

Chapter 3

Urbanicity, Urbanization, and the Urban Environment

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1. Introduction

During the Second Session of the World Urban Forum in 2004, world leaders and mayors warned that “. . . rapid urbanization was one of the greatest challenges facing humanity in the new millennium” (United Nations Human Settlements Programme (UN-HABITAT), 2004). In 1950, approximately 29 percent of the world’s population lived in urban areas (United Nations, 2004). By 2000, 47 percent lived in urban areas, and the United Nations projects that approximately 61 percent of the world’s population will live in cities by 2030. Overall, the world’s urban population is expected to grow from 2.86 billion in 2000 to 4.94 billion in 2030 (United Nations, 2004).

With population migration into cities comes the expansion of urban centers. The number of cities with populations of 500,000 or greater grew from 447 in 1975 to 804 in 2000. Table 3.1 presents world megacities (population over ten million) between 1950 and 2015. In 1950 there were two megacities; by 2000 there were 18, and 23 are projected worldwide by 2015 (United Nations, 2006). Urban centers are not evenly distributed among resource-poor and wealthy countries. Middle- to low-income countries contained 72% of the world’s cities in 2000 (Figure 3.1) and most growing cities are in developing countries.

Given the massive movement of the world’s population into cities, understanding the particular role of city living in shaping population health becomes central to public health planning. We provide here a summary of the key issues that pertain to our understanding of the role urbanization and urbanicity play in shaping population health. We refer the reader to other published work that discusses these issues in substantially more detail (Galea, Freudenberg, & Vlahov, 2005; Galea & Vlahov, 2005a, b).

2. Defining Urban Areas

There is little consensus among national and international entities and disciplines about the definition of urban and what constitutes a city. The US Bureau of the Census defines an urbanized area as “a place and the adjacent densely settled

TABLE 3.1. World megacities and their populations in thousands, 1950–2015 (United Nations, 2006)

1950		1975		2000		2015 (projected)	
City	Pop.	City	Pop.	City	Pop.	City	Pop.
New York-Newark	12338	Tokyo	26615	Tokyo	34450	Tokyo	35494
Tokyo	11275	New York-Newark	15880	Mexico City	18066	Mumbai	21869
		Mexico City	10690	New York-Newark	17846	Mexico City	21568
				São Paulo	17099	São Paulo	20535
				Mumbai	16086	New York-Newark	19876
				Shanghai	13243	Delhi	18604
				Kolkata	13058	Shanghai	17225
				Delhi	12441	Kolkata	16980
				Buenos Aires	11847	Dhaka	16842
				Los Angeles-Long Beach-Santa Ana	11814	Jakarta	16822
				Osaka-Kobe	11165	Lagos	16141
				Jakarta	11065	Karachi	15155
				Rio de Janeiro	10803	Buenos Aires	13396
				Cairo	10391	Cairo	13138
						Los Angeles-Long Beach-Santa Ana	13095
				Dhaka	10159	Manila	12917
				Moscow	10103	Beijing	12850
				Karachi	10020	Rio de Janeiro	12770
						Osaka-Kobe	11309
						Istanbul	11211
						Moscow	11022
						Guangzhou, Guangdong	10420

surrounding territory that together comprise a minimum population of 50,000 people,” where the “densely settled surrounding territory” is defined as “one or more contiguous block having a population density of at least 1,000 people per square mile.” The US Census Bureau thus provides a dichotomy whereby territory, population, and housing units within specific size and density parameters are designated urban, and those that are outside those parameters are non-urban. However, there are inherent limitations to these definitions. Urban areas exist in contrast to rural or, more simply, to non-urban areas. In the 21st century, few cities exist in extreme isolation such that what is not defined as city is rural (e.g., Las Vegas). Most cities (e.g., New York City, London, Bangkok, etc.) are actually

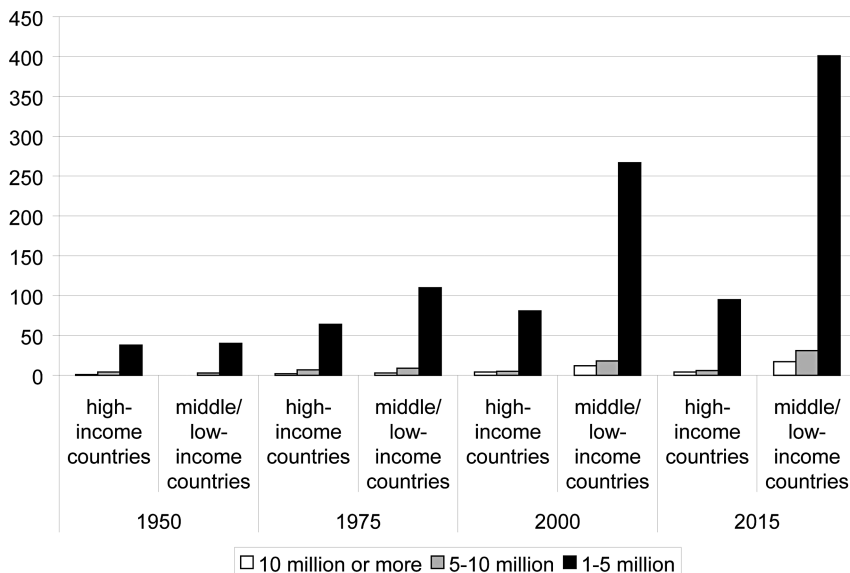


FIGURE 3.1. Number of cities with populations of 1 million or greater, 1950–2015 (United Nations, 2004)

a far-reaching densely populated area, containing peri-urban and suburban areas, which continue relatively un-interrupted for miles beyond the municipal city boundaries and the city-center.

The definition of “urban” varies widely between countries. Among 228 countries for which the United Nations had data in 2000, almost half (100) included size and density as criteria, 96 included administrative definitions of urban (e.g., living in the capital city), 33 included functional characteristics (e.g., economic activity, available services, etc.), 24 had no definition of urban, and 12 defined all (e.g., Anguilla, Bermuda, the Cayman Islands, Gibraltar, the Holy See, Hong Kong, Monaco, Nauru, Singapore) or none (e.g., Pitcairn Island, Tokelau, and Wallis and Futuna Islands) of their population as urban (United Nations, 2004). Official statistics (e.g., United Nations statistics detailed above) rely on country-specific designations and therefore vary widely. In specific instances, definitions of “urban” in adjacent countries differ tremendously. For example, Cambodia defines urban as towns, while Vietnam defines urban as cities, towns and districts with 2,000 or more inhabitants, and Thailand defines urban as municipal areas. Furthermore, definitions of urban have changed over time in different ways in different countries. Thus, global statistics are subject to country-level differences in the definition of urban that may be based on population density or specific urban features (e.g., proportion of agricultural workers, municipal services).

The variability in definitions across settings presents a challenge for those interested in examining the relationship between cities and health. Clearly, rates of disease, risk, and protective behaviors will vary between definitions. In any given study, the definition of “urban” or “city” will be a function of both the research question and the available data sources. For example, if a researcher wanted to examine the impact of restaurant smoking laws among cities, the definition of city would be defined by the municipal boundaries that are affected by city ordinances. In contrast, if a researcher wanted to use US Census data to examine the relation between socioeconomic measures and a specific health outcome in rural and urban settings, the definition of urban would be based on the US Census definitions because that is how the data on socioeconomic measures are provided. Ultimately, if the research question requires data from publicly available data sets like a census, the definition of a city or urban area will have to conform to the definitions of the data sources.

3. Conceptualizing Urban “Exposure” as a Determinant of Health

Until relatively recently, urban living and its related exposures were considered mainly in terms of their detrimental effects on health (Vlahov, Galea, & Freudenberg, 2005). This “urban health penalty” perspective has focused attention on poor health outcomes in “inner city” environments (Andrulis, 1997) and on disparities in the burden of morbidity and mortality, as well as disparities in health care access, among specific sub-groups (Vlahov, Gibble, Freudenberg, & Galea, 2004). Yet in many ways, urban living may be health promoting. Urban areas can provide access to cultural events, educational opportunities, cutting-edge medical facilities, and a plethora of health and social services (Leviton, Snell, & McGinnis, 2000; Wandersman & Nation, 1998). Moving forward, researchers must consider features that both promote and harm population health.

We can conceptualize exposure to the urban environment in the context of production of health and disease in three main ways: urbanicity, urbanization, and the urban environment, defined in Sections 3.1–3.3 below. These three urban aspects may differentially influence health in particular settings. In most developing countries urbanicity, urbanization, and the urban environment are all important determinants of health. Many of those countries are in the process of dramatic change, as their populations move from rural areas into cities. In the majority of developed countries, the pace of urbanization has slowed considerably. In both developed and developing countries, substantial differences exist between and even within cities, with respect to health outcomes and access to health and social services.

3.1. *Urbanicity*

Urbanicity, simply defined, is urban living. Measures of urbanicity, then, are usually in contrast to non-urban (e.g., rural and suburban) living and are subject to

the definition of the urban area. Urbanicity characterizes the presence of conditions at a particular point in time (i.e., prevalence) that are particular to urban areas or present in urban areas to a much greater or lesser extent than in non-urban areas. The focus on urbanicity is important to public health assessments on prioritizing current needs and approaches.

Figure 3.2 presents the relationship between urbanicity (defined as percent urban) and the infant mortality rate for 182 countries (World Health Organization, 2005). These data suggest that the infant mortality rate is lower in countries where more people live in urban areas. One might conclude that urban living is therefore associated with improved infant mortality. However, this type of ecological analysis is limited in helping identify what it is *about* urban living that influences the health of populations. We contrast this figure with one considering the role of urbanization in the next section.

3.2. Urbanization

Urbanization refers to changes in the size, density and heterogeneity of cities over time and provides a perspective for public health planning. Urbanization is related to movement of populations and resources from rural and suburban areas to urban areas and traditionally has been linked to industrialization, although current patterns of migration toward cities in the developing world appears to be independent of industrialization (Davis, 2006). More simply stated, urbanization

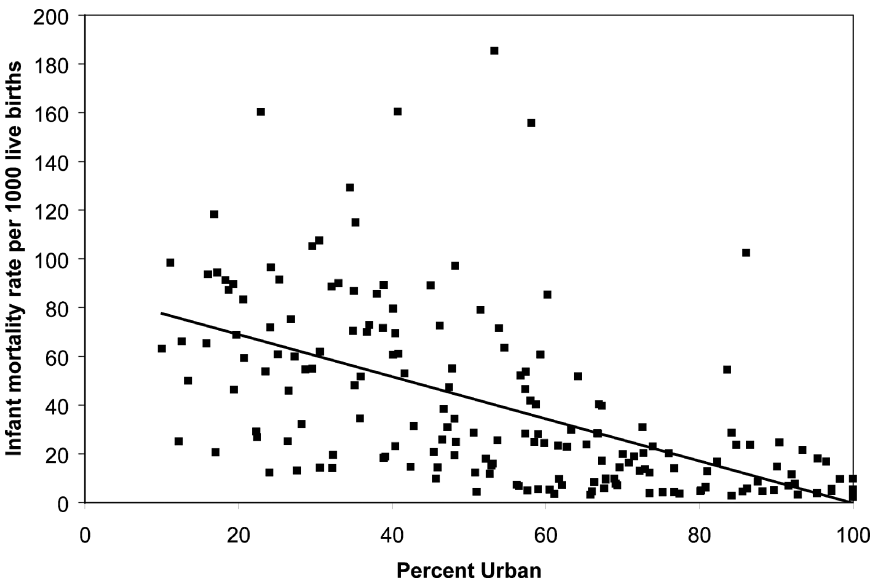


FIGURE 3.2. The relation between urbanicity and infant mortality rate for 182 countries (World Health Organization, 2005)

is the process that involves the emergence and growth of cities. Thus, urbanization is not dependent on the definition of urban per se, but rather on the dynamics of agglomeration of individuals. Although the pace of urbanization is independent of the base size of the population, the population size/density of surrounding areas may be a factor in its determination.

Characteristics of urbanization, including the intensity, rate, and duration of these changes, may influence the health of urban residents. Common mechanisms may exist through which urbanization affects health independent of the size of the city in question. Investigations of urbanization often consider “push” and “pull” factors as driving forces of urban migration (Godfrey & Julien, 2005). “Push” factors include natural disasters, civil disturbances, and economic hardship. “Pull” factors include opportunity for upward mobility, family, and desire for a “modern” lifestyle. For instance, in sub-Saharan Africa, the rapid migration into cities is related to high urban fertility rates and “push” factors such as the escape from rural poverty (McMichael, 2000). On the other hand, in South America urban growth is related to “pull” factors such as industrialization and economic opportunities (McMichael, 2000).

In addition to population changes, urbanization is associated with geographic changes, particularly changes in land use. Land use change is important not only for urban planning and resource management, but also for public health planning. Overall, a fundamental concern is the consequences on health when the pace of urbanization outstrips infrastructure development.

Urbanization is generally more of a concern for developing countries. Indeed, the growth rate of megacities in the developing world is anticipated to be higher than that of more developed countries. For example, the anticipated growth rate for Calcutta, India, between 2000 and 2015 is 1.9%, compared to an anticipated growth rate of 0.4% for New York City, USA (Hinrichsen, Blackburn, & Robey, 2001).

From a population perspective, measures of urbanization include variables such as the average annual rate of change of the urban population and the average annual rate of change of the percentage urban (Arriaga, 1970; United Nations, 2006). Figure 3.3 presents the relationship between the urbanization rate and the infant mortality rate for 182 countries (World Health Organization, 2005). These data show that the infant mortality rate is higher in countries where urbanization is occurring at a faster rate. This is in contrast to Figure 3.2, which showed lower infant mortality rates in countries that are already urbanized. These two figures simply illustrate the dramatic difference in urbanicity and urbanization as features of nations worldwide. Countries that are already substantially urbanized are typically richer countries with better health infrastructure and salutary conditions that are associated with better health. Conversely, more rapidly urbanizing countries are largely low- and middle-income countries (see Figure 3.1) where several macroeconomic and infrastructural factors are probably responsible for higher infant mortality rates. Therefore, simple considerations of urbanicity or urbanization cross-nationally can illuminate substantially different intra-national processes, but they do not provide information on the potential variability in the populations moving into and out of the urban areas nor about the static processes

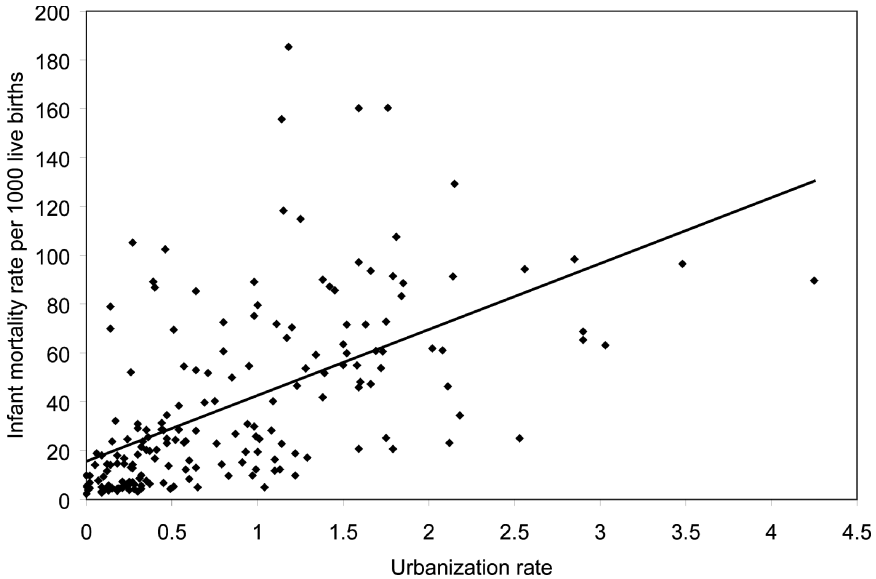


FIGURE 3.3. The relation between urbanization rate and infant mortality rate for 182 countries (World Health Organization, 2005)

that are shaping population health at one point in time. As we discuss below, understanding the elements of the urban environment, including both static elements and changing features of the urban environment, and how these constituent factors influence population health may be much more instructive in the long term.

3.3. *The Urban Environment*

The urban context or urban environment can be defined as the specific characteristics or features of cities that influence health. It is helpful to think about the urban environment as three distinct concepts: the social environment, the physical environment and the urban resource infrastructure. These are shaped in turn by municipal, national, and global forces and trends.

3.3.1. Social Environment

The urban social environment is the collective norms and values shared by members of social groups along with the interpersonal relationships and interactions shared among urban residents and communities (Coutts & Kawachi, 2006). Features of the social environment can both harm and promote health. Although we summarize some key pathogenic and salutogenic features of the social environment, the list provided here is by no means exhaustive. We refer the reader to

other works for a more comprehensive consideration of the urban social environment (Berkman & Kawachi, 2000; Kawachi & Berkman, 2003; McCarthy, 2000).

Social disorganization theory grew out of work of the Chicago School in the early twentieth century. In 1918, Thomas and Znaniecki described social disorganization as “a decrease of the influence of existing social rules of behavior upon individual members of the group . . .” (Thomas & Znaniecki, 1999). Park and Burgess (1925) noted that social disorganization was associated with specific features of urban landscapes. These features aggregate into zones reflective of both the socioeconomic position of the zone residents and varying levels of social disorganization. From a practical standpoint, social disorganization can be measured by the prevalence of abandoned housing and neighborhood crime rates.

Several studies have demonstrated the relationship between social disorganization and health. For example, Cohen and colleagues (2000) found an association between the deteriorated physical conditions of local neighborhoods with gonorrhea rates using an index based on Wilson’s “broken windows” theory (Wilson & Kelling, 1982) that measured housing quality, abandoned cars, graffiti, trash, and public school deterioration. In a study of syphilis in North Carolina, an increase in drug activity in the counties along the Interstate 95 corridor preceded a rise in syphilis cases (Cook, Royce, Thomas, & Hanusa, 1999).

Social norms are patterns of behaviors that are considered accepted and expected by a given society (Birenbaum & Sagarin, 1976) and can be conceptualized as a form of informal social control. From the perspective of urban health, societal and cultural norms are important considerations when thinking about the behavior of urban dwellers and may exist on several levels. For example, Frye, et al. (2006) considered the role of social norms in shaping behaviors among men who have sex with men (MSM) in urban communities. The authors posited that MSM may be influenced by the social norms of the gay community, with its unique physical and social structures and cultural characteristics, as well as by social norms of smaller subpopulations within the gay community. These communities may not be limited to one geographic location, however. Thus, MSM also may be influenced by the norms operating within their geographical neighborhood, which may operate in conjunction with, or in opposition to, the prevailing norms of the broader gay community.

Social capital refers to the features of social relationships or organizations that can facilitate collective action aimed at the improvement of society (Coleman, 1990). These features may include trust, reciprocity, norms, and information networks (Coleman, 1990; Putnam, 1993). However, there is no single definition or measure of the construct (Lochner, Kawachi, & Kennedy, 1999; Pilkington, 2002). Social capital is a multi-dimensional concept and is sometimes conceived of as structural and conceptual. Structural social capital refers to the quantity of relationships while cognitive social capital refers to the quality of those relationships (Bain & Hicks, 1998).

Generally, higher levels of social capital are associated with positive health outcomes. For example, in a study of children in four developing countries

(Ethiopia, India, Peru and Vietnam), cognitive social capital was positively associated with child nutritional status (De Silva & Harpham, 2006). In a cross-national study among adolescents in Chicago (United States) and Maastricht (Netherlands), higher levels of social capital (as measured by informal social control, social cohesion and trust) were associated with higher levels of perceived health (Drukker, Buka, Kaplan, McKenzie, & Van, 2005). Conversely, there is evidence to suggest that the absence of social capital is associated with negative health outcomes such as increases in mortality, poor self-rated perception of health, and higher crime rates and violence (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Kennedy, Kawachi, Prothrow-Stith, Lochner, & Gupta, 1998).

3.3.2. Physical Environment

The urban physical environment refers to the built environment, pollution, and the geological and climate conditions of the area the city occupies. Similar to features of the urban social environment, features of the physical environment can be pathogenic or salutogenic. Klitzman, Matte, & Kass (2006) have proposed a useful framework for considering the physical environment when study its affect on health; the model considers underlying community factors and mediating, proximate-level factors. Community factors include population density, land use patterns, physical infrastructure systems (e.g., transportation and sanitation) and buildings. Proximate-level factors include air and water quality, dust and noise level, local climate, pestilence (e.g., insects and rodents), and physical safety and security.

The built environment refers to “housing form, roads and footpaths, transport networks, shops, markets, parks and other public amenities, and the disposition of public space” (Weich et al., 2001). Examination of the association of built environment and health overall is a relatively recent area of inquiry (see the September 2003 issues of the *Journal of Urban Health* and the *American Journal of Public Health* that examined health and the built environment), but associations between poor quality built environments and depression drug overdose, and physical activity have been found. A recent study noted that access to increased access to physical activity facilities was associated with decreased likelihood of overweight and increased likelihood of moderate to vigorous physical activity (Gordon-Larsen, Nelson, Page, & Popkin, 2006). Greenspace (e.g., parks, esplanades, community gardens, etc.) has the potential to significantly contribute to the health of urban dwellers. Living in areas with walkable greenspace has been associated with increased longevity among elderly urban residents in Japan, independent of their age, sex, marital status, baseline functional status, and socioeconomic status (Takano, Nakamura, & Watanabe, 2002). Drawing on the rapid advances in remote sensing, spatial metrics and spatial modeling and the use of satellite imagery and geographic information systems (Herold, Goldstein, & Clarke, 2003), researchers have been able to examine changes in the urban physical environment over time and to assess the

role of urbanization in shaping health. For example, Ramadan, Feng, & Cheng, (2004) documented an average annual expansion of 7 km² in the areas surrounding Shaoxing City (China). This rapid expansion had an impact on surrounding agricultural areas and water resources, which have direct bearing on the health of urban residents.

Urban transportation systems include mass transit systems (i.e., subways, light rail and buses) as well as streets and roads. According to the Light Rail Transit Association, there are 135 subways currently operating in 67 countries worldwide. Urban transportation systems are key in the economic livelihoods of city residents as well as cities as a whole; thus, they can be considered salutogenic with respect to access to employment, health care, cultural activities and other opportunities and services. On the other hand, there are significant health considerations for mass transit and roadways, including security and violence, noise, and exposure to pollutants that may be pathogenic. These exposures are relevant not only for transit workers, but also for transit riders.

Pollution is one of the well-studied aspects of the urban physical environment. Urban dwellers are exposed to both outdoor and indoor air and water pollutants that include heavy metals, asbestos, and a variety of volatile hydrocarbons. For example, one study in Bangkok (Thailand) reported high levels of benzene and polycyclic aromatic hydrocarbons among street vendors and school children sampled from traffic-congested areas as compared to monks and nuns sampled from nearby temples (Ruchirawat et al., 2005).

3.3.3. Urban Resource Infrastructure

The urban resource infrastructure can have both positive and negative affects on health. Urban infrastructure may include both explicit health-related resources, such as health and social services, as well as municipal structures (e.g., law enforcement), which are shaped by national and international policies (e.g., legislation and cross-border agreements).

The relation between availability of health and social services and urban living is complicated and varies between and within cities and countries. In wealthy countries, cities are often characterized by a catalog of health and social services. Even the poorest urban neighborhood often has dozens of social agencies, both governmental and non-governmental, each manifesting a distinct mission and providing different services. Many of the health successes in urban areas in the last two decades, including reductions in HIV transmission, teen pregnancy rates, tuberculosis control, and new cases of childhood lead poisoning, have depended in part on the efforts of these groups. For example, social and health services are frequently more available in cities than they are in non-urban areas, which may contribute to better health and well-being among urban residents. Despite wider availability of social and health services in cities, however, many cities experience remarkable disparities in wealth between relatively proximate neighborhoods; these disparities are often associated with differences in the availability

and quality of care. Low-income urban residents face significant obstacles in finding health care both in wealthy and less-wealthy countries.

Local legislation and governmental policies can have substantial influence on the health of urban dwellers. Historically, municipal regulations regarding sanitation in the 19th and 20th centuries facilitated vast improvements in population health and led to the formation of national groups dedicated to improving population health like the American Public Health Association (Brieger, 1966). A contemporary example of the power of legislation to influence health has been ongoing in New York City (USA) since 2002. The city government implemented a comprehensive tobacco control strategy that included increased taxes on cigarettes, smoke free workplaces (including bars and restaurants), and health services aimed at cessation (including a free nicotine-patch program) (Frieden, Mostashari, Kerker, Miller, Hajat, & Frankel, 2005). Health department surveys indicated that, from 2002 to 2003, smoking prevalence among adults in New York City decreased by 11%.

4. Studying the Relation Between Cities and Population Health

There is a long and rich tradition of studying how cities and city living may influence population health. It is useful to think about empiric work that has explored this issue in three categories: urban vs. rural, inter-urban, intra-urban. In the following section we consider these three categories in turn, highlighting the contributions and limitations of each of these designs.

4.1. *Urban vs. Rural*

Urban vs. rural studies typically contrast urban areas with rural areas in the same country or consider morbidity and mortality in urban vs. non-urban areas. Essentially, these studies seek to determine whether morbidity and mortality due to a specific health outcome is different in specific urban areas as compared to specific non-urban areas.

Urban versus rural (or non-urban) comparisons are useful in drawing attention to particular health outcomes that may be more or less prevalent in urban areas and merit further investigation to examine the specific features of the urban (or rural) environment that are associated with that outcome. It is important to consider the substantial variability within urban, suburban and rural areas. Within a city there can be wide variation with respect to housing quality, retail establishments, parks, racial/ethnic and socioeconomic characteristics of residents and many other variables between neighborhoods. Using a factor analysis approach, McDade and Adair (2001) sought to empirically evaluate different definitions of urbanicity in Cebu City (Philippines). They concluded that urban-rural comparisons are useful for only the most general studies of urbanicity and health.

More recent work has refined distinctions such as urban core, urban adjacent, urban non-adjacent and rural. Even these categories become blurred when considering newer phenomenon such as “edge cities”, cities at major suburban transportation intersections (Garreau, 1991). Even with such refinements in the definition of urban, urban-rural comparisons remain limited in their ability to identify what those factors may be and the pathways through which they affect the health of urban dwellers. Features of cities change over time, and some factors may not be conserved between cities (e.g., racial/ethnic distribution). It is unsurprising, then that different urban-rural comparisons have provided conflicting evidence about the relative burden of disease in urban and non-urban areas. At best, these studies reveal gross estimates of the magnitude and scope of health measures in broad geographical areas typically defined by size and population density.

4.2. Inter-Urban

Inter-urban studies typically compare health outcomes between two or more urban areas between or within countries. Such studies can simply identify differences between cities, or they can begin to examine specific features of cities that influence health. Examples of the former are numerous. For instance, Vermeiren and colleagues (2003) have compared mental health outcomes among adolescents in New Haven (United States), Arkhangelsk (Russia) and Antwerp (Belgium), providing insights on cross-cultural and cross-urban similarities and differences in antisocial behavior, depression, substance use, and suicide. A study of Puerto Rican injection drug users in New York City (United States) and Bayamón (Puerto Rico) revealed several differences between the two ethnically similar populations; injection drug users in Puerto Rico injected more frequently (Colon et al., 2001) and had higher rates of needle sharing as compared to their New York counterparts (Deren et al., 2001). The authors pointed to similarities in drug purity (Colon et al., 2001) and differences in the onset of the crack epidemic (Deren et al., 2001) as city-level factors that influenced injector risk behaviors. When using the city as the unit of analytic interest, one implicitly assumes that city-level exposures are equally important for all residents. Studying differences in drug use risk behaviors among two cities does not permit analysis of differences in behaviors within cities due to location of residence, variability in barriers to safer behaviors, or variations in access to key services (e.g., drug treatment, needle exchange) provided to different urban residents. However, inter-urban studies such as the examples mentioned here can help guide municipal and state policy makers when making decisions on service provision throughout a city.

4.3. Intra-Urban

Intra-urban studies typically compare health outcomes within cities and are becoming widely used to investigate specific features of the urban environment. These studies often focus on neighborhoods, specific geographic areas within a

city that are generally administrative groupings (e.g., census tracts in Canada, sub-areas or suburbs in South Africa). However, it is important to note that these areas may not represent residents' perceptions of their neighborhoods. The Project for Human Development in Chicago Neighborhoods (PHDCN), which identified collective efficacy as a determinant of violence in urban neighborhoods (Sampson, Raudenbush, & Earls, 1997), is an example of such studies and has demonstrated their potential to guide specific interventions to improve urban health. As a result of findings from the PHDCN, public health interventions have been developed that attempt to increase collective efficacy and social capital in particular urban neighborhoods.

Recent innovations in statistical methodology have enabled the consideration of multi-level determinants of health (see Chapters 15 and 17 in this book for a fuller description of statistical methodologies). Many of these studies have empirically shown that living in disadvantaged areas is associated with poor health and that there are substantial inequalities in health. For example, evidence has shown an association between neighborhood-level poverty and all-cause mortality (Hahn et al., 1996), AIDS incidence (Zierler et al., 2000), low birthweight (Krieger et al., 2003), sexually transmitted diseases (Luke, 2004), and tuberculosis (Luke, 2004).

Intra-urban studies may contribute important insights into the relations between specific urban features and health outcomes. However, it may be difficult to generalize from one city to another. For instance, the relation between collective efficacy and violence may be modified by differential access to illicit substances within a given city. Furthermore, it is important to consider that neighborhood residence is a function of geographical location and social ties that are facilitated or necessitated by the urban environment (Bond, Valente, & Kendall, 1999).

5. Conclusion

Urban living and urbanization can have substantial influence on health and disease among urban populations. Evaluating the cross-national role of urbanicity alone as a construct has limited utility in illuminating the pathways through which urban living can impact health. Investigating the way in which the process of urbanization together with features of the urban environment affect health can help to elucidate these pathways and thus provide potential targets for public health interventions and governmental policies. Recent empirical research has begun to evaluate the independent associations between specific characteristics of the social environment and health within specific cities. Much more work will need to be done to establish cross-national comparisons that may enable us to draw conclusions that are generalizable across cities and across countries.

It is important to consider that the specific features of the urban environment do not exist in a vacuum. In other words, the interactions between the physical environment, urban resource infrastructure, and the social environment are important. The process of urbanization then intersects with the urban environment at any one point

in time through demographic change and changes in land use, availability, and the impact on agriculture and natural resources. Additionally, regional, national and international politics, events and governance can have substantial impact on the features of the urban environment. Moving forward, investigations into the nature of the interactions between these macro-level determinants of health may offer new understanding of how urban living shapes the health of populations and may suggest avenues for potential intervention.

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