

Assessment of Urban Infrastructure and Health Using Principal Component Analysis and Geographic Information System: A Case of Ahmedabad, India

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Abstract : Across the globe, there is a steady increase in people residing in urban areas. Due to this increase in urban population, urban health is affecting. The major issues identified like overcrowding, air pollution, unhealthy diet, inadequate infrastructure, poor solid waste management systems and insufficient access to health facilities, these issues are gradually clearly observed in health statistics of diseases and deaths rapidly increase in urban areas. Therefore, the present study aims to assess the health statistics and infrastructure services at urban areas to know the cause and effect between Infrastructure, its management and diseases (water borne). Most of the Indian cities have the municipal boundaries, which authorized by their respective municipal corporations and development authorities. Generally, cities have various zones under which municipal wards exist. The paper focuses on the city Ahmedabad, at Gujarat state. Ahmedabad Municipal Corporation (AMC) is divided into six zones namely Central zone, West zone, New-West zone, East zone, North zone, and South zone. Each zone includes various wards within it. Incidence of diseases in Ahmedabad which are linked to infrastructure was identified such as water-borne diseases. Later on, the occurrence of water-borne diseases at urban area was examined at each zone level. The study methodology follows four steps i.e. 1) Pre-Field literature study: Study on Sewerage system in urban areas and its best practices and public health status globally and Indian scenario; 2) Field study: Data collection and interviews of stakeholders regarding health status and issues at each zone and ward level; 3) Post field: Data analysis with qualitative description of each ward of zones, followed by correlation coefficient analysis between sewerage coverage, diseases and density of each ward using geographic information system mapping (GIS); 4) Identification of reasons: Affected health on each of zone and wards followed by correlation analysis on each reason. The results reveal that the health conditions in Ahmedabad municipal zones or boundaries are effected due to the slums created by the migrated people from various rural and urban areas. It is also observed that due to increase in population water supply and sewerage management is affecting. The overall effect on infrastructure is creating the health diseases which detailed in the paper using geographical information system in Indian city.

Keywords : infrastructure, municipal wards, GIS, water supply, sewerage, medical facilities, water borne diseases

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