on our understanding from Baherampura household survey, we revised the questionnaire before doing the survey in Kubernagar. The household questionnaire for Kubernagar was further revised before doing the survey in Vasna ward. A copy of our household sample questionnaire is shown in *Exhibit 3*.

6.2 Health Facilities Survey: AMC ward tax collectors helped us locate the health facilities in each ward. Starting with Baherampura ward, we completed the survey in Kubernagar and Vasna wards.

A copy of our health facilities sample questionnaire is shown in *Exhibit 4*.

7. Health Status Profile: Baherampura, Kubernagar, Vasna wards

7.1 Baherampura Ward

Baherampura, in the South Zone of Ahmedabad has a population of 75535 living in 8.68 sq km of area. Baherampura has 78 slums with 17565 huts and tenements. Average Household size is 4.6. Overall literacy levels at 67 % and female literacy at 57 % are the lowest in AMC.

Socio-Economic Profile: Eighty percent of the population resides in slums and chawls and hence exposed to very unhygienic living conditions. People are involved in construction work, dyeing industry as well as in vegetable vending and kite making at individual household levels. Work participation of women is almost nil in this ward. Average annual household expenditure on healthcare is around Rs 5000.

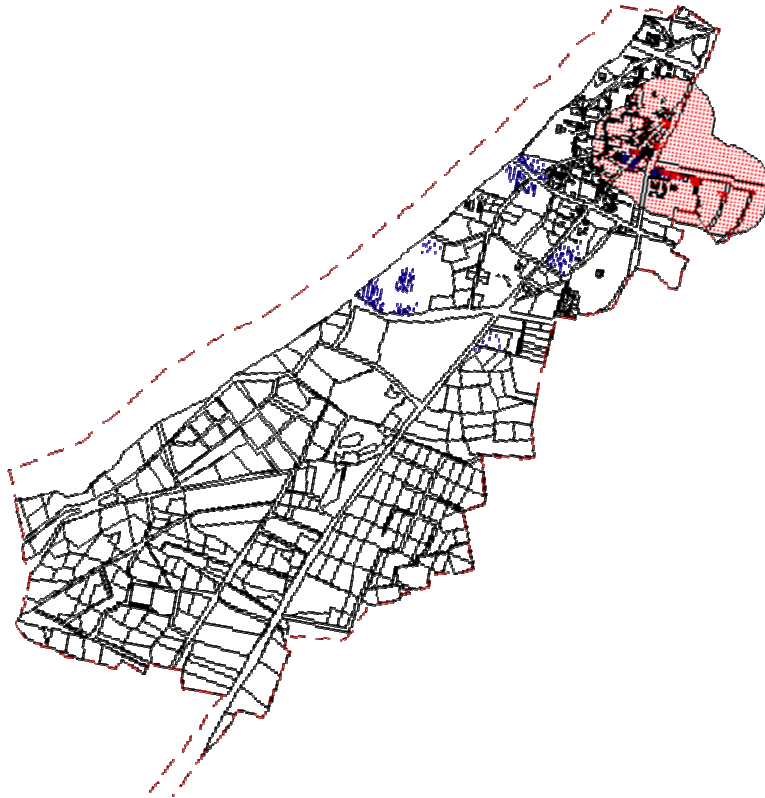
Public Health Infrastructure: Baherampura has 78.77 % households having legal water supply out of which 53 % have individual connections. Average duration for water supply is one and half hour per day. 39 % of households have absolutely no toilet facility and 13 % have community or common toilets. Location of industries amidst the residential areas, solid waste dumping site and nearness to river also make the population vulnerable for diseases. Road network is also very poor in this ward, making accessibility further difficult.

Health Facilities in Baherampura: Baherampura has very limited health facilities. It has no outpatient clinic run by the government. AMC runs a referral hospital with 8-10 beds. The infectious diseases hospital under AMC is not included in our study as our focus is only on general care (outpatient and inpatient services) and not on any specialty services. Because of low economic status, private health care facilities are also limited in number in this ward; 13 dispensaries and 6 nursing homes in all.

The problem of insufficient health facilities is compounded by poor locations, raising serious concerns on the equity of health services. Public and private health care centers are located in the northern part of the ward. All these are more than half a kilometer away for a majority of residents (See Map). Urban poor dwelling in Khodiyarnagar and other slums in the southern part of the ward are totally neglected.

Table 3
Number of Health Care Facilities in Baherampura ward

No. of Govt./Municipal Dispensaries	0
No. of Govt./Municipal Hospitals	1
No. of Private Dispensaries	13
No. of Private Hospitals	6



Coverage of Health Facilities and Slum locations in Baherampura Ward

Health Profile of Baherampura: Various aspects of health at household level were studied in detail such as expenditure pattern, awareness, and episodes of illness. 67 % of the population had at least one episode of illness last year. Awareness level was very low regarding public health facilities; 65 % did not know about doctor's presence at night and 65 % did not know about the presence of municipal hospitals. Almost 72 % of the total expenditure accounts for food and hence left with insufficient money for health needs.

7.2 Kubernagar Ward

Kubernagar election ward in the North Zone of Ahmedabad has a population of 87540 living in 2.33 sq km of area. It has 20 slums having 8200 huts & tenements. Average Household size is 4.9. Overall literacy level of Kubernagar is 80.19 % and female literacy is 71.3%.

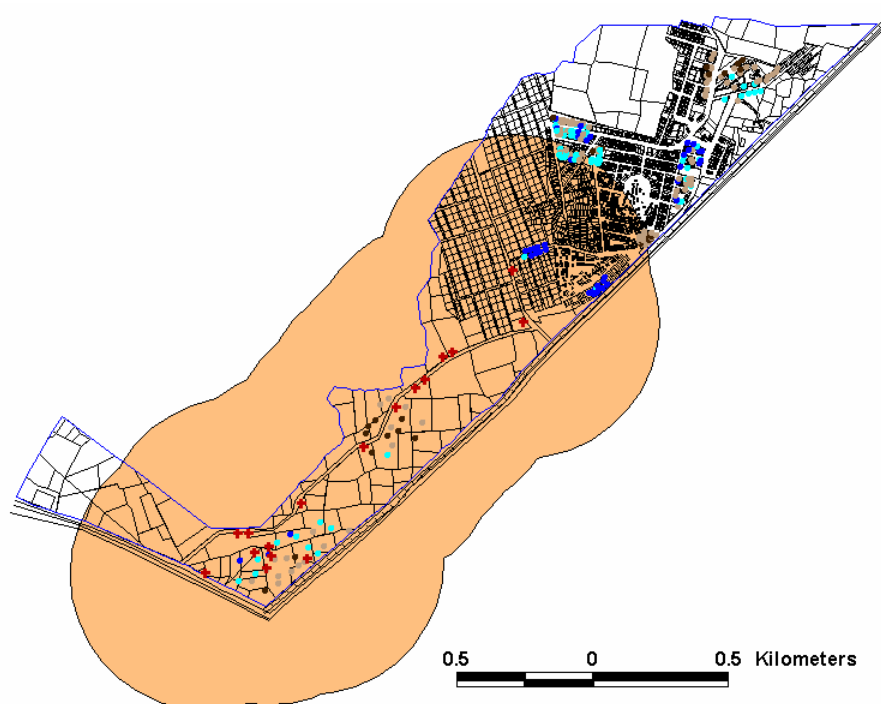
Socio-Economic Profile: Forty eight percent of population live in slums & chawls. Occupation is mainly cloth business, provision shops, small-scale business and factory jobs. Average annual expenditure on health is around Rs. 4000.

Public Health Infrastructure: Most of the households have legal water supply out of which 71% have individual connections. Average duration for water supply is one and half hour per day. About 70% households have individual toilet facilities, and 10% have community or common toilets. Though Kubernagar ward is developed as a township, the road network is very poor.

Health Facilities in Kubernagar: Kubernagar has no government facilities either for indoor or outpatient services. It has about 40 Private health care facilities, including one Trust hospital and two private hospitals.

Table 4
Number of Health Care Facilities in Kubernagar ward

No. of Govt./Municipal Dispensaries	0
No. of Govt./Municipal Hospitals	0
No. of Private Dispensaries	39
No. of Private Hospitals	3



Health Profile of Kubernagar: Various aspects of health at household level were studied in detail such as expenditure pattern, awareness, and episodes of illness. 70% of the population had at least one episode of illness last year. Awareness level was very low regarding public health facilities: 69 % did not know about doctor's presence at night and 54% did not know about the presence of municipal hospitals. Almost 75% of the total expenditure accounts for food and hence they are not left with sufficient savings for health expenditure, annual average expenditure on health is only Rs. 4000.

7.3 Vasna Ward

Vasna ward located in the West Zone of Ahmedabad, has a population of 1, 03,526 and covers an area of 5.5 square kilometers. Population density is 18,823 persons per square kilometer and the region contains 24 slums with a population of 39,367 persons accounting for 38 % of total population. There is no government healthcare facility presently available within the ward.

Based on our learning from Baherampura and Kubernagar wards, our goal for Vasna Ward was to do an elaborate survey and a more detailed analysis to understand the disparities between the slums and non-slum population. We interviewed approximately 350 households in a variety of neighborhoods; 200-250 surveys from slum communities and 50-100 surveys from low income, middle income and high income groups. After screening for invalid results, 340 households were included in the results for analysis. These 340 surveys were completed in 38 different neighborhoods of Vasna comprising of 1748 individuals with 75 % living in slums. Hindus constituted the vast majority, 99 % of the population. Overall, males represented 54% of individuals in the households that were surveyed and females represented 46%. The distribution of the sample by income group across these 38 areas can be found in Exhibit 5.

The distribution of surveyed households (judged primarily by housing type) is as follows:

**Table 5
Income Categories in Vasna Ward Sample**

Type of Household surveyed	No of HH	%
Slums	252	74.1%
Non-Slums (LIG / MIG / HIG)	88	25.9%
Low Income Group (LIG)	18	5.3%
Middle Income Group (MIG)	16	4.7%
High Income Group (HIG)	54	15.9%
Total	340	100.0%

Health information is socially sensitive, i.e., abortions, venereal diseases, tuberculosis, and thus, respondents may have avoided answering questions on these matters, particularly if the respondent was a female family member speaking in the presence of a male survey team member. Also, our surveys were conducted in the daytime and thus, households where all family members were working are not included. We suspect this perhaps leads to higher income bias since surveyed households can “afford” to have one or more members at home during the day.

The most frequent illnesses reported by the households in our survey were common colds, fevers and diarrhea or vomiting [See Table 6].

Table 6
Incidents and Frequency of Illness per year

Ailment	Incidents of Ailment	% of Total
Common Cold	455	43.3
Fever/Malaria	141	13.4
Gastrointestinal	74	7.0
Diarrhea/Vomiting	72	6.8
Skin Problems	56	5.3
Gynecological	48	4.6
Respiratory Disease	33	3.1
Fracture	30	2.9
Pediatric Problems	20	1.9
Tuberculosis	12	1.1
Measles	11	1.0
Emergency	11	1.0
Urinary	10	1.0
Psychological	7	0.7
Other	72	6.8
Total	1,052	100

Between socioeconomic categories, trends were apparent. In general, the slum population had 3.3 illness episodes per household. This rate of illness was 23% higher than in the richer LIG / MIG / HIG households which had 2.6 illness episodes per household. All the reported incidents of tuberculosis (12 cases out of 1,052 illness episodes) were among the slum population. More complicated health issues requiring specialized care such as psychological problems or urinary problems appeared less often in the poorer populations. While these conditions may exist in the poorer populations, it is less likely that a patient in the slum category has seen a specialist.

Of the vast majority of reported illness episodes, 70%, were resolved through outpatient (OPD) treatment. 9% of reported episodes were treated through inpatient (IPD) care. Table 7 provides data on frequency of OPD and IPD treatments.

Use of professional medical care was lower in the slum population. The rate of self-care, defined as an episode of illness where no professional medical treatment was sought, was higher in the slum group. It can be assumed that this is partially due to lack of money to pay for medical treatment, lack of easily accessible facilities, and unwillingness to go to cheaper government facilities.

For outpatient consultation, faith in the doctor and his or her reputation was the primary factor cited by 61% of respondents. Another 25% of households made their choice based on access to health facility and 11% decided on the basis of low fees. Other factors such as the suitability of timings or availability in an emergency were less important.

Table 7
Frequency of Ailments in Vasna Ward

Illness	% of OPD Visit	% of IPD Visit
Common Cold	54.6	15.4
Fever/Malaria	15	12.1
Gastrointestinal	6.8	9.9
Diarrhea/Vomiting	5.5	8.8
Skin Problems	4	7.7
Gynecological	2.6	7.7
Respiratory Disease	2.2	6.6
Fracture	1.5	4.4
Pediatric Problems	1.4	4.4
Tuberculosis	1	3.3
Measles	0.8	3.3
Emergency	0.5	2.2
Urinary	0.1	1.1
Psychological	0	1.1
Other	4	12.1

Interestingly, the reasons cited by respondents were different when their treatment required inpatient care. For IPD treatment, fees became a more critical factor, cited as the primary reason behind their choice of provider in 22% of the time. The low rate of hospitalization (inpatient care) in the slum population could be because of the high cost of hospital admission or because of biases in physician treatment patterns in dealing with the poorer population. Both the trend towards increased self-care and the decreased rate of hospitalization among lower income groups have been confirmed in other studies of treatment-seeking behavior. Location became less important in deciding about IPD care; it was mentioned as a primary reason in only 9% of IPD cases versus 27% of OPD cases. Lastly, availability in an emergency was more critical in IPD cases, accounting for 9% of primary reasons whereas it represented less than 1% of reasons for OPD care.

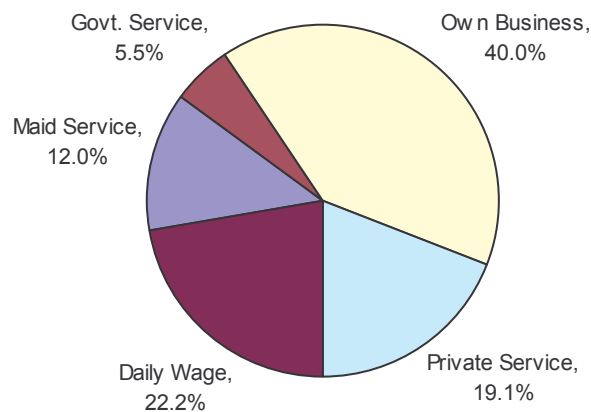
Slum Population

About 66 % of the slum dwellers in our sample were of working age, defined as age 15-60, 11 % children in the age group 0 – 6, and 3 % above the age of 61. Literacy levels were 79%; 74% of those living in the slums had some education at the primary school level and 39% had education at the secondary level. Gender gap exists in slum population; 88% of men in the community were literate, only 67% of women were literate.

Among employed people in the slums, the largest group (40%) work in their own businesses in occupations like barbering, carpentry, selling clothes, shoe polishing and selling fruits, vegetables or flowers. The second largest group of 22% works for daily wages. This category includes jobs such as drivers, construction laborers, handicraft piece work, or paper pickers. 19% are employed by private companies, 13% do domestic work in private houses, and finally, 6% are employed by the

government. The data showed that 61% of our slum dwellers were earning income through one of these forms of employment. Anecdotal evidence suggests that partial employment is common in the group described as earning “daily wages”. This type of work – construction labor or driving a private car – can be unpredictable and in some cases may provide about only 15 days of employment per month.

Figure 1: Employment – Slums in Vasna Ward



Income data was verbally reported during the survey interview and respondents were sometimes reluctant to share this information, most likely due to suspicions that such information would be used for other purposes (such as taxation). Thus, we suspect a certain degree of inaccuracy in the figures, given in Table 8.

**Table 8
Income of Slum Population in Relation to State Poverty Line**

Monthly Income (Rs.)	No of HH	%
Below 1000	8	3.20%
1001-2000	44	17.6
2001-2375	6	2.4
2375	State Poverty Line	
2375-3000	41	16.4
3001-4000	39	15.6
4001-5000	34	13.6
5001-10,000	64	25.6
Above 10,000	14	5.6

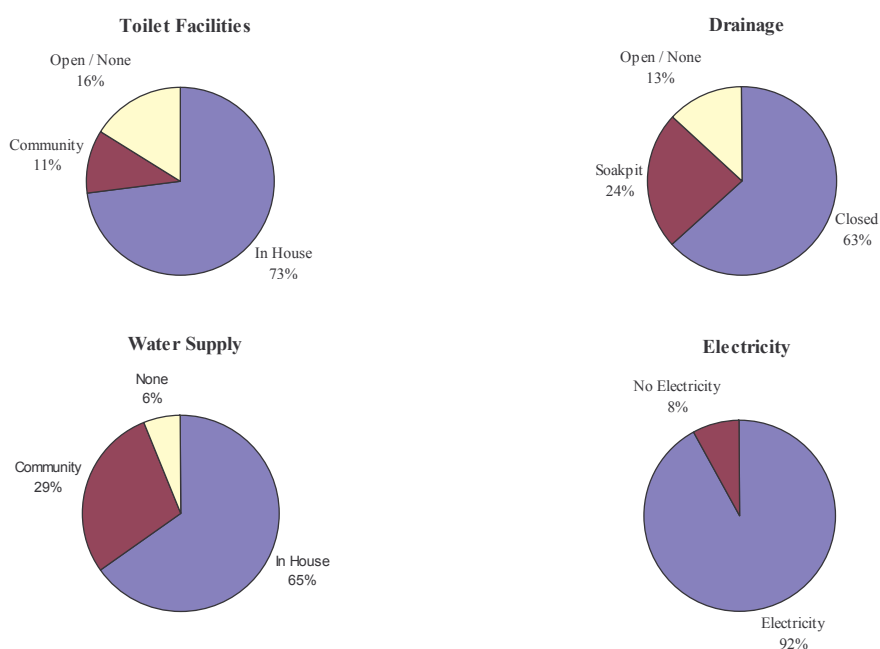
However, relative trends can be derived from the data, particularly in regard to expenditures. The slum households spend roughly two-thirds of their income to cover the basic necessities of food and health expenses, leaving little money for other items such as education, clothing and transportation. These households are left with limited ability to save or to cover the large health expenses associated with hospitalization and acute illness. Average expenditure per episode on health are given in Table 9.

Table 9
Average Expenditures on Healthcare – Slum Households in Vasna Ward

Average Expenditure	OPD Treatment	IPD Treatment
Common Cold	24	1,030
Fever/Malaria	27	1,500
Gastrointestinal	51	1,975
Diarrhea/Vomiting	39	2,272
Respiratory Disease	133	6,833
Tuberculosis	0	4,003
Measles	19	7,500
Skin Problems	152	8,000
Gynecological	192	2,999
Fracture	184	7,717
Pediatric Problems	40	11,817
Emergency	NA	3,500
Urinary	10	NA
Psychological	107	150
Other	601	876
Average Expenditure	61	4,298

As can be seen from the Figure 2 below, 73% of slum households had in house toilet facilities and an additional 11% had access to community latrines. Drainage facilities

Figure 2: Public Health Infrastructure in Slums of Vasna Ward



were as follows: 63% of slum households had closed drainage systems, 24% had only soak pit systems, while 13% had open drainage or no drainage. Water supply showed a roughly similar pattern to drainage: 65% of the slum and chawls sample reported in house water supply, 29% had access to community facilities such as a hand-pump, and 6% responded that they had no form of local water supply. 92% of the slum households had electricity power connections, legal or otherwise.

Availability and Access to Healthcare Facilities (Analysis of large slums): We present below some observations on the availability and access to healthcare by focusing our analysis on seven large slums in Vasna: Pravin Nagar, Gupta Nagar, Yogeshwar Nagar, Shivshankar Nagar, Mangal Talavadi, Om Nagar and Rajiv Nagar slums.

Availability of private health care facility within 1 km of distance [See Table 10] varies drastically between various communities ranging from absolutely no facility for Rajivnagar slums to 66 health facilities for Mangal Talavadi. Rajiv Nagar population is forced to travel more for their health care needs which may result into high rate of self medication or no treatment or delayed treatment.

Table 10
Number of health facilities within 1 km from major slums

Type of Facilities	Slum Name	Yogeshwar Nagar	Rajiv Nagar	Pravin Nagar	Om Nagar	Mangal Talavadi	Gupta Nagar	Shiv Shankar Nagar
Outpatient Facilities	Private	8	0	17	27	33	14	7
	Public	1	0	1	1	0	1	1
Inpatient Facilities	Private	4	0	13	24	33	13	4
	Public	0	0	0	0	0	0	0
Total Facilities		13	0	31	52	66	28	12

The analysis of nearest services available for major slum populations of Vasna is given in Table 11 below. The distance to the nearest private outpatient health facility ranges from 0 km to 2 km, while the nearest public provider is 1.2 km to 3.1 km away. Remote slums like Rajiv Nagar have no facilities nearby. Inpatient health care facilities are located within 0.1 km to 1.3 km which is fairly satisfactory. The current urban health center (run by Akhand Jyot Foundation) is located in the Far East Paldi ward which makes it less accessible for majority of slum population of Vasna ward.

Table 11
Distance to nearest available health facility from major slums

Type of Facility	Slum Name	Yogeshwar Nagar	Rajiv Nagar	Pravin Nagar	Om Nagar	Mangal Talavadi	Gupta Nagar	Shiv Shankar Nagar
Outpatient Facility	Public	2.8	3.1	2.3	1.9	1.2	2.3	2.9
	Private	0.3	1.9	0	0.3	0.1	0	0.5
Inpatient Facility	Public	5.0	4.6	4.6	4.2	3.5	4.6	5.1
	Private	0.8	1.3	0.4	0.3	0.1	0.4	1

Our HH survey reveals that slum dwellers in Vasna travel from 0.5 km to 3 km for outpatient health care services and as far as 11 km for inpatient health care service.[See Table 12]. The probable causes to seek inpatient care at distant facilities are non-availability in the vicinity or low affordability to seek care at private facilities forcing them to use sparsely located public sector facilities.

Table 12
Average distance traveled for health care from major slums

Type of Treatment	Slum Name	Yogeshwar Nagar	Rajiv Nagar	Pravin Nagar	Om Nagar	Mangal Talavadi	Gupta Nagar	Shiv Shankar Nagar
Outpatient Treatment	Minimum Distance Travelled	0.6	2.6	0.21	0.3	0.5	0.2	0.8
	Average Distance Travelled	1.8	3.08	2.9	0.5	1.3	1.2	1.3
	Maximum Distance Travelled	11.2	4.6	10.7	0.7	3.5	2.3	2.1
	Distance to Most Visited Facility	0.5	2.6	1.3	0.3	1	1.1	0.8
Inpatient Treatment	Minimum Distance	5	4.6	4.6	0.6	1.3	0.7	2.4
	Average Distance	5	6.2	7.7	3	6	0.7	4.2
	Maximum Distance	5	10.9	10.7	4.2	9.7	0.7	5.1
	Distance to Most Visited Facility	5	4.6	4.6	4.2	9.7	0.7	5.1
Average Distance Travelled		2.1	4	2.7	1	2.2	0.9	2.4

Distance shown is in km

The most visited health care facility is within 0.3 km to 2.6 km in case of out patient care, which suggests distance is one of the strong determinants to choose outpatient facility. The most visited health care facility for inpatient treatment ranges from 0.7 km to 9.7 km suggest the importance of factors such as availability and affordability to choose inpatient facility. Thus access to health facility is the prime concern for OPD where as availability and affordability are the prime concerns for IPD facilities.

The distribution of distance traveled to OPD and IPD facilities is given in Table 13. Nearly 90 % of people travel from 0.5 km to 3 km to seek outpatient health care services. In most slums nearly 70 % people travels 1 km to seek outpatient care. There are slums where 100 % patients visit health care provider within 1 km such as Omnagar, there are slums like Rajiv Nagar where all patients are traveling 2-3 km for outpatient care. Availability of service providers is a major determinant here.

Table 13
Probability Distribution of Distance traveled for outpatient healthcare needs

Distance Travelled Slum Name	% Patients traveling for Outpatient treatment					
	0 to 0.5 km	0.5 to 1.0 km	1.0 to 2.0 km	2.0 to 3.0 km	3.0 to 5.0 km	5.0 to 12.0 km
Yogeshwar Nagar	64	9	9	9	0	9
Rajiv Nagar	0	0	0	78	22	0
Pravin Nagar	45	0	36	0	9	9
Om Nagar	50	50	0	0	0	0
Mangal Talavadi	21	43	14	7	14	0
Gupta Nagar	38	13	38	13	0	0
Shivshankarnagar	0	40	40	20	0	0
Seven Slums average	36	19	16	18	7	3

Distance shown is in km

Nearly 75 % patients' travel 3 km to 12 km to seek inpatient health care. Also, there are slums where 50 % of patients have traveled 1 km to 2 km to seek inpatient care. Those are the slums where availability of inpatient health care providers is high like Mangal Talavdi, Pravin Nagar and Gupta Nagar.

Table 14
Probability Distribution of Distance traveled for inpatient healthcare needs

Distance Travelled Slum Name	% Patients traveling for inpatient treatment					
	0 to 0.5 km	0.5 to 1.0 km	1.0 to 2.0 km	2.0 to 3.0 km	3.0 to 5.0 km	5.0 to 12.0 km
Yogeshwar Nagar	0	0	0	0	100	0
Rajiv Nagar	0	0	0	0	75	25
Pravin Nagar	0	0	33	0	33	33
Om Nagar	0	33	0	0	67	0
Mangal Talavadi	0	17	33	0	17	33
Gupta Nagar	0	33	0	0	67	0
Shivshankar Nagar	0	0	0	33	0	66
Seven Slums Average	0	12	9	5	51	23

Distance shown is in km

Our analysis of Vasna slum populations has brought out the wide disparities on the quality of healthcare services (access, availability, and affordability) between slum and non-slum areas.

Equity of healthcare services: Equity of healthcare services is a function of the access, availability, and affordability of healthcare services. Our analysis presented above on availability, access, and affordability for the slum populations of Vasna ward therefore do provide some estimates for equity of healthcare services as well.

Effectiveness and Efficiency: Any analysis on the quality of healthcare services should also address issues regarding the efficiency and effectiveness of services.

Efficiency of services measures the amount of input resources (finance, materials and human resources) for a given output of services offered. In other words, efficiency is a measure of input-output ration of resources to achievement.

Effectiveness of services measures the quality of output services for a given amount of input resources. This is a measure of the utilization of available resources to provide medically acceptable standards of healthcare services. This measure depends on the professionals who are actually involved in the delivery of services.

Our work on efficiency and effectiveness of healthcare services is going on, and we will present our observations on these dimensions of service quality at a later date.

8. Conclusion:

Our pilot study of Baherampura, Kubernagar, and Vasna wards in Ahmedabad has given us a better insight into the status of urban health in these wards. We have also, to some extent, understood the differences that exist in the urban health status based on socio-economic profile, public health facilities and healthcare seeking habits.

Based on our understanding gained from the above pilot studies of 3 wards in AMC, we feel that it is necessary to extend the study to a few more wards in the remaining areas of Ahmedabad city. The objective to extend the study to a few more wards is to develop a comprehensive understanding of the nature, magnitude, and complexity of the issues facing AMC, and evolve a working model of urban health for AMC.

Our approach for the extended study will focus on the AMC objectives of a model Urban Health Centre to offer primary health services. Towards this objective, we would build a Decentralized Model with Integrated Services based on a good understanding of public-private partnership.

Decentralization will offer many benefits to placing the delivery in the hands of local bodies, as they are the officials that are most easily accessed by community leaders and most likely to understand the context in which services must be delivered.

Integrated Services would include consultation, investigation, medication, and referral services under the same roof. **Public-Private Partnership** would ensure scaling up of resources to meet the client needs, without incurring major investments. Over the years there have been several models of public private partnerships which have evolved in Ahmedabad city in the area of health care services. For example

- Urban Family Welfare Centers: Ahmedabad Municipal Corporation in partnership with NGOs such as Indian Red Cross Society, Indian Medical Association, Family Planning Association of India etc.
- Karuna Trust managing a AMC maternity home and voluntary services to Gujarat Cancer Hospital
- Polio Foundation running a Rehabilitation Centre
- SEWA, Ahmedabad jointly with AMC providing community based TB control services under revised National TB Control Program
- NGOs in charge of Anganwadi centers under ICDS program
- Prarthma Blood Centre in Ahmedabad supplying blood to AMC hospitals
- Medical drug stores in AMC hospitals, etc.

Besides health, there are examples of public private partnership in civic services – e.g. improvement of public gardens through partnership with business and industry, improvement of slum development programs and water sanitation programs with NGOs and industry, and so on. We propose to analyze a few such programs of public private partnership to understand what are the success factors and challenges.

The proposed extend and a more detailed study of a few more wards in AMC and a study on the nature of some existing public-private partnerships will enable us to develop a clear insight into building **an urban health model through public private partnership**. Work on this phase is currently going on.

Exhibit 1
A Profile of the Wards in Ahmedabad City

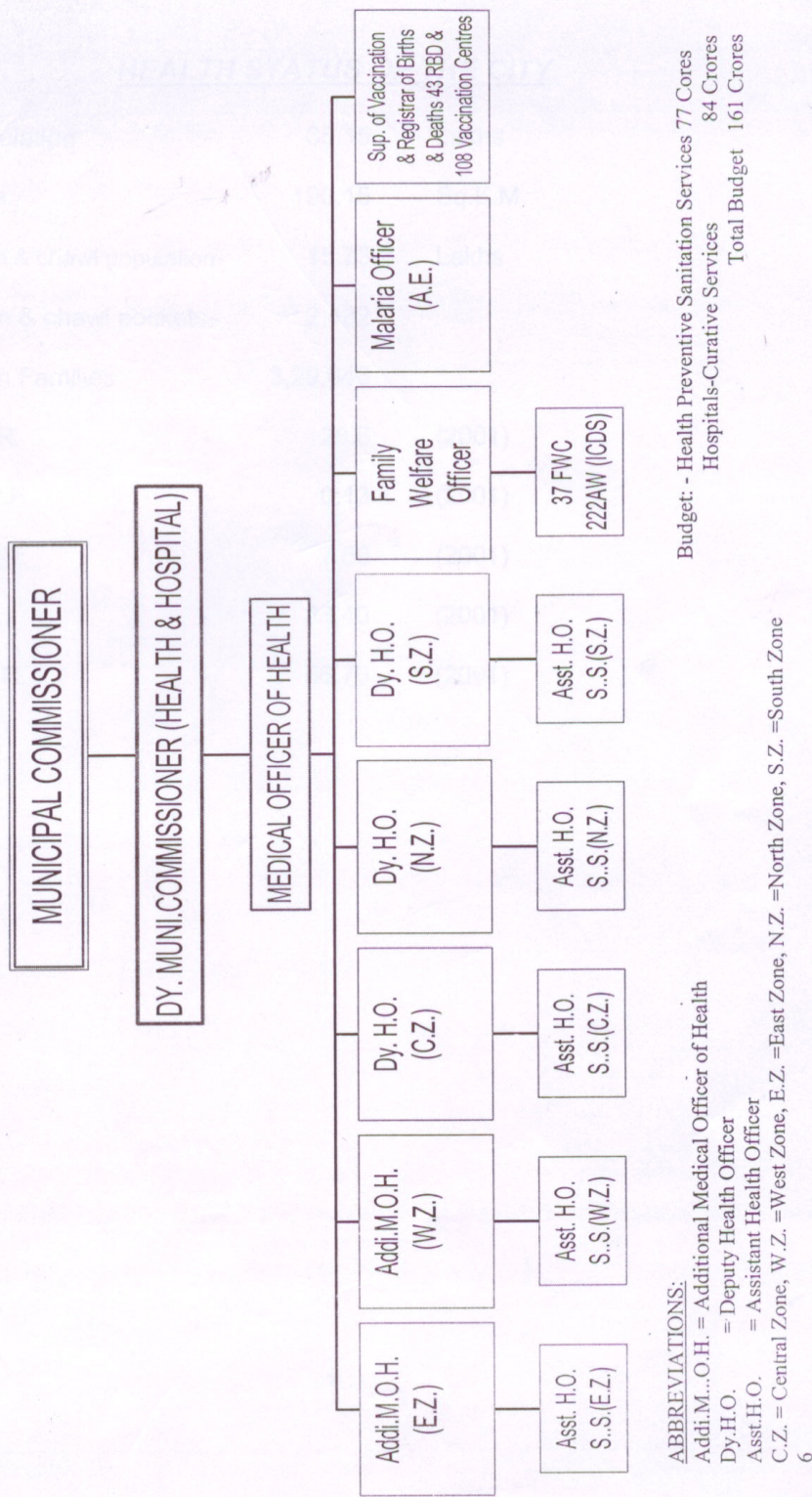
Zone	Ward Name	Area Sq. Kms	Total Population		Female population	
			Number	% Literacy	Number	% Literacy
Central	Khadia	1.38	54470	92.99	26033	89.96
	Kalupur	1.36	61100	89.76	29286	85.87
	Dariapur	0.74	62989	88.89	30493	84.28
	Shahpur	1.12	62657	81.81	30080	76.12
	Raikhad	1.86	64521	81.89	31225	76.49
	Jamalpur	1.00	66521	83.13	32118	78.30
	Dudheshwar	2.47	68013	74.29	31834	64.41
	Madhupura	4.30	70609	80.35	32693	72.71
	Girdharnagar	2.27	66508	84.22	31411	76.43
	Subtotal	16.50	577388	84.15	275173	78.29
East	Bapunagar	2.28	90054	81.85	42398	75.86
	Rakhial	3.06	75016	76.37	35055	67.23
	Gomtipur	1.88	68408	79.24	32258	71.38
	Raipur	3.10	73065	75.78	33870	66.73
	Amraiwadi	2.14	76340	80.55	34738	70.39
	Baipura-Hatkeshwar	1.67	102545	83.25	46946	75.05
	Nikol Road	4.16	120656	84.25	55413	75.89
	Odhav	6.94	106541	82.65	48301	73.99
	Khokhra-Mehmdabad	2.28	70572	89.68	33814	84.97
	Subtotal	27.51	783107	81.51	362793	73.50
North	Asarva	1.46	53669	79.63	25248	69.04
	Naroda Road	1.75	83730	70.55	38944	68.81
	Saraspur	1.69	70915	80.63	33523	72.22
	Potalia	4.05	80463	85.79	37530	76.31
	Kubernagar	2.33	87540	80.19	40244	71.30
	Sardarnagar	3.85	99841	80.23	47354	73.31
	Saijpur	2.15	79644	81.19	37086	71.36
	Thakkarbapanagar	3.96	129168	88.59	59841	82.97
	Naroda Muthia	10.95	94058	85.46	43917	79.55
	Subtotal	32.19	779028	82.36	363687	73.87
South	Maninagar	3.24	87797	87.20	42205	83.13
	Kankaria	3.45	69367	80.27	33019	72.73
	Baherampura	8.68	77535	67.56	36500	57.66
	Danilimda	5.20	110012	77.76	52350	71.18
	Bagfirdaus	6.40	121963	89.41	56749	83.95
	Vatva	32.82	121716	79.62	55788	70.96
	Isanpur	12.53	114028	86.34	52961	80.49
		Subtotal	72.32	702418	81.32	329572
West	Paldi	5.78	74822	91.06	36586	88.09
	Vasna	5.50	103526	81.51	49813	76.50
	Gandhigram	6.69	65800	87.15	30631	83.36
	Navrangpura	6.80	59987	85.50	29102	81.46
	S.P. Stadium	3.32	72880	86.97	34074	82.80
	Naranpura	3.50	83331	93.23	40012	90.38
	Nava Wadaj	2.23	68079	90.59	32037	85.64
	Juna Wadaj	3.68	71932	75.81	33437	67.15
	Sabarmati	4.82	73063	79.50	34558	70.62
	Subtotal	42.32	673420	85.70	320250	80.67
AMC	Grand Total	190.84	3515361	83.01	1651475	76.11

Source: AMC Statistical Outline

Exhibit 2: Org chart of AMC Health

AHMEDABAD MUNICIPAL CORPORATION

ORGANISATIONAL SETUP OF HEALTH DEPARTMENT



**Exhibit 3:
Household survey questionnaire**

Date of Survey: _____ Form No.: _____
 Ward Name: _____ AMC Ward ID: _____
 Area of Survey: _____ Investigator Name: _____

A. Household members

Name	Age	Sex	Education	Occupation	Income/Month	
1.		M — F —	Illiterate — KG — Primary (1-7) — Second. (8-10) — Higher (11-12) — College —	Seasonal — Govt. — Service — Private — Service — Own — Business — Maid — Service — Daily — Wages	Student — Unemployed — Housework — Retired — Other: — _____	
2.		M — F —	Illiterate — KG — Primary (1-7) — Second. (8-10) — Higher (11-12) — College —	Seasonal — Govt. — Service — Private — Service — Own — Business — Maid — Service — Daily — Wages	Student — Unemployed — Housework — Retired — Other: — _____	
3.		M — F —	Illiterate — KG — Primary (1-7) — Second. (8-10) — Higher (11-12) — College —	Seasonal — Govt. — Service — Private — Service — Own — Business — Maid — Service — Daily — Wages	Student — Unemployed — Housework — Retired — Other: — _____	

4.			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Illiterate <input type="checkbox"/> KG <input type="checkbox"/> Primary (1-7) <input type="checkbox"/> Second. (8-10) <input type="checkbox"/> Higher (11-12) <input type="checkbox"/> College	<input type="checkbox"/> Seasonal <input type="checkbox"/> Govt. Service <input type="checkbox"/> Private <input type="checkbox"/> Service <input type="checkbox"/> Own Business <input type="checkbox"/> Maid Service <input type="checkbox"/> Daily Wages	<input type="checkbox"/> Student <input type="checkbox"/> Unemployed <input type="checkbox"/> Housework <input type="checkbox"/> Retired <input type="checkbox"/> Other: _____	
5.			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Illiterate <input type="checkbox"/> KG <input type="checkbox"/> Primary (1-7) <input type="checkbox"/> Second. (8-10) <input type="checkbox"/> Higher (11-12) <input type="checkbox"/> College	<input type="checkbox"/> Seasonal <input type="checkbox"/> Govt. Service <input type="checkbox"/> Private <input type="checkbox"/> Service <input type="checkbox"/> Own Business <input type="checkbox"/> Maid Service <input type="checkbox"/> Daily Wages	<input type="checkbox"/> Student <input type="checkbox"/> Unemployed <input type="checkbox"/> Housework <input type="checkbox"/> Retired <input type="checkbox"/> Other: _____	
6.			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Illiterate <input type="checkbox"/> KG <input type="checkbox"/> Primary (1-7) <input type="checkbox"/> Second. (8-10) <input type="checkbox"/> Higher (11-12) <input type="checkbox"/> College	<input type="checkbox"/> Seasonal <input type="checkbox"/> Govt. Service <input type="checkbox"/> Private <input type="checkbox"/> Service <input type="checkbox"/> Own Business <input type="checkbox"/> Maid Service <input type="checkbox"/> Daily Wages	<input type="checkbox"/> Student <input type="checkbox"/> Unemployed <input type="checkbox"/> Housework <input type="checkbox"/> Retired <input type="checkbox"/> Other: _____	
7.			<input type="checkbox"/> M <input type="checkbox"/> F	<input type="checkbox"/> Illiterate <input type="checkbox"/> KG <input type="checkbox"/> Primary (1-7) <input type="checkbox"/> Second. (8-10) <input type="checkbox"/> Higher (11-12) <input type="checkbox"/> College	<input type="checkbox"/> Seasonal <input type="checkbox"/> Govt. Service <input type="checkbox"/> Private <input type="checkbox"/> Service <input type="checkbox"/> Own Business <input type="checkbox"/> Maid Service <input type="checkbox"/> Daily Wages	<input type="checkbox"/> Student <input type="checkbox"/> Unemployed <input type="checkbox"/> Housework <input type="checkbox"/> Retired <input type="checkbox"/> Other: _____	

B. Healthcare Needs Assessment

Problems affecting household in last one year	No. of times	Doctor or facility visited, if any	Reasons for choosing facility (Tick all that apply)	Types of treatment (Tick all that apply)	Satisfaction with treatment	Cost
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1. Have there been any pregnancies or deliveries in the household in the last year? If yes, did you seek care?

2. Where was the delivery done and who helped?

Pregnancy & Delivery Yes ___ No ___	Home ___ Midwife ___ Other ___ (Nurse/Relative): ___ Hospital: _____	Nearby ___ Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	OPD { ___ Consultation ___ Lab tests ___ Xray/Radiology ___ Medicines ___ IPD; For what? _____	Good ___ Average ___ Poor ___	Rs: ___ Free ___ Total ___ Per ___ Visit

3. Have there been any other women's health problems in the household? Abortion, menstruation, uterine, etc.?

Gynecological, Other Yes ___ No ___	Dr. /Facility Name: ___ ___ ___ Self-medicated ___ No treatment ___	Nearby ___ Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	OPD { ___ Consultation ___ Lab tests ___ Xray/Radiology ___ Medicines ___ IPD; For what? _____	Good ___ Average ___ Poor ___	Rs: ___ Free ___ Total ___ Per ___ Visit

4. If there are any children below the age of 1 year, have they had any health problems?

Infant Problem Yes ___ No ___	Dr. /Facility Name: ___ ___ ___ Self-medicated ___ No treatment ___	Nearby ___ Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	OPD { ___ Consultation ___ Lab tests ___ Xray/Radiology ___ Medicines ___ IPD; For what? _____	Good ___ Average ___ Poor ___	Rs: ___ Free ___ Total ___ Per ___ Visit

5. Have there been colds, breathing problems, or TB?

Common Cold Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	<input type="checkbox"/> OPD <input type="checkbox"/> IPD; For what? _____ 	Good ___ Average ___ Poor ___	Rs: ___ Free
					Total ___ Per ___ Visit
Respiratory Problem Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	<input type="checkbox"/> OPD <input type="checkbox"/> IPD; For what? _____ 	Good ___ Average ___ Poor ___	Rs: ___ Free
					Total ___ Per ___ Visit
Tuberculosis Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	<input type="checkbox"/> OPD <input type="checkbox"/> IPD; For what? _____ 	Good ___ Average ___ Poor ___	Rs: ___ Free
					Total ___ Per ___ Visit

6. Has anyone in the household had fever, malaria, measles, diarrhea, vomiting or stomach ache?

Fever / Malaria Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	<input type="checkbox"/> OPD <input type="checkbox"/> IPD; For what? _____ 	Good ___ Average ___ Poor ___	Rs: ___ Free
					Total ___ Per ___ Visit
Diarrhea/ Vomiting Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	<input type="checkbox"/> OPD <input type="checkbox"/> IPD; For what? _____ 	Good ___ Average ___ Poor ___	Rs: ___ Free
					Total ___ Per ___ Visit

Gastro-intestinal Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	OPD ___ IPD; For what? _____	Consultation ___ Lab tests ___ Xray/Radiology ___ Medicines ___	Good ___ Average ___ Poor ___	Rs: ___ Free ___ Total ___ Per ___ Visit ___
Measles Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	OPD ___ IPD; For what? _____	Consultation ___ Lab tests ___ Xray/Radiology ___ Medicines ___	Good ___ Average ___ Poor ___	Rs: ___ Free ___ Total ___ Per ___ Visit ___

7. Does anyone in the household have diabetes, blood pressure, or heart problems?

Diabetes Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	OPD ___ IPD; For what? _____	Consultation ___ Lab tests ___ Xray/Radiology ___ Medicines ___	Good ___ Average ___ Poor ___	Rs: ___ Free ___ Total ___ Per ___ Visit ___
Blood Pressure/ Heart Problem Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	OPD ___ IPD; For what? _____	Consultation ___ Lab tests ___ Xray/Radiology ___ Medicines ___	Good ___ Average ___ Poor ___	Rs: ___ Free ___ Total ___ Per ___ Visit ___

8. Has anyone had any bone fractures or operations (for appendix, hernia, circumcision, etc.)?

Operations / Surgery Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation ___ Suitable timings ___ Low fees ___ Available ___ Emergency care ___ Other ___	OPD ___ IPD; For what? _____	Consultation ___ Lab tests ___ Xray/Radiology ___ Medicines ___	Good ___ Average ___ Poor ___	Rs: ___ Free ___ Total ___ Per ___ Visit ___
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Bone Fracture Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation Suitable timings Low fees Available Emergency care Other ___	OPD ___ IPD; For what? _____	Consultation Lab tests Xray/Radiology Medicines	Good ___ Average ___ Poor ___	Rs: ___ ___ Free ___ Total ___ Per ___ Visit ___
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9. Has anyone in the household had skin irritations, VD, or any other health problems at all?

Skin Problems/ VD Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation Suitable timings Low fees Available Emergency care Other ___	OPD ___ IPD; For what? _____	Consultation Lab tests Xray/Radiology Medicines	Good ___ Average ___ Poor ___	Rs: ___ ___ Free ___ Total ___ Per ___ Visit ___
Other Yes ___ No ___	Dr. /Facility Name: _____ _____ Self-medicated ___ No treatment ___	Nearby Faith/Good reputation Suitable timings Low fees Available Emergency care Other ___	OPD ___ IPD; For what? _____	Consultation Lab tests Xray/Radiology Medicines	Good ___ Average ___ Poor ___	Rs: ___ ___ Free ___ Total ___ Per ___ Visit ___

C. Health Awareness Indicators

1. What health facilities are you aware of (hospitals, clinics, doctors, etc.)?

Name of Facility	Roughly Located Where?
1.	
2.	
3.	
4.	
5.	
6.	
7.	

2. Have you heard of any of the following health insurance plans?

3. Do you have these insurances?

Health Insurance Plan	Aware?	
	Yes	No
1. ESIS		
2. SEWA		
3. Other: _____		

	Have?	
	Yes	No

4. Which NGOs have you heard of?

NGO	Aware?	
	Yes	No
1.		
2.		
3.		
4.		

5. If any children in the household are in school, where are they attending? Are you paying any fees?

Name of School	Fees?	
	Yes	No
1.		
2.		
3.		

D. Socioeconomic Profile

Name of Head of Household: _____

Address: _____

Housing: _____ Slum/Chawl _____ Religion: _____ Hindu

_____ LIG Flats _____ Muslim

_____ MIG Flats _____ Christian

_____ HIG Flats/Houses _____ Other: _____

Monthly Health Costs: Rs. _____

Monthly Food Costs: Rs. _____

E. Public Health Facilities

Toilet facilities	<input type="checkbox"/> In house <input type="checkbox"/> Community <input type="checkbox"/> Open / None		
Drainage facilities	<input type="checkbox"/> Open / None <input type="checkbox"/> Closed <input type="checkbox"/> Soakpit		
Power supply / lights	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Water supply	<table border="1"> <tr> <td> <input type="checkbox"/> In house <input type="checkbox"/> Community <input type="checkbox"/> None </td> <td> <input type="checkbox"/> Hrs/day </td> </tr> </table>	<input type="checkbox"/> In house <input type="checkbox"/> Community <input type="checkbox"/> None	<input type="checkbox"/> Hrs/day
<input type="checkbox"/> In house <input type="checkbox"/> Community <input type="checkbox"/> None	<input type="checkbox"/> Hrs/day		

Exhibit 4: Health Facility Sample Survey

A. OPD Clinics

Name of Clinic/Dispensary:
Address:

General /Single/Multiple Specialty
Ward No:

1) Name of Departments in which Specialties Offered. ** If Yes =1 or No =0

If it is multi speciality clinic then pls. fill no. of doctors

Specialty Name	Available Yes/No**	No. of doctors*	Total Time Consultation in AM	Total Time Consultation in PM
ENT				
General Physician				
OB&G				
Oncology				
Ophthal.				
Ortho.				
Paeds.				
Physiotherapy				
Psych				
Skin				
Surgery				
Dental				
Cardiac				
Urologist				
Neurologist				
Family Planning				
Diabetes Clinic				
TB Clinic				
Pain Clinic				
Venereal Diseases				
Laser Eye Correction				
Telemedicine				
Gastro enterologist				

* Includes all MBBS, MD, Part time Consultant, full time consultant who does practice in a particular specialty. But excludes interns.

2) Facilities available:

	Facilities Available	Yes/No
2.1	Continuous electricity supply thought consultation timings	
2.2	Municipality water	
2.3	Purified water*	
2.4	Laboratory Services	
2.5	X-ray	
2.6	USG	
2.7	Computers specific for clinic	

* By Purified water we mean any form of treatment done, so as to get improved quality of water

3) On an average,

a) What is the OPD Cases (New & Repeat) per day:

b) No. of OPD cases that you send to laboratories

c) No. of OPD cases that you send to radiology facility:

If 2.4, 2.5, 2.6 are Yes then pls. ignore 3b, 3c

4) Remarks

Date:
Name of Surveyor:

B. Inpatient Facility Survey

Name of Facility:
Address:

General Hospital/Single/Multiple Specialty
Ward No:

1.1 Name of Departments in which Specialties Offered. ** If Yes =1 or No =0

Specialty Name	Available Yes/No**	No. of doctors*	No. Of Nurses	No. of Beds (Including ICU's)
ENT				
Medicine				
OB&G				
Oncology				
Ophthal.				
Ortho.				
Paeds.				
Physiotherapy				
Psych				
Skin				
Surgery				
Dental				
Cardiac				
Urologist				
Neurologist				
Family Planning				
Trauma Care				

* Includes all MBBS, MD, Part time Consultant, full time consultant who does practice in a particular specialty. But excludes interns.

If segregation is not possible then Total Number of DOCTORS _____
 If segregation is not possible then Total Number of NURSES _____
 If segregation is not possible then Total Number of BEDS _____
 Out of Which Total number of ICU beds is _____
 On an average what is the Bed Occupancy % _____

1.2 If any specialty is offered separately

Specialty	Yes/No
Diabetes Clinic	
TB Clinic	
Pulmonary Medicine	
Caesarean Section	
High Risk Pregnancy Clinic	
Pain Clinic	
Radiation Therapy	
Chemotherapy	
Oncology Surgery	
Cataract Removal	
Laser Eye Correction	
Cornea Clinic	
Joint Replacement Surgery	
Cosmetic Surgery	
Burns Ward	
Venereal Diseases	
Specialty	Yes/No
Isolation Ward	

Laprosopic Surgery	
Endoscopic procedures	
Telemedicine	
Gastro enterologist	
SICU	
PICU	
NICU	
MICU	
ICCU	

2 Facilities available:

	Facilities Available	Yes/No
2.1	Emergency facility (24 hours)	
2.2	Blood bank	
2.3	Laboratory	
2.3.1	If 2.3 is Yes Separate laboratory	
(a)	Pathology	
(b)	Microbiology	
(c)	Bio-Chemistry	
(d)	Histo-Pathology	
2.3.1	If 2.3 is Yes and 2.3.1 is No: Combined laboratory	
2.4	Radiology	
If 2.4 is Yes		
2.4.1	X-Ray	
2.4.2	USG	
2.4.3	Doppler	
2.4.4	CT-Scan	
2.4.5	MRI	
2.4.6	IITV	
2.4.7	C-Arm IITV	
2.4.8	Mammography	
2.5	24 Hour non stop electricity supply	
2.6	Municipality water	
2.7	Purified water*	

* By Purified water we mean any form of treatment done, so as to get improved quality of water

3 Availability of Equipments

Equipment	Yes/No	Remarks (No.s)
OT's		
Dental Chairs		
Cell Counter		
ABG Gas Analyser		
Non invasive Ventilators		
Invasive Ventilators		
Defibrillators		
ECG Analog		
Central Monitoring Station (in ICU)		
Incinerator		
Stretcher		
Dialysis Machine		
Lithotrippers		
Endoscopes		
Laprosopes		

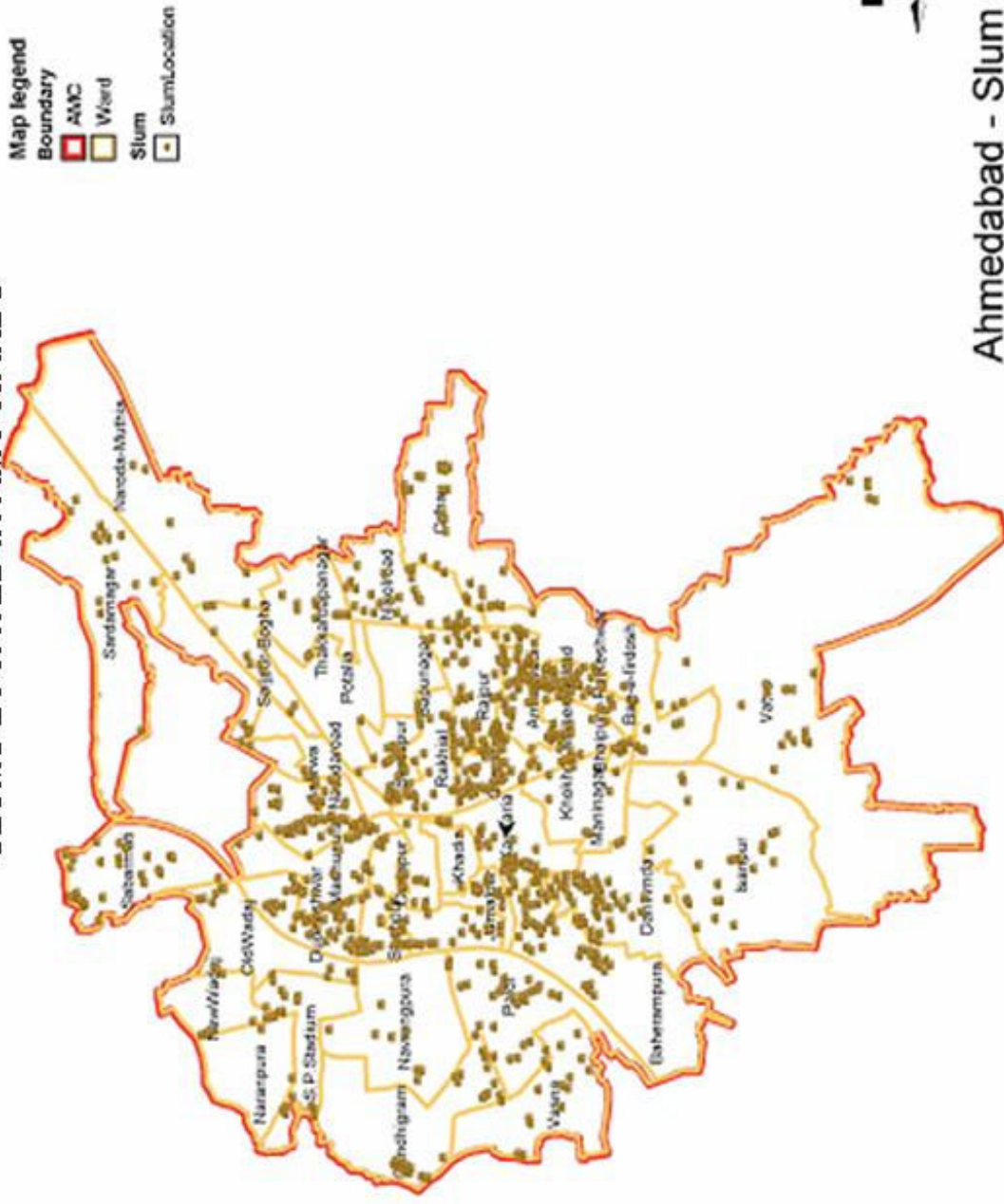
4 Availability of

Computer Facility	Yes/No
Stand Alone Computers	
HIS	

Exhibit 5
Sample Distribution within Vasna Ward

	Number of Households				Total
	Slum	LIG	MIG	HIG	
Aktanagar	3				3
Ayojanagar				4	4
Bhavana Flats			4	3	7
Bhavana Tenament		4	1	3	8
Chamunda Nagar	13				13
Chandra Nagar	2				2
Dharnidhar Soceity			2	8	10
Dungarsi Nagar	2				2
Ganeshkunj Soceity				4	4
Guptanagar	19				19
Haajam Society	5				5
Ishawar Krupa	2				2
Jadiba Nagar	13				13
Kundan Apartment		8	2	1	11
Lavaniya Soceity			5	2	7
Manekbaug Soceity				5	5
Mangal Talavadi	22			1	23
Mittal Apartment	2	4		1	7
Nr. Umiya Vizan	2				2
Omnagar	18	1			19
Pratapkunj Society		1	1	3	5
Pravinnagar-1	13			1	14
Punjan Apartment				5	5
Rajivnagar	24				24
Raval Nagar	13				13
Riddhi Flats	2			4	6
Sawashsinagar	8				8
Sayojan Nagar	8				8
Shivshaktinagar	1			1	2
Shivshankarngar	19				19
Shrinagar	5				5
Shrinathpark Society				2	2
Someshwarnagar	15				15
Sorainagar	10				10
Sumadhur Society				2	2
Swaminarayan Nagar	4				4
Vasna Gam	7		1		8
Yogeshwarnagar	20			4	24
Total	252	18	16	54	340

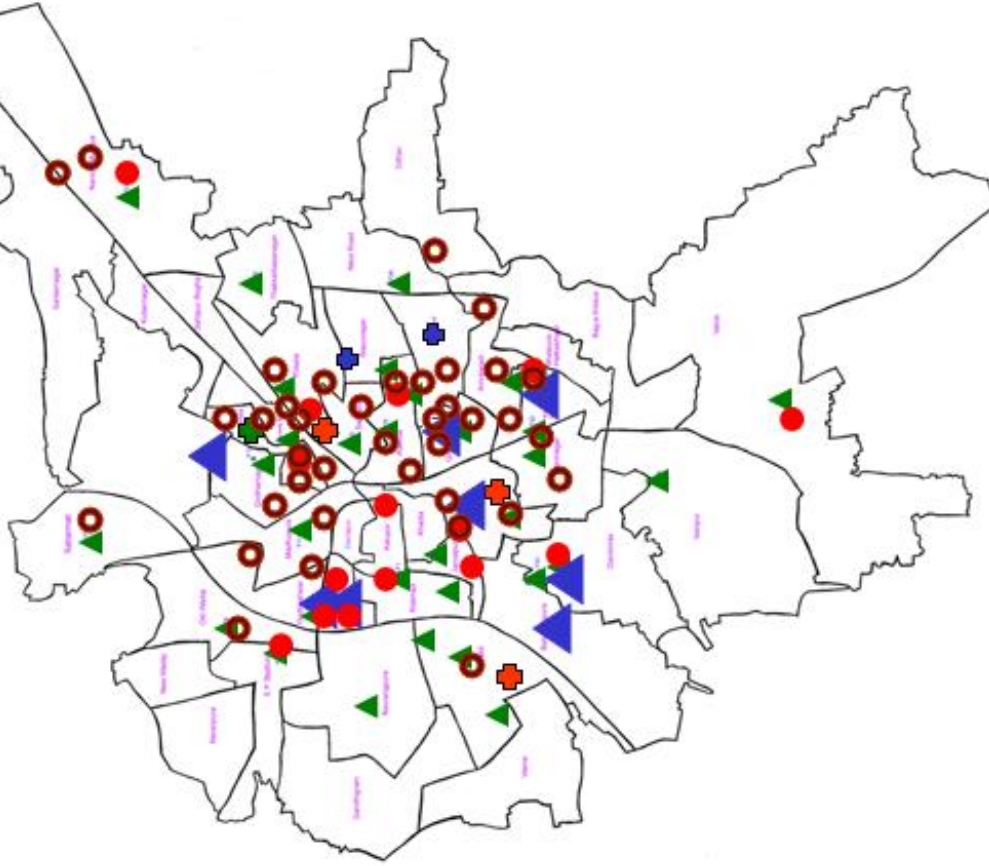
Exhibit 7
Map of AMC: Slum Locations
SLUMS LOCATED IN AMC WARDS



Ahmedabad - Slum Locations

Exhibit 8
Map of AMC: Health Facilities

AMC HEALTH FACILITIES



AMC Health Facilities	
Dispensaries	23
Hospitals	3
Maternity Homes	8
Family Welfare Centers	37
Eye hospital	1
Infectious disease hospital	1
State Govt. Health Facilities	
Civil Hospital	1
Cancer Hospital	1
Kidney Hospital	1
Heart Hospital	1
Central Govt. Health Facilities	
ESI General Hospital	1
ESI Chest Hospital	1
ESI Dispensaries	42



Exhibit 9
Map of AMC: Location of Baherampura & Kubernagar Wards

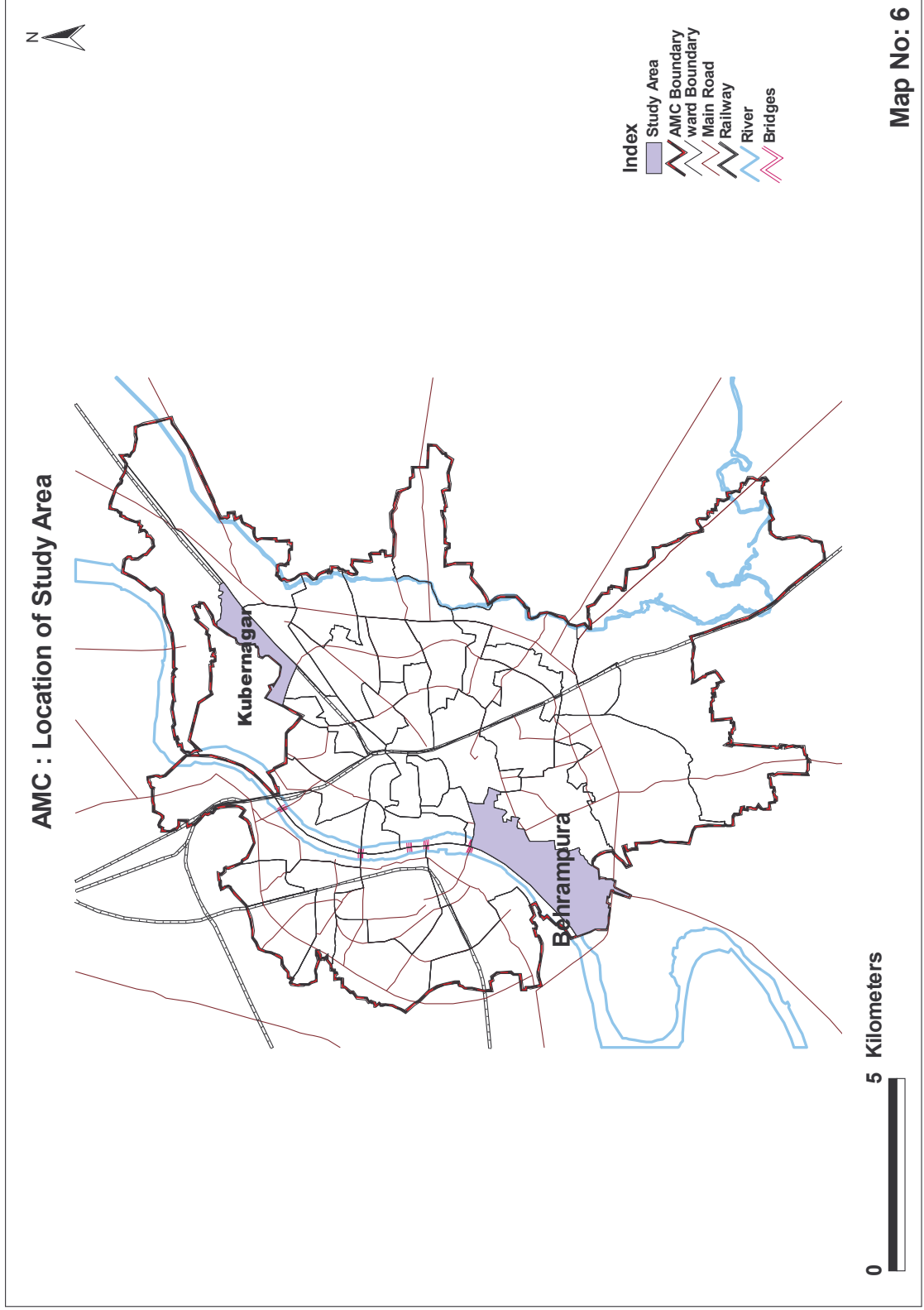


Exhibit 10
Health Status: Baherampura & Kubernagar
Comparison: Behrampura vs Kubernagar

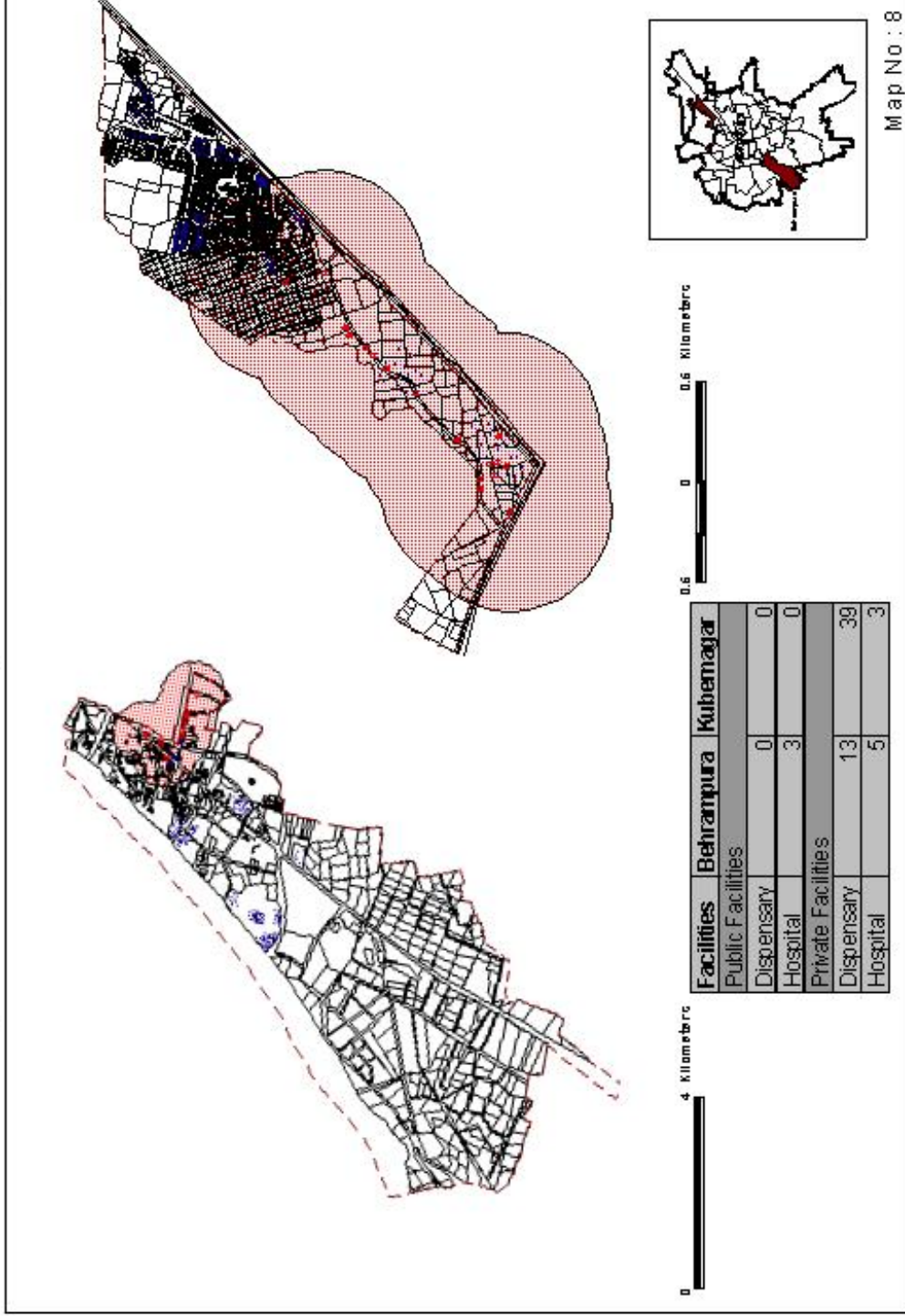


Exhibit 11
Health Status: Baherampura & Kubernagar

Comparison: Behrampura vs Kubernagar

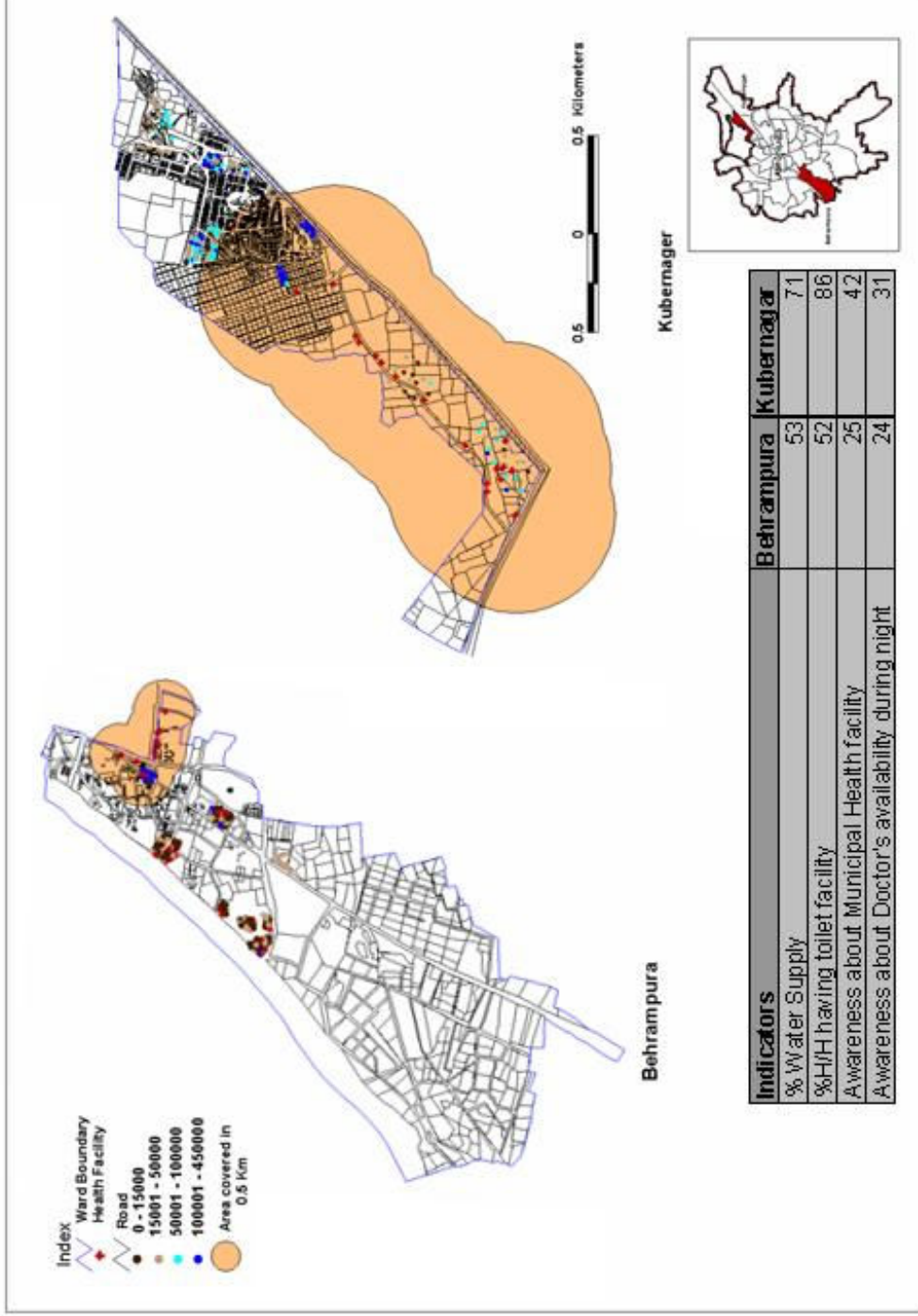
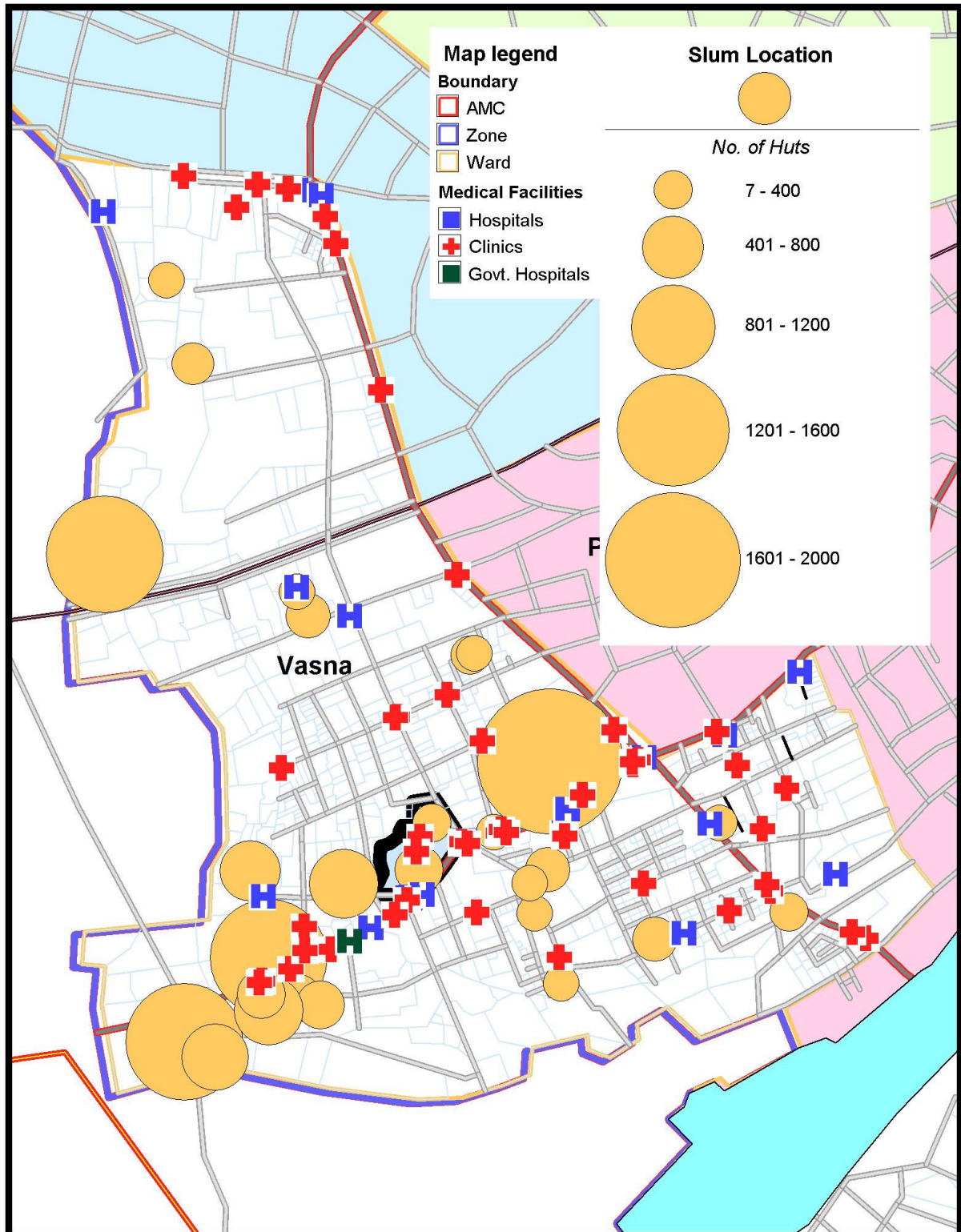


Exhibit 12 Health Status: Vasna Ward



Vasna Ward: Location of Slums and Health Facilities

Not to Scale

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