

# 2018 Statewide Global Health Case Competition

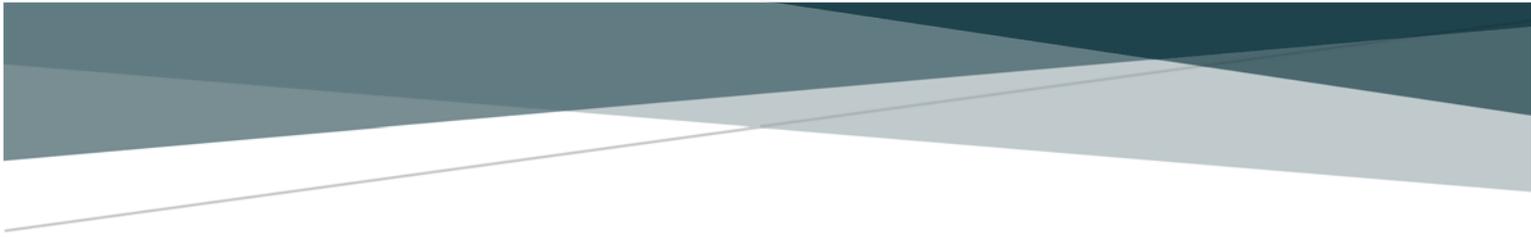
*Connecting students from diverse fields to address a  
global health challenge*



*Challenges of slum life in  
Orangi Town, Karachi, Pakistan*

**UAB** SPARKMAN CENTER  
FOR GLOBAL HEALTH

Knowledge that will change your world



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All characters and plots described within the case are considered fictional and bear no direct reflection of existing organizations or individuals. The case topic, however, is a true representation of circumstances in Pakistan. The case scenario is complex and does not necessarily have an ideal solution, thus encouraging a discerning balance of creativity and knowledge. Provided are informative facts and figures within the case and appendices to help teams create a proposal. The data provided are derived from independent sources, may have been adapted for use in this case, and are clearly cited allowing teams to verify or contest them within their recommendations, if necessary. Teams are responsible for justifying the accuracy and validity of all data and calculations that are used in their presentations, as well as defending their assertions during judging.

## Opening Scenario

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Omar is the founder of the newly established Impact International, an international NGO which aims to raise awareness and advocates for populations living in slums worldwide. The mission of Impact International is to serve as a liaison between community leaders, other local non-profit organizations and government officials in order to promote policy change as it relates to sub-par housing and unsanitary living environments. Although Impact International is headquartered in Washington, D.C., Omar intends to establish an in-country office within each of the cities that are greatly impacted by slums globally. Omar is in the process of evaluating the specific needs of the office in Orangi Town Karachi, Pakistan. Omar is stopped by a young, beggar boy while on his way to a meeting with local government officials. Omar takes a moment to talk to the young boy; his name is Iqbal.

Iqbal is a 10-year-old boy living in a slum of the Chishti Nagar neighborhood of Orangi Town in Karachi, Sindh Province, Pakistan. He and his family of 8 live in a 1-bedroom dwelling with no in-home access to clean water, toilets, or electricity. Iqbal's family suffers from diarrhea and must often buy expensive medicines to ensure they do not perish from dehydration and malnutrition. Iqbal's father and mother do not have stable employment, and their income is contingent upon working odd jobs; Iqbal and his 5 brothers often walk miles a day to beg for change in order to supplement the family's income. Iqbal and his brothers have an elementary-level reading comprehension of Urdu, as their mother is a former schoolteacher and impressed upon her sons that literacy is the key to gainful employment. Iqbal has friends who attend local private schools in Chishti Nagar; however, Iqbal's family does not have the resources to send their sons to these expensive schools. Iqbal dreams of one day becoming an architect- to build his family the house he always wanted to live in.

## Case Background

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Pakistan is the sixth most populous country in the world. Located in South Asia, Pakistan had a population of nearly 208 million people in 2017 and an average growth rate of 2.4% in the period of 1998 – 2017. Pakistan is the most urbanized country in the South Asia region, with rapid increases in urbanization from 32.5% in 1998 to 36.4% in 2017 (Pakistan Bureau of Statistics, 2017). The urbanized population is spread out among ten major cities and each city has a minimum of 1 million people; these populations are also expected to increase. Urban and city development specialists predict by 2025 the urban-based population will rise by 50% (Jatoo, Fu, Saengkrod, & Mastoi, 2016; Kugelman, 2014). Sindh is the most urbanized province with 52% population residing in urban areas. Karachi, the largest city in Pakistan and capital of Sindh Province, has been one the most favorable destinations for people to move to.

According to 2017 census, Karachi's population is a staggering 14.9 million people and this number is projected to increase to 18.7 million by 2025 (Pakistan Bureau of Statistics, 2017). The population density is approximately 6,000 people per square kilometer. In 2016, the United Nations (UN) ranked Karachi as twelfth top megacity in the world by size, and has predicted that by 2030, Karachi will rank seventh. Approximately 90% of the population in Karachi consists of migrants from different backgrounds, with a 5% estimated growth rate. The largest ethnic group in Karachi are the Muhajirs (Urdu, Gujarati, Marathi, Konkani, Rajasthani and Malabari Muslims)(World Population Review, 2017). The religious demographic of Pakistan includes Muslim (official) at 96.4% (Sunni 8-90%, Shia 10-15%) and others (including Christian and Hindu) at 3.6% (Central Intelligence Agency, 2018). Typical urban city problems are easy to find in Karachi, including increasing slum dwellers, pollution, traffic jams, overcrowdedness, and accidents. Furthermore, public health problems also exist in relation to non-communicable and communicable diseases, fueled in part by poor sanitation (Amer, 2013; Jatoo et al., 2016). Orangi Town is a located in the northwestern part of Karachi. With approximately 2.4 million residents, it was named as the largest slum in the world in 2016 (UN-Habitat, 2016).

A “slum” is defined as a contiguous settlement with a high-density population and lack of permanent housing and basic services. In Karachi, as well as other countries in the world, people have their local term for slums, which is *katchi abadi* or non-permanent settlement (UN-Habitat, 2003). According to the 2016 World Cities Report: Urbanization and Development, in 2014,

29.7% of world's urban population (880 million people) lived in a slum, and the majority of them were in developing countries (UN-Habitat, 2016). Slums can be complex and multidimensional. The UN has defined characteristics that are usually attributed to slums, including insecure residential status, poor structural quality of housing, overcrowding, and inadequate access to safe water, sanitation, and other infrastructure (Unger & Riley, 2007). However, not all slum dwellers are extremely poor; some can make 'reasonable' income just slightly above poverty level (UN-Habitat, 2016). Population living in slums simultaneously faces the increased risk of non-communicable and communicable diseases. Risk factors like tobacco use, low physical activity, obesity, and unhealthy diets are commonly found among slum dwellers which lead to cardiovascular disease, diabetes, cancer, and other chronic diseases. Environmental risk factors like poor sanitation, indoor and outdoor air pollution, overcrowding, and inadequate access to water supply enable the transmission of communicable disease like diarrhea, TB, and malaria (Nishtar, Chisthie, & Chisthie, 2014).

### **Inadequate access to safe water**

The rapid increases in population growth and urbanization are leading to shortages of drinking water in Pakistan. As a country, 23% of the population does not have routine access to water and only about 20% of the country's population has access to safe drinking water (Daud et al. 2017). Most water resources are contaminated with fecal sewage and/or toxic chemicals from agricultural sources (e.g. pesticides and fertilizers) that are dumped into bodies of water. Human and animal fecal matter contains coliform bacteria that can cause nausea, cholera, diarrhea, typhoid and death if ingested (Daud et al. 2017). Symptoms can be severe in newborns, young children and for adults with immune deficiencies. Chlorine is routinely added to public water supplies because it is a highly efficient disinfectant, and kills disease-causing pathogens, such as bacteria, viruses, and protozoans. More pathogenic matter in drinking water can necessitate a higher demand for chlorine.

Water scarcity is a problem in Karachi, and even more so in Orangi Town. The main water source to Orangi town is the Hub dam which is highly unpredictable (Alamgir, et al. 2015). Karachi Water and Sewerage Board officials are burdened with the need to provide adequate access to safe water. They argue chlorine levels are adequate at pumping stations, but there are

many open drainage channels found in the city leading to greater numbers of pathogens in the water (Alamgir et al., 2015). About 30% of all diseases and 40% of all deaths in Pakistan are due to poor water quality (Daud et al. 2017). According to International Union on Conservation of Nature (IUCN) report, diarrhea is the leading cause of death in infants and children in Pakistan (up to 60% of children) (Daud et al. 2017). Many families spend an enormous percentage of their income on medical bills even though most of these water-borne illnesses can be prevented by access to clean water.

### **Inadequate access to sanitation and other infrastructure**

Inadequate access to sanitation and sewerage infrastructure results in poor hygienic conditions, and can serve as one of the main reasons for the lack of quality drinking water. Human waste often seeps into water reserves leaving it unsafe for consumption. Adequate sanitation is fundamental to improving living standards. In its absence, diarrhea and other illnesses prevail, leading to high death rates and forcing families to spend their scarce savings on medical care. The inhabitants of these slums are left with little hope of accumulating the means to start up the ladder of development. When this fundamental problem is resolved, especially when the people play a leading role in solving it, they are strengthened, and the stage is set for advancement (United Nation Children's Fund [UNICEF], 1997).

### **Overcrowding**

The United Nations defines overcrowding as *households with more than two persons per room or less than five square meters per person*. Additionally, overcrowding is associated with cohabitation by multiple families and a high proportion of single-room units. Often the same room is used for cooking, sleeping, and living (UN-Habitat, 2003). In such areas, problems from overburdened household sanitation facilities are further exacerbated by the density of residents making it difficult to even find space to construct proper facilities (Isunju et al, 2011).

Furthermore, overcrowding is a major risk factor in the transmission of diseases with epidemic potential, and outbreaks are both more common and more severe in areas with high population density (World Health Organization [WHO], 2017).

With a population density of 6,000 people per square kilometer, Karachi is constantly dealing with the issues of overcrowding (Jatoo, 2016). Families choose to move closer to the densely populated city center in order to avoid the daily headache of an overcrowded commute into work. While some solutions seem promising for reducing overcrowding, such as motorbike use (which tripled from 500,000 to 1.65 million between 2005 and 2013), they also pose their own health risks, such as decreased road safety (Hasan, 2015). Waste disposal is also cited as a pressing concern, particularly in Orangi Town, though past community participatory projects have benefitted the community. Between 1980 and 1992, residents invested over \$2 million from their own resources to construct sewers and reduce the waste burden of overcrowding (UN-Habitat, 2003). Still, other sources of waste such as garbage continue to plague Karachi's overcrowded communities (Paracha, 2017).

### **Poor structural quality of housing**

Poor structural quality of housing is generally defined by two criteria: households residing in hazardous sites and households living in temporary and/or dilapidated structures. Slums often form in undesirable areas, such as zones with high pollution and near railroads or airports. Such communities are referred to as squatter slums, as opposed to informal slums, since illegal land invasion occurs as a means of land acquisition (UN-Habitat, 2003). Additionally, inadequate housing built in vulnerable areas such as on hillsides and near rivers are subject to landslides, flooding, and earthquakes. Not only do such conditions amplify the effects of natural disasters but also make rescue efforts much more challenging. This combination of structural factors in slum settlements also increases the risk of injury and disease such as cholera, malaria, and dengue (Unger & Riley, 2007).

In Pakistan's urban areas, such as Orangi Town, the demand for housing is three times higher than the supply (Hasan, 2006). This gap is normally bridged by the establishment of 'katchi abadis', unauthorized squatter settlements on government-owned land. In Karachi, an estimated 6 million residents live in katchi abadis. Such unofficial settlements are often not initially connected to normal infrastructure such as electricity, water, gas, and sewage. However, ad hoc arrangements are commonly made to secure access to such resources and services (Hasan, 2006). In 2001, the Orangi Pilot Project analyzed the major housing issues in Orangi Town, many of

which dated back to the initial infrastructure of the city from the 1960s. Prominent concerns included poor quality building materials, severe structural problems in dwellings, faulty construction techniques, and poor household ventilation (World Habitat, 2001). These issues in conjunction with one another create quite a problematic mix of housing difficulties.

## Summary of Team Assignment

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Massive structural challenges impede the chances for Iqbal, his family, and others in Orangi Town, to have a chance at a better life. These challenges include: abject poverty, lack of educational opportunities, lack of clean drinking water, lack of sanitary waste management, poor medical services, rampant unemployment, and structural violence preventing the upward mobility of persons living in Orangi Town. Any successful attempt to alleviate the suffering of the individuals and families caught in this maelstrom of misfortune will recognize the interactions between these public health issues and holistically combat this crisis. Furthermore, the empowerment of persons like Iqbal is critical towards this approach: the citizens of Orangi Town must be able to sustain their own long-term social, economic, political, and health-related development. A successful, effective, and competent intervention will rely on outside expertise, citizen input from the local community, and take into account local cultural mores and practices. A truly collaborative and gestalt effort to combat this degradation of human dignity is the only hope for people like Iqbal and the millions of others living in Orangi Town.

You have been tasked with submitting a proposal for the development and implementation of a program that is effective, culturally appropriate, and feasible. It may include interventions incorporating educational, policy, social, and/or other strategies that involve important stakeholders from local government, the community, non-governmental organizations, universities, and other partners. Omar has been given a timeframe to develop and implement an effective Orangi Town slum intervention program over a period of five years. The maximum amount you are permitted to request is \$2,000,000 USD for the duration of the program. Your team must present your plan to a panel of local and global experts on February 24, 2018. You will need to justify your decisions concerning the development of your final strategies and be prepared to explain the details of your plans.

## Important Considerations

- Choice of Target Population: Who is the target population and why did the team choose to target them?
- Who will you develop partnerships with (other NGOs, local government, etc.) to leverage resources and expertise?
- Who are the stakeholders and decision makers?
- How will you monitor and evaluate your project?
- Are the proposed strategies feasible, effective and culturally appropriate?
- For your intervention program, what are the:
  - Objectives?
  - Strategies?
  - Settings?
  - Budget?
  - Timeline?
  - Sustainability?
- What impact will this implementation have at the individual, family, community, and national level?
- Are there any long-term or short-term economic consequences?

## Important Aspects of Proposed Strategy

- Social Benefit/Social Return on Investment: Impact on health outcomes, economic improvement, and productivity at the personal, family, and community levels
- Feasibility: How well do the proposed strategies utilize and/or improve capacity of current health systems, training/education required to implement plan, what provisions for education, product, or service delivery?
- Economic Impact: Direct costs associated with proposed strategies; transportation and/or opportunity costs to stakeholders

- **Cultural Acceptability:** Cultural perceptions of the proposed strategies and the extent to which they have taken in local cultural context and technologies
- **Legal and Ethical Issues:** Strategies for how these will be addressed, if applicable
- **Scalability:** Application of recommendations to other communities or more extensive coverage beyond Pakistan, provided there is evidence of success
- **Sustainability:** Plans for how the program will proceed once funding ends
- **Monitoring and Evaluation:** Comparison of baseline data, to data collected during and after proposed intervention(s) and how this information will be used to inform program improvements and demonstrate impact
- **Risk Identification & Mitigation Strategies:** Potential challenges/risks associated with recommendation(s) and how those will be addressed
- **Innovation:** Are there aspects of the proposal which could be considered particularly innovative or creative; novel application of existing technologies or new products/services proposed?

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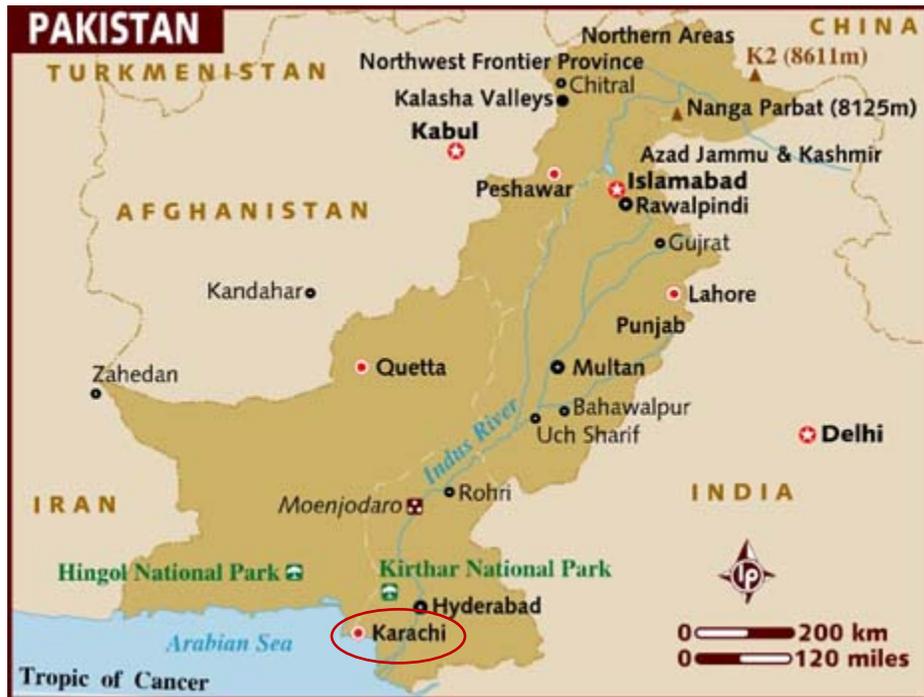
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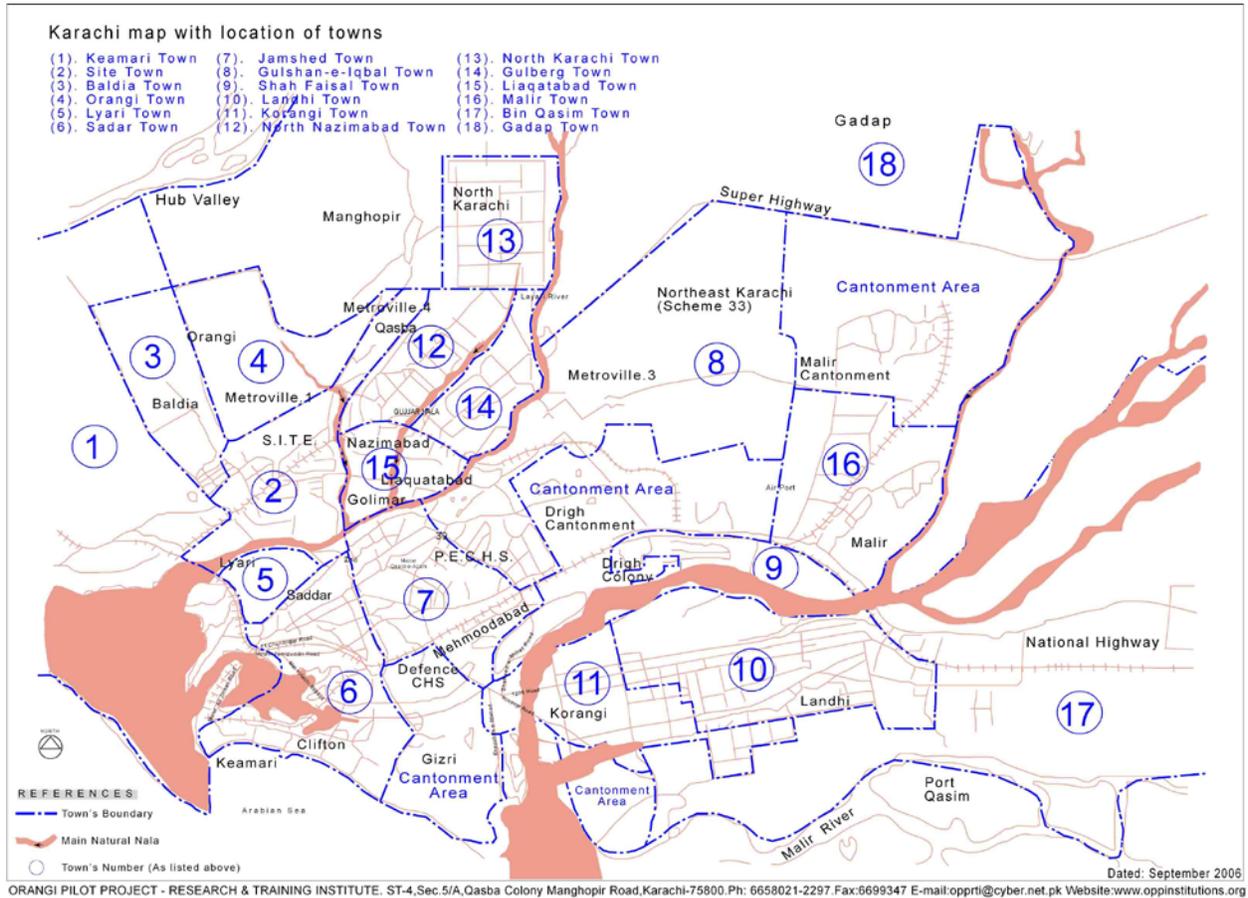
## Appendices

### Appendix A: Map of Karachi, Pakistan



Source: Lonely Planet (n.d.). Map of Pakistan. Retrieved from <https://www.lonelyplanet.com/maps/asia/pakistan/>

## Appendix B: Karachi map with location of towns



Source: Orangi Town Pilot Project (OPP) (Sept 2006). Map: Karachi map with location of towns. Retrieved from [http://www.opp.org.pk/wp-content/uploads/2017/05/5\\_Karachi-location-of-towns.jpg](http://www.opp.org.pk/wp-content/uploads/2017/05/5_Karachi-location-of-towns.jpg)