

# Chapter 20

## Mobile Phones as a Lens into Slum Dynamics

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### ABSTRACT

*The worldwide adoption of mobile phones is providing researchers with an unprecedented opportunity to utilize large-scale data to better understand human behavior. This chapter highlights the potential use of mobile phone data to better understand the dynamics driving slums in Kenya. Given slum dwellers informal and transient lifetimes (in terms of places of employment, living situations, etc.), comprehensive longitude behavioral data sets are rare. Working with communication and location data from Kenya's leading mobile phone operator, the authors use mobile phone data as a window into the social, mobile, and economic dimensions of slum dwellers. The authors address questions about the functionality of slums in urban areas in terms of economic, social, and migratory dynamics. In particular, the authors discuss economic mobility in slums, the importance of social networks, and the connectivity between slums and other urban areas. With four years until the 2015 deadline to meet the Millennium Development Goals, including the goal to improve the lives of slum dwellers worldwide, there is a great need for tools to make development and urban planning decisions more beneficial and precise.*

### INTRODUCTION

For the first time in history, more people live in cities than in the countryside. Our world is no longer simply going through the experience of urbanization. Our world has become urban-

ized. One billion people - or one in every three urban residents - now live in an urban slum, the vast majority of them in developing nations (Kramer, 2006).

The United Nations Secretary-General Ban Ki-moon stated, "with more than half of the world's population now living in urban areas<sup>1</sup>, this is

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the urban century” (UN-Habitat, 2008, 2009). By 2015, there will be at least 500 cities whose population is over one million (UN-Habitat, 2002, 2003). It is estimated that by 2050, the world population will reach ten billion, with the majority of those people living in urban areas (Davis, 2002). The brunt of this population growth will occur in developing countries. Ninety-five percent of the growth of the human population will occur in the urban areas of developing countries, whose population is expected to double to nearly four billion over the next generation (Yeung, 1997). In particular, Africa’s urban population is expected to triple in the next 20 years (Kaplan, Wheeler, & Holloway, 2009). As cities continue to grow at such an alarming rate, the level of inequality continues to rise. Africa is experiencing the largest urbanization force without a stable economic basis to sustain this growth. The push of rural landlessness and poverty are driving more individuals, at a rate of 5% per year, to cities. Likewise, there is less correspondence between urban growth and overall economic growth than in other developing countries. As a result, urbanization in Africa will continue to go hand in hand with slum growth and formation. For example, between 1990 and 2000 slum in Africa areas grew at a rate of 4.53%, while overall urban growth rates were 4.58% in the same period (UN-Habitat, 2006). These figures imply that the vast majority of new urban migrants are settling into slums.

While there is no universally agreed upon definition of a slum<sup>2</sup>, the UN designates an area as a slum if it meets a majority of the following characteristics: lack of basic services, substandard housing or illegal and inadequate building structure, overcrowding and high density, unhealthy living conditions and hazardous locations, insecure tenure, irregular or informal settlements, poverty and social exclusion, and minimum settlement size. The operational definition is restrictive to physical and legal characteristics of slums including: inadequate access to safe water, inadequate access to sanitation and other infrastructure, poor

structural quality of housing, overcrowding, and insecure residential status. Given the complexity, relative nature, and informality of slums, any finer definition is difficult to achieve (UN-Habitat, 2002, 2003).

Currently, almost a billion individuals, or one in every three urban dwellers, lives in a slum. It is estimated that by 2030 there will be two billion individuals living in slums, with a total of 45% of the total urban population living in slums (Ravallion, 2001). In sub-Saharan Africa the statistics are even more staggering. There, nearly two-thirds of city dwellers (or 62%) live in a slum (UN-Habitat, 2008, 2009). Since, urban areas, in particular slums, provide a means for individuals to improve their quality of their life, their growth is inevitable. Slum play a number of roles in a city as a first stopping point for immigrants, a key source of local enterprise and industry, and the most obvious source of low-cost labor. They are the easiest access point for new migrants to a city with affordable housing. Many argue their growth is an inevitable consequence of urbanization. Cities cannot provide housing or social support for the large influx of migrants during rapid periods of growth. Slums are able to ease the housing burden for cities since they provide shelter in an incredibly small area for a large group of people without any governmental aid. With a lack of governmental infrastructure and plans for urban growth, it is unsurprising that slums continue to prosper. Moreover, in many parts of the world local and central authorities do not recognize this large and growing population. This “invisible” population and unplanned part of most cities desperately needs better policy and planning strategies to alleviate the suffering of slum dwellers.

Although slums serve an important role in growing urban areas, the high density of people, low-cost infrastructure, and lack of organization and social support typically cause poor living conditions. Most of the humanitarian issues with slums concern the detrimental effect living in a

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