INTRA-URBAN SPATIAL INEQUALITY:

CITIES AS "URBAN REGIONS"

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Cities as 'urban regions'

Chapters 1, 4 and 7 explore the idea of cities as sites of economic concentration and density. But a city is not a homogenous unit. This paper explores spatial inequalities *within* cities: how they are generated, what characteristics they have, and—similarly to inter-country, inter-territory and urban-rural inequalities—how these spatial inequalities become persistent and self-perpetuating, embodying serious economic and social problems. This conceptual frame views cities as agglomerations of 'urban regions'—which exhibit significant spatial intra-urban inequalities, and where trends towards equality are constrained predominantly by labour immobility and land-use policies.

It should be noted at the outset that, compared to all other scales of spatial inequalities investigated by this report—inter-country, inter-territory and urban-rural—the analysis of intra-urban inequalities suffers from the greatest dearth of data, especially in low- and middle-income countries. The emphasis of this paper will be on quantitative evidence from single cases where data is available, with its theoretical framework provided by qualitative literature.

Dynamics of urban spatial inequalities

This section gives an overview of the forces and characteristics of intra-urban spatial inequalities, before the subsequent main section examines the mechanisms by which they have significance for economic development.

Spatial inequalities within urban areas are a natural consequence of income inequalities between households. Standard urban economic theory explains the spatial patterning of cities in term of bid-rent curves and other models of location decisions[1]. These mechanisms give rise to the predominant clustering of residences by income, with those locations determined according to the desirability of residence location and households' abilities to afford land in that location. Until the 20th century—in the era before motorised transport—the costs of intra-urban communication encouraged the concentration of residences, services and even light manufacturing in the centres of cities. Residents with higher-incomes outbid the poor for the most central and convenient sites, and thus income declined markedly with distance from the centre. According to the standard models of urban economics, during the 20th century, motorised transport increased the speed of intra-urban mobility, and it began to be possible for higher-income residents to prefer larger lot sizes on the periphery of cities while still commuting to work in the centre[2]. In North America and some of the developing world it is now the poor who tend to be clustered in the central cities, while higher-income residents are dispersed towards the periphery, including in 'gated communities'[3]. In other cities—particularly rapidly-growing cities—the poor are also concentrated in informal settlements at the urban periphery[4]. This physical separation of income groups is the first reason why intra-urban spatial inequalities can be

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[1] The basic model was pioneered by the work of William Alonso, Richard Muth, and Edwin Mills. Household preferences also depend on employment opportunities, levels of public services and amenities (Tiebout, 1956), socio-demographic composition of the neighbourhood (Schelling, 1978).

[2] Mieszkowski & Mills, 1993. This trend is not universal, though it has been borne out in many geographic regions of the world. See, for example, Portes, 1997: 17-18; 31-41 for sources and evidence on Caribbean cities—where spatial polarisation is observed to be increasing in some and decreasing in others. Intra-urban decentralisation in the US has been actively encouraged by the use of subsidies for home ownership, subsidies for highway construction and maintenance, and minimum-lot-size residential zoning which excludes lower-income residents who would pay less in property taxes while receiving the full benefits of local public goods.

[3] Gated communities account for approximately 11 percent of all new housing in the United States. Quantitative evidence is much sparser for the rest of the world, but gated communities are being reported to be becoming a common sight in South America, South Africa, the Middle East, and Southeast Asia. In Europe, Canada, Australia and New Zealand, the development of gated communities is not so widespread—see Blandy et al., 2003 for a review of evidence.

[4] It has been suggested that these different patterns may depend on the quality of transport in central cities—e.g. Glaeser, Kahn & Rappaport, 2007—but research on this question is not yet conclusive.

self-perpetuating: poor areas are unlikely to have access to the local consumption spending of higher-income areas, and thereby cannot benefit from local multiplier effects[5].

The traditional monocentric urban structure has evolved as jobs have begun to move outside city centres, forming polycentric urban structures[6]. Agglomeration economies mean that firms will still cluster in centres—and sometimes each sub-centre will have different industry-mix characteristics—but the costs of congestion, land and crime in city centres have prompted a suburbanisation of jobs, including the creation of multiple sub-centres. In the US, the proportion of jobs of ten Metropolitan Statistical Areas (MSAs) in central cities has decreased from nearly 70 percent in 1970 to 57 percent in 1980, 51 percent in 1990 and 47 percent in 2000[7]. Suburbanisation and polycentricity are not so far advanced elsewhere, but trends in developing-world cities share a similar trajectory[8]. Where sufficiently large, these sub-centres have been termed 'edge cities'[9], which may even have 'leapfrogged' undeveloped land in response to incentives for land developers[10]. In theory there exists a feedback loop as households follow the location choices of enterprises, and vice versa; however, the expectation that households would seek to minimise their travel costs has not been borne out in reality: there is a great deal of cross-commuting between different centres in urban areas[11]. Contributing to the idea of cities as collections of 'urban regions', the size distribution of sub-centres may itself follow the rank-size rule (Zipf's law)[12]. These trends are observed over time, and also across different city sizes, with larger cities tending to become more polycentric[13]. Thus the percentages of jobs in developing-world CBDs—which has often been between 10 and 20 percent of all metropolitan employment—have tended to fall as their economies grow[14].

Amongst many social and technological trends, globalisation is probably acting to polarise intra-urban inequalities, thereby entrenching spatial inequalities. Globalisation has made it

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[5] This is what would be predicted by the operation of simply Keynesian multipliers, whereby departure of higher-income groups from a neighbourhood economy constitutes an exogenous decrease in income, subsequently multiplied through its effects on induced demand. However, the empirical literature on local multipliers at scales as small as the neighbourhood is rather sparse.
[6] It is however worth noting that, in all US cities reviewed by Anas, Arnott & Small, 1998: 1442-3, the initial CBD remains the largest and densest centre in polycentric cities.
[7] Gobillon, Selod & Zenou, 2005: 4.
[8] e.g. Dökmeci & Berköz, 1994; Robinson, 1996; Aguilar, 1999; Garza, 2000.
[9] Garreau, 1991.
[10] Burchell, 1998.
[11] Anas, Arnott & Small, 1998: 1444.
[12] Sources in Anas, Arnott & Small, 1998: 1443.
[13] Ingram & Carroll, 1981; Hamilton, 1982; Dowall & Treffeisen, 1991.
[14] Lee, 1989.

easier to outsource many industrial activities to other countries, thereby making redundant urban manufacturing workers in high-income countries: a 'disappearing middle' on the incomes spectrum. The global economy is to a significant extent articulated through cities as nodes on its networks, giving rise to what have been termed 'global cities', but more realistically are the locations of globally connected elites and their workplaces. Those elites generate a whole set of service industries, many of which are relatively low paid. Thus, according to global cities literature, the particular industrial and occupational structure of such cities produces a bifurcated earnings structure[15]. Empirical evidence from New York, London, Tokyo, Paris and the Randstad does support this hypothesis, though the polarisation of incomes seems to be due to earnings growth amongst high-earners, and the exclusion of low-earners from the labour market—mediated by governmental policy—rather than their employment by globalised elites at very low wages[16].

In tandem with these patterns, urban densities are predominantly declining, contiguity is marginally increasing, and compactness is marginally decreasing. Urban land use is on average increasing at twice the rate of urban population globally, and the most disparate rates are located in Europe, East Asia, Southeast Asia and sub-Saharan Africa (see Figure 1). The physical shape of urban growth means that compactness has been marginally decreasing: urban areas are extending—mostly along transport arteries—without becoming infilled between those tentacles. Latin American and sub-Saharan cities are the most infilled, and developed country cities the least infilled (see Figure 2). Contiguity is marginally increasing: built-up areas are becoming marginally less fragmented. East Asian cities are considerably less contiguous than those in most of the rest of the world, and have become more fragmented each year (see Figure 3). Cities are relatively contiguous in low income and higher income countries, but are one-third more fragmented in lower-middle income countries.

Within these metrics, the urban poor live in poor quality settlements, which have customarily been termed 'slums'. A 'slum' household is detected by reference to five variables[17], the absence of any one of which[18] is sufficient to determine that household is a slum

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[15] Friedman, 1986 & Sassen, 1991.
[16] Fainstein, 2001.
[17] UN-HABITAT, 2003b: 18-19.
[18] Confusingly, UN-HABITAT says that this definition will not apply in all cases. For example, in Rio de Janeiro, living area is deemed insufficient for middle classes too, and is thus not a good discriminator—UN-HABITAT, 2003b: ftnt 38.

household: access to improved water[19], access to improved sanitation[20], security of tenure[21], durability of housing[22], and sufficient living area[23]. The proportion of the urban population who are slum households falls as the urbanisation rate increases (see Figure 4)[24], although that is probably because higher GDP is associated with low slum percentages and high urbanisation rates rather than a causal relationship between those two variables. There is also fairly robust relationship between the rate of urban growth and rate of slum growth (see Figure 5), most plausibly because rapidly-growing cities necessitate the equally-rapid expansion of public services provision, which does not occur because the fastest rates of urban growth are observed mostly in low-income countries without sufficient state capacity.

In the developing world, slums are found not only in the decaying centres of cities, but also on the periphery of cities, and also in scattered 'slum islands' in the interstices of formal housing[25]. Such patterns mainly reflect household strategies to locate close to employment opportunities, but are shaped also by a lack of government capacity to enforce planning regulations, punctuated by sporadic forced evictions and attempts to relocate slum areas—usually to the periphery of cities. In Delhi, for example, since 1951 the number of slum clusters has increased from 200 to 1,160[26]—at a rate almost exactly the same as population growth: low-income households formed new slum clusters as the city itself expanded, rather than concentrating further in existing informal settlements[27]. A similar pattern of dispersed spatial clusters is shown for Bangalore and Pune (Figures 6a and 6b). Elsewhere, slum households are more spatially concentrated. In Shanghai, for example, migrants—who tend to be low-income workers—are clustered most densely around the periphery of the central city, which is exactly the location of industrial establishments in which they tend to work[28] (Figure 7). In Nairobi, Kenya, 1,389 of the 4,774 census enumeration areas were classified as slums by UN-HABITAT and the

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[19] 20 litres per person per day, at less than 10 percent of total household income, available to household members without needing to spend more than an hour a day to collect it.

[20] An excreta disposal system, in the form of either a private or public toilet shared with a reasonable number of people. Empirically, lack of improved sanitation has been the dominant feature identifying slum households—UN-HABITAT, 2003b: 20.

[21] Measured by evidence of documentation of secure tenure status—i.e. the right to effective state protection against eviction—and either *de facto* or perceived protection from forced evictions.

[22] A non-hazardous location with a structure which provides protection against rain, heat, cold and humidity.

[23] Fewer than three people per habitable room, which is a minimum of 4m^2.

[24] This conclusion should be treated with some caution, not just because the relationship is not particularly robust—i.e. R^2 is relatively low—but also because data on the absolute proportions of slum populations is so unreliable. However, there is a tendency for slum populations to be underestimated (UN-HABITAT, 2003b), and it is likely that the relationship is stronger than shown here.

[25] UN-HABITAT, 2003a: 88-90.

[26] Hazards Centre, 2003.

[27] UNDESA, 2005.

[28] Wu, 2005.

Kenyan government; in these areas on average 86.9 percent of households qualify as slum

households under the definition given above. In the remaining non-slum areas, 82.1 percent of

households qualify as non-slum[29], again indicating a high degree of spatial concentration.

**Finally, intra-urban spatial inequalities often also have ethnic characteristics: while cities
have simplistically been labelled 'melting pots' for various ethnic groups, but the degree of
melting may in fact be limited**. Migrants have often clustered in neighbourhoods with other

members of their ethnic group, resulting in spatial inequalities of ethnicity. In Paris for example,

32 percent of all residents would have to be relocated in order to achieve a uniform residential

mix of French, Magrebians and Africans across the city[30]. In US metropolitan areas, similar

indices of dissimilarity indicate around twice as much segregation[31]. In the developing world,

quantitative data tends to be less comprehensive, but many cases are apparent from qualitative

evidence. Beirut and Jerusalem are obvious examples of intra-urban religious segregation, which

has become further embedded through violent conflict in both cities. Mogadishu has had its

urban space polarised into clans: the northern part of the city is occupied increasingly by

members of the ruling Abgal clan, with others confined mainly to the south[32].

In many cases ethnic or religious segregation occurs because racial groups are correlated with

income—as for example in the US, where 64 percent of the black population in the ten largest

MSAs lives in a central city compared with 28 percent of the white population[33]—but that is not

necessarily the case[34]. Income inequalities in China's cities are rising[35], but are not wholly

spatially correlated with ethnic segregation: even though ethnically-distinct migrants and

permanent residents are predominantly spatially segregated[36], migrant households have a

marginally higher per capita income than permanent resident households[37]. Much of this

segregation is self-selected, as urban migrants seek out neighbourhoods and social networks

established by relatives and peers, which permit them a foothold in formal and informal labour

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[29] Turkstra et al., 2004: 8.
[30] Gobillon & Selod, 2007: Table 1.
[31] The mean index of white-black dissimilarity by block group for all US metropolitan areas is 57, and the mode is 63.
See the interactive data analysis of the US census available at http://enceladus.isr.umich.edu/race/choosearea.asp
[32] Marchal, 2006: 214, 218-9.
[33] Gobillon, Selod & Zenou, 2005: 5.
[34] Belfast in Northern Ireland is a notable counterexample—Van der Wusten & Musterd, 1998: 247.
[35] The Gini coefficient for income inequality has increased from 0.16 in 1985 to 0.32 in 2003. In Beijing in particular,
the Gini coefficient for intra-urban inequality increased from 0.18 in 1981 to 0.28 in 1995—Dai, 2005: table 3.
[36] Beijing for example has several districts nicknamed with the names of the provinces from which residents mainly
derive.
[37] Dai, 2005: 11-12.

markets. Occasionally ethnic segregation has been enforced by *de jure* restrictions—as, for example, in South Africa—or by *de facto* institutional discrimination in land-use planning[38]. Under apartheid, only whites were permitted to live close to the city centre, which pushed the non-white labour force to the urban periphery. In the post-apartheid era, these trends have not been reversed under market-driven conditions: by 1996, the African-white index of dissimilarity[39] in Cape Town was still 93 percent[40].

The scale of these processes is indicated in Figures 8a to 8d, which map the spatial distribution of poverty headcounts. While Vietnam and Panama show the conventional story of agglomeration economies fairly clearly—i.e. areas with fewest poverty headcounts are in and around the major cities—the spatial distributions of poverty within cities is usually not even, and in Malawi and Bolivia some of the areas with the most severe poverty are in and immediately around the capital city, including poverty rates even worse than many rural areas. What consequences do such intra-urban spatial inequalities have?

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[38] In Israel, for example, between 1996 and 2000, 82 percent of building violations were in Israeli areas of Jerusalem, but of the 434 demolition orders issued, over 80 percent were instead for Palestinian buildings—B'Tselem statistics in World Bank, 2007: 10.

[39] The dissimilarity index represents the percentage population of Africans or of whites which would have to be relocated in order to obtain a uniform mix of both groups in each neighbourhood of the urban area.

[40] In the same year, it was 76 percent for whites and Asians, and 86 percent for whites and coloureds. Rospabe & Selod, 2006: 267.

Spatial poverty traps within cities?

Inequalities in general can be impediments to development, through the micro-level obstacles households face in finding and taking advantage of economic opportunities[41]. Relative poverty can, for example, harm a household's health outcomes and education outcomes, transmitting poverty to the next generation and forming a 'poverty trap'. But does the spatial expression of those inequalities bring additional problems? The answer is probably yes, with those problems characterised as forming 'spatial poverty traps'—by which spatial inequalities are self-perpetuating and, through an iterative process, may actually worsen over time.

Economic opportunities are limited foremost by (i) isolation from geographic concentrations of jobs, (ii) a lack of access to social networks in disadvantaged areas, (iii) economic constraints from ethnic segregation, (iv) spatial concentrations of crime and violence, (v) diminished cross-income economic exchanges, and (vi) inaccessibility caused by locational disadvantages in the urban form itself. Each of these will be examined in turn. As will be implied by the following analysis, all six mechanisms can operate at greater magnitudes—and hence spatial inequalities are more consequential—in larger cities.

Where there is a disconnection between the residential location of the urban poor and their jobs, there may be a **'spatial mismatch'**. This hypothesis—that distance to jobs has a significant impact on labour-market outcomes—was first developed in the 1960s, tracing the causes of riots in black inner-city neighbourhoods of US cities to the spatial disconnection between inner-city ghettos and the suburbs, where low-skilled jobs had already begun to decentralise[42]. The physical separation of residences and potential jobs may be consequential because of long commuting journeys and expensive commuting costs—especially where private transport is expensive and public transport is has low service levels, or the need to commute early in the morning or late at night increases the risk of crime[43]—or the high costs of job search[44]. More recently this discourse has been extended to include not only inaccessibility to the labour market,

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[41] World Bank, 2005.
[42] Kain,1968. More recently, similar phenomena have been identified as root causes of widespread rioting in French cities during 2005—see sources in Gobillon & Selod, 2007: 1.
[43] Moser, Winton & Moser, 2003.
[44] Chirinko, 1982; Seater, 1979; Rospabe & Selod, 2006: 263-264.

but also to schools, health facilities and social activities—constituting spatial routes to 'social exclusion'[45].

The hypothesis has been widely tested using data on North American and European cities, but very rarely in developing-world cities, where a lower capacity of state institutions to enforce planning decisions has meant that slum households are sometimes spatially concentrated and sometimes spatially dispersed (as surveyed above), as households seek to locate themselves close to employment opportunities. Thus is 'spatial mismatch' less of a problem in developing-world cities? Conventional transportation analysis uses a number of different measures of accessibility, taking into account the physical distance of settlements from jobs, and perhaps a lack of affordable or speedy public transport[46]. Three issues will be surveyed very briefly here: time, cost and distance. With regard to time, the evidence varies, according to the availability of transport infrastructure and the size of cities. In Buenos Aires, 87 percent of jobs in the metropolitan area are accessible in 45 minutes of travel time by car; but if public transportation is chosen, only 23 percent of metropolitan jobs are accessible in 45 minutes. Even if the travel time threshold is raised to 60 minutes—implying a two-hour commute each day—the effective size of the labour market is only two-thirds of its potential size for public transport users[47]. In Mexico City, 20 percent of workers spend more than three hours travelling to and from work each day, and 10 percent spend more than five hours[48].

With regard to cost, intra-urban transport can account for substantial proportions of the household income of slum dwellers. Between 8 and 16 percent of urban households' income is typically spent on transport, but this can rise to more than 25 percent for the poorest households in very large cities[49]. In Ciudad Juarez, Mexico, for example, households living in low-income districts were found to be spending 29 percent of their income on transport to work[50]; in a low-income settlement outside Dar es Salaam, Tanzania, the proportion was between 10 and 30 percent[51]. In Chinese cities, the urban poor in Beijing and Shanghai spend around $1.50 of their monthly income of $35 on transportation; the figure is so low mainly because they choose to cycle or walk: choosing bus travel instead for two trips each day would absorb around $14 a month, or 40

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[45] e.g. World Bank, 2002: xi.

[46] Three of the most frequently used measures are: minimum distance, average travel cost, and gravity measures (where facilities are weighted by their size and adjusted for the 'friction of distance').

[47] Prud'homme, Huntzinger & Kopp, 2004: table 7.

[48] Schwela & Zali, 1999.

[49] Sources in World Bank, 2002: 5; 22.

[50] Cohen, 2001.

[51] Howe & Bryceson, 2000.

percent of their income[52]. Many of the urban poor will therefore choose to walk or cycle to work, further reducing the geographic size of their labour market. Thus the implication is that poor urban transportation—which levies high relative financial- and time-costs—fragments the urban economy through excluding some households from substantial shares of the labour market, causing higher unemployment[53].

The economic impact of distance is a function the other two variables, but geographic distance may itself impinge on job search efficiencies, particularly if low-skilled jobs are filled mainly by word-of-mouth or local advertisements only. Returning to the example of Cape Town, when the locations of jobs are compared with the locations of ethnic groups, it is found that whites and Asians reside relatively close to jobs, whereas coloured and especially Africans are located at a much greater distance from job locations (see Figures 9a to 9d). Using data on 1,870 individuals of working age in Cape Town, it was found that—controlling for many other variables—local employment density did not significantly increase the probability of being unemployed, but a higher average commuting distance amongst employed workers did significantly increase the unemployment probability[54].

The effects of spatial location may also be gendered, since in most cases where women work, they tend to be more time-poor than men, and many must return home during the day in order to perform household chores including childcare[55]. In the developing world, women are even less likely than men to have access to private transport, which further confines them to work at shorter distances from home. For example, in a survey of households in Sanjay Camp, Delhi—a slum cluster located in a generally high-income area—it was found that 75 percent of men work within 12 kilometres of their homes, but for 75 percent of women the distance radius is only 5 kilometres[56]. A typical day's work for a domestic worker will involve walking to work in a nearby affluent neighbourhood, returning home in the afternoon to take care of her children and other household chores, returning to work in the evening, and then reaching home again in time to prepare the evening meal for her family[57]. For these female workers, if slums are relocated, they may become simply too far away from jobs to be able to return home at the requisite times each day.

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[52] Peng, 2004.
[53] One in-depth study of this phenomenon has recently been completed in Dakar, Senegal—see Rowbottom, 2007.
[54] Rospabe & Selod, 2006.
[55] e.g. Mensah, 1995.
[56] Anand & Tiwari, 2006.
[57] Also Huq-Hussain, 1995.

In smaller cities where all parts of the city are close enough to be accessible even by walking or bicycle—or where planning decisions are more loosely enforced and households settle closer to jobs—spatial mismatch may not be such a feature. Another possible—but untested—finding is that 'spatial mismatch' exists less in cities with a higher predominance of urban poverty, since there is a higher likelihood that income is generated within the neighbourhood and local areas. Urban households in lower-income economies tend to generate more household income from petty trade and local informal economies (i.e. within informal settlements themselves[58]) than the low-income but more remote jobs which characterise the occupations of the working poor in high- and middle-income countries. However, given the positive correlation between transport expenditure and income earned[59], it is difficult to determine whether a higher proportion of proximate employment indicates the absence of spatial mismatch or an extreme manifestation of it (if prohibitive transport costs completely prevent households from travelling). And, as is well-documented, where forced eviction and the relocation of low-income households to the periphery of the city has occurred[60], the livelihoods of those who already work outside the slum have been harmed, as well as potentially impeding the possibility for other slum-dwellers to find such employment. While it may be possible to follow relocations with compensation to households according to their revealed preferences for types of dwelling and local infrastructure[61], the impact on social networks and individual livelihoods is idiosyncratic and more difficult to account for. There is still much empirical research required on this issue.

Second, spatial inequalities of income decrease the probability that members of different income groups will socially interact with each other, limiting economic mobility through access to social networks which provide economic opportunities. A significant proportion of jobs are found through personal contacts, especially among low-skilled workers, young adults and ethnic minorities who resort largely to informal search methods[62]. The physical segregation of high- and low-income groups may act to constrain access to high-income social networks, but the most important effects are likely to result from the segregation of groups more closely related in income levels, since the most usual route to upwards economic mobility is through marginal

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[58] For example, Mukhopadhyay & Dutt, 1993 describe the process by which slum dwellers in Tangra, Calcutta need to shop more frequently and more locally because of their inability to store perishable food. Around one-quarter of Tangra's residents earn their income within Tangra itself.
[59] e.g. Mukhopadhyay & Dutt, 1993: 183.
[60] There are, on average, well over 2 million forced evictions each year, mainly in Africa and Asia—COHRE, 2002; 2003; 2006..
[61] Lall et al., 2007.
[62] Mortensen & Vishwanath, 1994, Holzer, 1987 & Holzer, 1988—cited in Gobillon & Selod, 2007: 3.

improvement rather than large jumps[63]. For example, the spatial concentration of unemployed workers means a job-seeker from that neighbourhood will know fewer employed workers that could personally support a job application with their employer or could provide other professional contacts[64].

Third, the evidence on economic effects of ethnic spatial inequalities contains contradictory findings, with the outcomes of ethnic segregation mainly negative but sometimes positive. Those results appear to be reconciled by accounting for differing levels of human capital amongst different ethnic groupings[65]. They may also vary over time, with positive social capital effects in the short term—as intended by first-generation migrants—but negative human capital and labour market effects in the longer term for subsequent-generation migrants and non-migrants, because of intergenerational and public goods externalities in segregated neighbourhoods[66]. The benefits of segregation accrue in the form of group networks which provide access to employment opportunities, or perhaps a group population of critical mass to form group-specific commercial enterprises. For migrants, these benefits can be considered to reduce the costs of assimilation. The costs of segregation accrue in the form of isolation from non-group labour and goods markets, lower quality of local public goods including primary and secondary education (partly through lower public investment and partly because of human capital externalities, where students in predominantly low-ability classes tend to do worse[67]), and lack of contact with higher-skilled individuals. Moreover, while ethnic segregation is not a new urban phenomenon, the physical form of contemporary cities as described below may render such segregation more divisive and consequential.

Fourth, urban crime and violence has tended to become concentrated where low-incomes are also spatially concentrated. Crime has a detrimental impact on development by increasing costs and by eroding household assets[68]. In US metropolitan areas, for example, households are around one-third more likely to be victims of crime than in the suburbs; property crime rates are

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[63] This oversight was one of the reasons why the US 'Moving to Opportunity' program was not more successful in its initial stages (e.g. Kling et al., 2007): the placement of very low-income families in high income areas was not followed through with assistance to link into high-income social networks.

[64] Reingold, 1999, Selod & Zenou, 2001 & 2006—cited in Gobillon & Selod, 2007: 3.

[65] Borjas, 1995; Edin et al., 2003; Cutler et al., 2007.

[66] For example, Molina, de Rada & Jiménez, 2002 present a quantitative analysis of segregation in ten Bolivian cities. See Molina et al., 2002: 9-11 for other sources.

[67] Summers & Wolfe, 1977; Arnott & Rowse, 1987.

[68] e.g. Moser & McIlwaine, 2006.

two to three times higher and murder rates are five times as high[69]. In New York during the 1980s, for example, inner-city violence added to health deficiencies meant that black men in Harlem had mortality rates 50 percent higher than the nationwide average for black men, and were even less likely to reach the age of 65 than men in Bangladesh[70]. In São Paulo, a few municipalities have recorded homicide rates more than five times higher than the safest municipalities: in the worst areas, almost 150 of every 100,000 inhabitants were killed in 1998[71]. Almost half of all Latin American and Caribbean cities, and 29 percent of all developing-world cities, have areas that are considered dangerous and inaccessible to state security services[72].

Spatial distributions of crime are explained by a combination of economic, social and environmental factors. Differing rates of unemployment, poverty and income; but such attributes have been found to account for only 30 percent of the variation in crime rates[73]. Many of the remaining causes are instead sociological: through the social interactions necessary for crime to be committed[74], 'broken windows syndrome'[75], residents' socialization into crime[76] and anti-social behaviour[77], or the greater impenetrability of spatially-concentrated illegal networks for law enforcement personnel[78]. Meanwhile, there are also proximate causes, rooted in local environments: poor neighbourhoods are more likely to have poorly lit paths and lanes, isolated bus stops or public latrines, which are particularly prone to be places of robbery, rape and violent crime[79].

While the current consensus is that inequalities are even more important than absolute poverty in determining crime rates, it is not clear whether inequality within neighbourhoods or between different neighbourhoods which matters more. But the sociological mechanisms by which inequality promotes crime can be inferred to have a spatial dimension: for example, crime is thought to rise when individuals perceive their poverty as permanent—as may happen in spatial poverty traps. In addition, crime rates appear to be affected by spatial inequalities particularly if

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[69] Sources in Zenou, 2003: 459.
[70] McCord & Freeman, 1990.
[71] Carneiro, 2000: 21-22. It should be noted that crime rates in São Paulo have greatly declined since the 1990s.
[72] Flood, 2001.
[73] Glaeser, Sacerdote & Scheinkman, 1996.
[74] Glaeser, Sacerdote & Scheinkman, 1996 find that social interactions are most important for petty crimes, moderately important in property crime and other serious crimes, and negligible for murder and rape.
[75] 'Broken windows syndrome' = where visible past crimes make it seem socially more acceptable to commit new ones. See also sources in Zenou, 2003: 461-462.
[76] For empirical evidence, see e.g. Case & Katz, 1991.
[77] Crane, 1991.
[78] See Small Arms Survey, 2007: 167 for another overview of sources.
[79] Moser, 2004: 10.

spatial inequalities are geographically proximate[80]—this may reflect the sociological influence of greater visibility of income inequalities[81], together with the economic effect of transport costs on the choice of locations to commit crimes. Ethnic spatial inequalities, when correlated with income spatial inequalities, may be particularly conducive to high crime rates because of their effect in catalysing feelings of hopelessness and alienation amongst low-income groups who begin to assume ascribed social positions[82]. Finally, the incidence of crime has the characteristics of a vicious circle: social problems reinforce the desire of wealthier socio-economic populations to remove themselves yet further from the rest of the city which—through the economic feedback mechanism of local multipliers—can decrease neighbourhood incomes still further, in turn prompting more crime.

Fifth, physical divisions in urban space and movement decrease socio-economic interactions between income groups, ultimately acting to compartmentalise urban economies and diminishing the flow of income into low-income areas. These effects have been observed most readily where urban space has been privatised, bifurcating society into those who have access and those who are excluded. In Colombia, for example, the deregulation of land use controls and planning instruments and the privatisation of urban infrastructure, have resulted in the progressive disappearance of 'neighbourhoods' and mixed-use public spaces, and their replacement by collections of enclosed single-use spaces and condominiums[83]. As an increasing fragmentation of social groups reinforces the fear of crime, many residents consider it safer to reach the destination of another security-protected environment, such as a shopping mall or office condominium, by car. They become socially 'disembedded' from the rest of the urban environment[84]: the public city becomes a 'no man's land', to be avoided if possible. Wealthy residents of São Paulo, for example, live in places like Alphaville, "a walled city surrounded by high electrified fences and patrolled by a private army of 1,100 guards"[85], with these fortified

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[80] See, for example, Demombynes & Özler, 2006, who find that inequality *within* police precincts (roughly, 'neighbourhoods') is not associated with crime, but that violent crime is more likely to occur in areas with high inequalities between bordering neighbourhoods.

[81] Such a theory is closely related to the idea of 'relative deprivation' causing crime: individuals or groups are more likely to engage in violence if they perceive a gap between what they have and what they believe they deserve—and that gap is more noticeable in urban areas where income disparities are more densely apparent.

[82] Blau & Blau, 1982. While there exists a good deal of qualitative evidence for this hypothesis, quantitative evidence has not always deemed it so important. For example, Demombynes & Özler, 2006 find that the elasticities of crime with respect to between-group inequality are positive and significant, they are very small, and apply to property crimes not violent crime; most of the correlation between burglary and inequality can instead be attributed to inequality *wtihin* racial groups.

[83] Ortiz-Goméz & Zetter, 2004.

[84] Rodgers, 2004.

[85] Brennan-Galvin, 2002: 136.

spaces replacing gardens and yards, neighbours talking, and the possibility of glancing at some family scene through the windows[86]. These spatial divisions need not be manifested at a large scale to be of consequence. In Buenos Aires, for example, the majority of gated communities are geographically proximate to informal settlements because of the planning exceptions granted to developers by poor municipalities[87]—but there is minimal social interaction on either side of gates and walls[88]. This is not be a completely new phenomenon—the cities of medieval Europe, for example, where characterised by fortified, privileged areas surrounded by homes of the deprived—but the economic costs of that phenomenon remain valid.

There is unfortunately far less evidence on the economic impact of public-private divisions in urban space than sociological description of the phenomenon itself. Economic impacts may not be significant if the wealthy still rely on low-income households for service industries such as housecleaning, catering and entertainment, regardless of the physical division of urban spaces. The intra-urban economy may still function as usual. But the last section brings evidence on changes in movement patterns around cities, to which the division of spaces contributes, thereby impacting on the spatial distribution of economic activity.

Sixth, the physical urban structure itself determines movement patterns through the city, having consequences for public transport and feeding back into the locations for economic activity. When all jobs are in the centre, there are high traffic flows on radial routes into the centre because the transport system has many origins for work trips but a concentrated destination[89]. When jobs become dispersed, workers will try to live and work in the same radial corridor of the city[90], but on the whole radial flows will be reduced owing to the greater number of destinations. On one hand, the average distance to workplaces is likely to be reduced, as in Bogotá where the city's population grew by 40 percent but the average distance from home to work remained constant because of the decentralisation of employment[91]. But if time as well as distance is taken into account, the costs are more apparent. Supplying public transport becomes more costly in that situation of a greater diversity of destinations rather than high volume radial corridors[92]. Increasing prices and/or decreased service levels lead more commuters to use private

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[86] Caldeira, 2000: 297.
[87] Libertun, 2007.
[88] Pírez, 2002:149.
[89] Ingram, 1998.
[90] Mohan, 1994; Meyer et al., 1965.
[91] Pineda, 1982.
[92] Meyer et al., 1965.

autos, which further lowers passenger volumes and degrades transit performance. Meanwhile public transport performance is degraded even further by declining urban densities ('urban sprawl'). Transport operators cannot make a profit if population densities fall below 30-50 persons per hectare[93], as they have tended to do in richer suburbs, and so urban dwellers without cars and unable to afford taxis are excluded.

Such movement patterns are generated not only by the locations of jobs but—as suggested by a novel line of research—urban morphology itself may determine movement pathways through the city. Retail activity tends to be located at 'integration cores' in the city—i.e. concentrations of streets by which all other streets in the urban grid are reachable with the fewest turns[94]; conversely those areas of the city which are not physically 'integrated' into the street network miss out on the 'movement economies' generated by pedestrian and vehicular traffic. In Belém, Brazil, urban growth has been characterised by illegal occupation of land on the periphery of the historical city core—as in many Latin American cities. A study of land values found them to be significantly correlated with measures of accessibility, even at the neighbourhood scale, where the highest value plots are those on streets whose layout allows more direct pathways to the rest of the city[95]. Similarly, a study comparing location with the success of sites and services projects on the periphery of Santiago, Chile, found that the local economy was revitalised most in those locations with the most advantageous street layout[96].

Exacerbating the outcomes: inequalities in municipal investment

Inequalities in income have tended to be associated with inequalities in welfare and human development indicators[97]. Thus **when income inequalities are expressed spatially they are likely to coincide with spatial inequalities in welfare and human development indicators.** Case studies of the intra-urban distribution of welfare indicators from any city will demonstrate this phenomenon. In Kenya, while Nairobi's under-five mortality rate is on average 61.5—a statistic which compares favourably with the rural rate of 113—the 40 percent of Nairobi's

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[93] Bertaud, 2004.
[94] Hillier, 1996.
[95] Lima, 2001. Measures of local integration were found to explain 90 percent of the variation in land values.
[96] Desyllas et al., 1998.
[97] World Bank, 2005.

population living in slums have an under-five mortality rate of 150.6: far worse than rural areas[98].

In Ouagadougou, Burkina Faso, an analysis of the national census finds wide spatial disparities in

literacy and school enrolment in the city's 30 districts. The percentage of illiterate heads of

households was 25-40 in four districts (mainly close to the city centre), but over 60 percent in

seven districts (on the periphery); meanwhile, between 7.5 and 13 percent of 7-12 year-olds had

never been to school in eight districts (mainly in the centre), but the same measure recorded 20 to

27 percent of 7-12 year olds in another eight districts (mainly on the periphery)[99]. In Rio de

Janeiro, São Paulo and Mexico City, those living at the periphery of the city—where lower-

income households are concentrated—are found to rely on slower modes of public transport,

spend more money in absolute terms per public transport trip, and have higher commuting

times[100]. Many of these inequalities are directly associated with income inequalities: areas poorly

served by transport will probably the only ones affordable to low income groups. And, with

respect to education and healthcare, many households will prioritise basic household expenditures

like food, rent and transport over sending their children—especially girls—to school, and may not

seek formal healthcare until health problems are extremely serious.

**But in many cities the spatial distribution of welfare indicators is caused not only by spatial
inequalities in income: it is entrenched by regressive spatial distributions of public
investment.** One of the most influential causes is group competition for public expenditure on

services and amenities, which higher-income groups have tended to win. Those expenditures are

augmented further by the ability of high-income areas to provide their own physical and social

infrastructure privately. The whole process is facilitated in many cases by fragmented

institutional structures—with most metropolitan regions having many municipal administrative

units which resist fiscal transfers[101].

In Buenos Aires, Argentina, an analysis[102] of public expenditures on infrastructure, education and

healthcare in the 1990s found that the spatial distribution this spending did not correspond to the

needs of the population. Spending on public infrastructure such as streets, sidewalks, public

buildings, parks, playgrounds and traffic lights was distorted to the point where some districts

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[98] APHRC, 2002: 87.

[99] Kabore & Pilon, 2003. Indeed, in some countries—but by no means all—primary school enrolment rates are even
worse in urban slum areas than in rural areas (UN-HABITAT, 2006: Figure 3.5.1).

[100] Câmara & Banister, 1993.

[101] For example, São Paulo metropolitan region has 39 municipalities; Rio de Janeiro consists of 13 municipalities;
Buenos Aires has 20 local government units; and more than half of Mexico City's population is located outside of its
official administrative district—sources in UN-HABITAT, 2004: 66.

[102] Cohen & Debowicz, 2001.

received more than 30 times the level of investment per capita as others. Comparing five broad geographical areas, the wealthy Recoleta-Retiro district received $306 per capita infrastructure investment versus $18 per capita in the impoverished central and north-west area. Recoleta-Retiro and the northeast corridor received around three times the per capita public education expenditure of the rest of the city. Given the crucial importance of infrastructure, education and healthcare in determining lifetime welfare, these neighbourhoods are likely to become increasingly polarised.

In São Paulo, Brazil, municipal research[103] found intra-urban inequalities to such a degree that human development indicators for the city's 96 administrative districts "reach values that can be found in both Europe and Africa at the same time". A quantitative analysis of public investments found that spending on education and social programmes are biased towards already-affluent areas, thus widening rather than reducing intra-urban inequalities[104]. Infrastructure spending is distributed more equitably, but is not weighted towards those districts with lower human development indicators. In Nairobi, Kenya, while 14 public schools are situated within walking distance of Kibera slum, in 2003 they could only accommodate 20,000 children, which left more than 100,000 school-age children without places.

Figures 10a to 10d illustrate several of these trends in Rosario, Argentina. Figure 10a gives some impression of that city's urban growth away from the initial core along the main road arteries, with slums filling some of the interstices. Figure 10b shows the degree to which the formal city benefits from basic infrastructure—in this case, sewerage connections—compared to the slum interstices, with intermediate service levels stretching along the north-south road arteries as well as the major east-west axis. High unemployment levels in 2001 afflicted much of the city, but with concentrations in many of the same areas as are deprived of infrastructure. As a product of some of the mechanisms explored in the previous section, while unemployment rose in most parts of the city between 1991 and 2001, it rose most of all in areas with already-high unemployment— as shown in Figure 10d.

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[103] SMDTS, 2002: 12, cited in Haddad & Nedović-Budić, 2006.
[104] Haddad & Nedović-Budić, 2006.

Prescriptions for intra-urban spatial inequalities

The most effective prescription to ameliorate intra-urban spatial inequalities would be prevention: i.e. reforming market economies—or at least intervening in them—so as to limit the extent of income inequalities in general[105], since spatial inequalities are at root an expression of income inequalities generated by market systems. This section sticks to the theme of the report, and instead makes some suggestions for some specifically spatial—i.e. area-based—initiatives as *post hoc* cures.

First, the conceptual frame of 'urban region' can be useful in guiding transport interventions. While many commentators have conveyed a sense of the awesome challenge of urban poverty—especially in mega-cities with total populations on a scale unprecedented in human history—the task seems easier once one recognises that no large city is a homogenous entity. Instead large cities are more accurately conceptualised as polycentric clusters of identifiable cities and towns, requiring both regional trunk infrastructure and effective local urban management, in much the same way that a province or a small country might need[106]. Public transport provision should aim to expand the labour market available to workers, given the evidence on 'spatial mismatch' presented above. There exist an increasing number of successful urban transport schemes in developing world cities, which rather than seeking to emulate public transport strategies from high-income urban areas like prioritising private automobile transport[107], have developed innovative ways of easing congestion and integrating disparate areas of the city—Curitiba, Brazil and the new Bus-Rapid Transit (BRT) system in Bogotá, Colombia are two frequently-cited examples. While many developing-world cities suffer from stifling congestion[108]—others have achieved remarkable improvements in mobility in recent years, involving large infrastructure investments but also improvements in the management of infrastructure and consideration for non-motorised transport too[109]. Bangkok made substantial reductions in average commute times during the 1990s. Lima, Peru and Accra, Ghana have both recently made improvements to the speed and safety of non-motorised transport[110]. If cities are

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[105] World Bank, 2005 and Musterd & Murie, 2001: 24.
[106] Hamer, 1994: 173.
[107] Cox, 2002.
[108] For example, in 1998, Lagos, Kinshasa, Nairobi and Moscow all report *average* one-way commute times of around 60 minutes. This compares with 25-30 minutes in London, Singapore and Atlanta—UN-HABITAT, 1998.
[109] See World Bank, 2002.
[110] World Bank, 2002: 30.

engines of economic growth, not only is urban transport the oil that prevents the engine from seizing up[111], it is also an essential policy instrument for reducing spatial inequalities.

Second, transport interventions will work best if they are accompanied by direct engagement with urban slums. Transport and land-use patterns are symbiotic. Transport interventions to improve the accessibility of low-income areas may have perverse effects if land values in such areas then rise, attract higher-income households, and displace the low-income households the interventions were designed to help. That phenomenon is even more likely in developing-world cities, given the scarcity of good transport infrastructure[112]. Thus, to avoid squeezing a balloon, further development assistance is required. The Millennium Development Goals include a target—number 11—to achieve "a significant improvement in the lives of at least 100 million slum dwellers" by 2020[113]. This will probably involve direct poverty reduction measures, including local economic development strategies. Further structural interventions in land use may also be necessary, striking a balance between freedom of urban location decisions and planning to mitigate the social costs which free land markets have caused[114]. For example, once urban sprawl occurs, it becomes very difficult to retrofit profitable transport routes through a low-density city; stronger planning regulations may be necessary.

Third, and more broadly, a lack of intra-urban information and deficient urban institutions are profoundly impeding policies to mitigate the effects of spatial inequalities. As UN-HABITAT has pointed out, most cities in the developing world cannot effectively develop and analyse urban policy because of a scarcity of information on the households living in them. Without better information, city administrations and national governments cannot systematically appraise urban problems, and if they engage in remedial policies they cannot effectively measure their outcomes. Indeed, data measuring the internal spatial structure of the city, its economy and the distribution of opportunities is not even collected in many parts of the world[115]. Regarding institutions themselves, not only does the intra-urban fragmentation of urban administration hinder fiscal transfers for progressive investment in physical infrastructure (as detailed above); urban planning is itself often perceived as a technical exercise in the developing world:

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[111] World Bank, 2002: 22.

[112] Gakenheimer, 1999: 674.

[113] However, the definition of what constitutes 'a significant improvement' is still disputed (UN-HABITAT, 2003b: 14) and, most importantly, even if that ambitious target of 100 million were to be achieved, the total population of slum dwellers would still—because of concurrent slum growth—have almost doubled from 715 million in 1990 to 1.3 billion in 2020 (UN-HABITAT, 2006: 34-35).

[114] Elaborated in World Bank, 2002: 16.

[115] UN-HABITAT, 2003b: 46.

controlling the type and height of buildings, and the land size of development sites, for example—without a remit wide enough to consider the relationship between private and public space within a neighbourhood or the city as a whole[116]. Partly this may be out of necessity, as cash-strapped municipalities simply do not have the luxury to choose their broader destiny, and prostitute their planning regulations to land developers[117].

Conclusion

One of the meta-insights of this paper has been that urban problems are often made worse when they coexist and overlap in space. The flip side of this acknowledgement is that ameliorative policies can be spatially targeted too[118]. There is a large literature on urban regeneration—at the neighbourhood scale—which will not be duplicated here. There is also a large literature on urban poverty—at the city scale—including prescriptive policies for slum upgrading[119], improving urban water and sanitation provision[120], and so on, which will also not be repeated since it is widely available[121]. This paper adds value by joining some of the dots: to show how spatial inequalities are a structural cause of their own perpetuation, and to suggest policies that go beyond neighbourhood interventions: aiming to make fragmented 'urban regions' more like integrated cities.

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[116] Ortiz-Goméz & Zetter, 2004.
[117] For example, Libertun, 2007 provides an evocative quote from the planning officer in Belen de Escobar municipality in Buenos Aires: "We are the 'anti-planners', we always come after. If someone has a parcel and wants to invest there, he just comes and asks us to change the zoning code. If it is a big investment and he wants everything quick, he might offer the mayor to pave some blocks. We all know that we could not afford that with our budget. So we change the code and everybody is happy, there are more construction jobs, then more blocks are paved and he has done his business. But in the end we are going nowhere. There is no plan and we have no project."
[118] Smith, 1999: 4.
[119] e.g. UN-HABITAT, 2006: part 4, and various World Bank documents available through http://www.worldbank.org/urban/upgrading/index.html
[120] See UN-HABITAT, 2003c.
[121] See UN-HABITAT, 2003a.

Bibliography

Agbola, Tunde (1997), *Architecture of Fear: Urban Design and Construction Response to Urban Violence in Lagos, Nigeria*, Ibadan: African Book Publishers.

Aguilar, Adrian Guillermo (1999), 'Mexico City growth and regional dispersal: the expansion of largest cities and new spatial forms', *Habitat International*, Vol. 23 Issue 3, September 1999, p. 391-412.

Amin, Ash (2002), 'Ethnicity and the multicultural city: living with diversity', *Environment and Planning A,* Vol. 34, pp. 959-980.

Anand, Anvita & Geetam Tiwari (2006), 'A gendered perspective of the shelter-transport-livelihood link: the case of poor women in Delhi', *Transport Reviews*, Vol. 26 No. 1, pp. 63-80.

Anas, Alex, Richard Arnott & Kenneth A. Small (1998), 'Urban spatial structure', *Journal of Economic Literature*, Vol. XXXVI (September 1998), pp. 1426-1464.

Angel, Shlomo, Stephen C. Sheppard & Daniel L. Civco et al. (2005), 'The Dynamics of Global Urban Expansion', Transport and Urban Development Department, Washington DC: World Bank. http://go.worldbank.org/58A0YZVOV0

APHRC (2002), 'Population and health dynamics in Nairobi's informal settlements: report of the Nairobi cross-sectional slums survey (NCSS) 2000', Nairobi: African Population and Health Research Center (APHRC). http://www.aphrc.org/documents/aphrc_ncssreport_26april2002_final.pdf

Arnott, R. & J. Rowse (1987), 'Peer group effects and educational attainment', *Journal of Public Economics*, Vol. 32, pp. 287-305.

Bertaud, Alain (2004), 'The spatial organization of cities: deliberate outcome or unforeseen consequence?' Retrieved, http://www.alain-bertaud.com/images/AB_The_spatial_organization_of_cities_Version_3.pdf

Blau, J.R. & P.M. Blau (1982), 'The cost of inequality: metropolitan structure and violent crime', *American Sociological Review*, Vol. 47 No. 1, pp. 114-129.

Blandy, Sarah, Diane Lister, Rowland Atkinson & John Flint (2003), 'Gated communities: a systematic review of the research evidence', *CNR Paper 12*, April 2003, ESRC Centre for Neighbourhood Research, http://www.bristol.ac.uk/sps/cnrpaperspdf/cnr12pap.pdf

Borjas, G. (1995), 'Ethnicity, neighbourhoods, and human capital externalities', *American Economic Review*, Vol. 85, pp. 365-390.

Brennan-Galvin, Ellen (2002), 'Crime and Violence in an Urbanizing World', *Journal of International Affairs*, Vol. 56, No. 1 (Fall), pp. 123–46.

Brun, Jacques & Catherine Rhein (eds.) (1994), *La ségrégation dans la ville: concepts et mésures*, Paris: Editions L'Harmattan.

Burchell, Robert W. (1998), 'The Costs of Sprawl—Revisited', *Transit Co-operative Research Program Report 39*, Transportation Research Board, Washington, DC: National Academy Press.

Caldeira, Teresa (2000), *City of Walls: Crime, Segregation, and Citizenship in São Paulo*, Berkeley and Los Angeles: University of California Press.

Câmara, Paulo & David Banister (1993), 'Spatial inequalities in the provision of public transport in Latin American cities', *Transport Reviews*, Vol. 13 No. 4, pp. 351-373.

Carneiro, Leandro Piquet (2000), 'Violent crime in Latin American cities: Rio de Janeiro and São Paulo', University of São Paulo, http://www.usp.br/nupps/Crime&Violence_Rio&SaoPaulo.pdf

Case, Anne C. & Lawrence F. Katz (1991), 'The company you keep: the effects of family and neighborhood on disadvantaged youths', *NBER Working Paper No. 3705.* http://www.nber.org/papers/w3705.v5.pdf

Chirinko, R. (1982), 'An empirical investigation of the returns to search', *American Economic Review*, Vol. 72, pp. 498-501.

Chokor, Boyowa Anthony (1991), 'The perception of spatial inequalities in a traditional Third World city', *Urban Studies*, Vol. 28 No. 2, pp. 233-253.

Cohen, Michael (2001), 'The impact of the global economy on cities', in Freire & Stren (eds.) *The challenge of urban government: policies and practices*, Washington DC: World Bank, pp. 5-18.

Cohen, Michael & Darío Debowicz (2004), 'The five cities of Buenos Aires: poverty and inequality in urban Argentina', in Saskia Sassen (ed.) *UNESCO Encyclopedia of Sustainable Development*, Paris: UNESCO.

COHRE (2002), *Forced evictions: violations of human rights,* June 2002, Geneva: Centre on Housing Rights and Evictions (COHRE), http://www.cohre.org/store/attachments/COHRE%20Global%20Survery%20No%208.pdf

COHRE (2003), *Forced evictions: violations of human rights,* April 2003, Geneva: Centre on Housing Rights and Evictions (COHRE), http://www.cohre.org/store/attachments/COHRE%20Global%20Survey%20No%209.pdf

COHRE (2006), *Forced evictions: violations of human rights 2003-2006,* December 2006, Geneva: Centre on Housing Rights and Evictions (COHRE), http://www.cohre.org/store/attachments/Global_Survey_10.pdf

Cox, Wendell (2002), 'Urgent and comprehensive planning for low-income urban areas', in Godard & Fatonzoun (eds.) *Urban mobility for all*, Routledge.

Crane, Jonathan (1991), 'The epidemic theory of ghettos and neighborhood effects on dropping out and teenage child-bearing', *American Journal of Sociology*, Vol. 96, pp. 1226-1259.

Cutler, David M., Edward L. Glaeser & Jacob L. Vidgor (2007), 'When are ghettos bad? Lessons from immigrant segregation in the United States', *Journal of Urban Economics*, In Press.

Dai, Erbiao (2005), 'Income inequality in urban China: a case study of Beijing', *Working Paper 2005-04*, Kitakyushu: The International Centre for the Study of East Asian Development.

Davis, Mike (1992), 'Fortress L.A.' in *City of Quartz: excavating the future in Los Angeles*, New York: Random House, pp. 221-263.

Demombynes, Gabriel & Berk Özler (2006), 'Crime and local inequality in South Africa', in Bhorat & Kanbur (eds.) *Poverty and policy in post-apartheid South Africa*, Cape Town: HSRC Press, pp. 288-320. http://www.hsrcpress.ac.za/product.php?productid=2178&freedownload=1

DFAIT (Department of Foreign Affairs and International Trade), Canada (2006), 'Freedom from Fear in Urban Spaces: Discussion Paper.' Ottawa: DFAIT.

Dökmeci, Vedia & Lale Berköz (1994), 'Transformation of Istanbul from a monocentric to a polycentric city', *European Planning Studies*, Vol. 2 Issue 2, pp. 193-205.

Dowall, David E. & P. Alan Trefeissen (1991), 'Spatial transformation in cities of the developing world', in *Regional Science and Urban Economics*, 21, pp. 201-224.

Edin, P., P. Fredriksson & O. Aslund (2003), 'Ethnic enclaves and the economic success of immigrants: evidence from a natural experience', *Quarterly Journal of Economics*, Vol. 118, pp. 329-357.

Fainstein, Susan (2001), 'Inequality in Global City-Regions', in Scott (ed.) *Global City-Regions: Trends, Theory, Policy*, Oxford: Oxford University Press.

Flood, Joe (2001), 'The Global Urban Observatory Databases: analysis of urban indicators', Nairobi: UN-HABITAT. http://ww2.unhabitat.org/programmes/guo/guo_analysis.asp

Friedman, John (1986), 'The World City Hypothesis', *Development and Change*, Vol 17, pp. 69-83.

Gakenheimer, Ralph (1999), 'Urban mobility in the developing world', *Transportation Research Part A,* Vol. 33, pp. 671-689.

Garreau, Joel (1991), *Edge Cities: life on the new frontier*, New York: Doubleday.

Garza, G. (2000), *La ciudad de México en el fin del segunda milenio*, Mexico City: El Colegio de México, Centro de Estudios Demográficos y Desarrollo Urbanos.

Gentile, Michael (2004), 'Divided post-Soviet small cities? Residential segregation and urban form in Leninogorsk and Zyryanovsk, Kazakhstan', *Geografiska Annaler*, Vol. 86 B, No. 2, pp. 117-136.

Glaeser, Edward L., Matthew E. Kahn & Jordan Rappaport (2007), 'Why do the poor live in cities? The role of public transportation', *Journal of Urban Economics*, In Press.

Glaeser, Edward L., Bruce Sacerdote & José A. Scheinkman (1996), 'Crime and social interactions', *Quarterly Journal of Economics*, Vol. 111, No. 2, pp. 507-548.

Gobillon, Laurent, Harris Selod & Yves Zenou (2005), 'The mechanisms of spatial mismatch', *Discussion Paper No. 5346*, London: Centre for Economic Policy Research. www.cepr.org/pubs/dps/DP5346.asp

Gobillon, Laurent & Harris Selod (2007), 'The effects of segregation and spatial mismatch on unemployment: evidence from France', *WP 0702*, Paris: Laboratoire d'Economie Appliquée (LEA). http://www.inra.fr/Internet/Departements/ESR/UR/lea/documents/wp/wp0702.pdf

Haddad, Mônica A. & Zorica Nedović-Budić (2006), 'Using spatial statistics to analyze intra-urban inequalities and public intervention in São Paulo, Brazil', *Journal of Human Development*, Vol. 7, Issue 1, March 2006, pp. 85-109.

Hamer, A.M, (1994), 'Economic impacts of third world mega-cities: is size the issue?', in Fuchs et al. (eds.) *Mega-city growth and the future*, Tokyo: United Nations University Press, pp. 172-191.

Hamilton, B. (1982), 'Wasteful commuting'*, Journal of Political Economy*, 90, pp. 1035-1053.

Hazards Centre (2003), 'Yeh Dilli Kiski Hai: Yojna ki rajniti aur aniyojit ka hastakshep', Delhi: Hazards Centre.

Hillier, Bill (1996), 'Cities as movement economies', *Urban Design International*, Vol. 1 No. 1, pp. 41-60.

Hillier, Bill, Margarita Greene & Jake Desyllas (2000), 'Self-generated Neighbourhoods: the role of urban form in the consolidation of informal settlements', *Urban Design International*, Vol. 5, pp. 61-96.

Howe J., & D. Bryceson (2000), 'Poverty and Urban Transport in East Africa', http://siteresources.worldbank.org/INTURBANTRANSPORT/Resources/poverty&ut_eafrica.pdf

Huq-Hussain, Shahnaz (1995), 'Fighting poverty: the economic adjustment of female migrants in Dhaka', *Environment and Urbanization*, Vol. 7 No. 2, pp. 51-65.

Ihlanfeldt, K. & M. Young (1994), 'Intrametropolitan Variation in Wage Rates: The Case of Atlanta Fast-Food Restaurant Workers', *Review of Economics and Statistics*, Vol. 76, pp. 425-433.

Ingram, Gregory K. & Alan Carroll (1981), 'The spatial structure of Latin American cities', *Journal of Urban Economics*', 9, pp. 257-273.

Ingram, Gregory K. (1998), 'Patterns of metropolitan development: what have we learned?', *Urban Studies*, Vol. 35 No. 7, pp. 1019-1035.

Kabore, Idrissa & Marc Pilon (2003), 'Intra-urban enrolment disparities in Ouagadougou', prepared for the Education for All Global Monitoring Report 2003/4, *Gender and Education for All: the leap to equality*, Paris: UNESCO. http://unesdoc.unesco.org/images/0014/001467/146782e.pdf

Kain, John F. (1968), 'Housing segregation, negro employment, and metropolitan decentralization', *Quarterly Journal of Economics*, Vol. 82, Issue 2 (May 1968), pp. 175-197.

Kesteloot, Chris (ed.) (2002), 'The spatial dimensions of urban social exclusion and integration: urban territorial policies and their effects at the neighbourhood level', *URBEX Series No. 21*, Amsterdam. http://www2.fmg.uva.nl/urbex/resrep/fd_22.htm

Kling, Jeffrey R., Jeffrey B. Liebman & Lawrence F. Katz (2007), 'Experimental analysis of neighbourhood effects', *Econometrica*, Vol. 75 Issue 1, pp. 83-119.

Knox, Paul L. (1982), *Urban Social Geography*, New York: Longman.

Lall, Somik V., Mattias K.A. Lundberg, Zmarak Shalizi (2007), 'Implications of alternate policies on welfare of slum dwellers: evidence from Pune, India', *Journal of Urban Economics*, In Press.

Lee, K. S. (1989), *The location of jobs in a developing metropolis*, New York: Oxford University Press.

Libertun, Nora (2007), 'Polarization & prosperity in the Buenos Aires' periphery: how does decentralized management of land use impact on urban growth?', presented at the *Fourth Urban Research Symposium,* 14th-16th May 2007, Washington DC: World Bank. http://www.worldbank.org/urban/symposium2007/papers/libertun.pdf

Lima, Jose Julio (2001), 'Socio-spatial segregation and urban form: Belém at the end of the 1990s', *Geoforum* 32, pp. 493-507.

Lugano, Emily & Geoff Sayer (2003), 'Girls' education in Nairobi's informal settlements', *Links*, October 2003, Oxford: Oxfam GB, http://www.kutokanet.com/issues/edu/girlseduoxfam.htm

Martínez-Martin, Javier Alberto (2005), 'Monitoring intra-urban inequalities with GIS-based indicators: with a case study in Rosario, Argentina', doctoral dissertation No. 127, Utrecht University and ITC. http://www.itc.nl/library/papers_2005/phd/martinezmartin.pdf

Marchal, Roland (2006), 'Resilience of a city at war: territoriality, civil order and economic exchange in Mogadishu', in Bryceson & Potts (eds.) *African Urban Economies: viability, vitality or vitiation?*, Basingstoke & New York: Palgrave Macmillan, pp.207-229.

Maxwell, Tanya (2006), 'Guns, Gangs, and Armed Violence in Los Angeles', unpublished background paper, Geneva: Small Arms Survey.

McCord, C. & H.P. Freeman (1990), 'Excess mortality in Harlem', *New England Journal of Medicine*, Vol. 322 No. 3, pp. 173-177.

Mensah, Joseph (1995), 'Journey to work and job search characteristics of the urban poor', *Transportation*, Vol. 22 No. 1, February 1995, pp. 1-19.

Meyer, J. R., J. F. Kain & M. Wohl (1965), *The urban transportation problem*, Cambridge, MA: Harvard University Press.

Mieszkowski, P. & E. Mills (1993), 'The Causes of Metropolitan Suburbanization', *Journal of Economic Perspectives*, Vol. 7, pp. 135-147.

Mitlin, Diana, David Sattherthwaite & Carolyn Stephens (1996), 'City inequality', *Environment and Urbanization*, Vol. 8, No. 3, October 1996, 3-7.

Mohan, R. (1994), *Understanding the developing metropolis: lessons from the city study of Bogota and Cali*, New York: Oxford University Press.

Molina, George Gray, Ernesto Pérez de Rada & Wilson Jiménez (2002), 'Social exclusion: residential segregation in Bolivian cities', *Research Network Working paper R-440*, Washington DC: Inter-American Development Bank.

Moser, C., A. Winton & A. Moser (2003), 'Violence, fear and insecurity and the urban poor in Latin America', paper for the World Bank Latin American and Caribbean Region Study of Urban Poverty, mimeo.

Moser, Caroline (2004), 'Urban violence and insecurity: an introductory roadmap', *Environment & Urbanization*, Vol. 16 No. 2, October 2004, pp. 3-16.

Moser, Caroline & McIlwaine, Cathy (2006), 'Latin American Urban Violence as a Development Concern: towards a framework for violence reduction', *World Development* Vol. 34 No. 1, pp. 89-112. http://www.brookings.edu/views/articles/200601moser.pdf

Mukhopadhyay, Anupa & Ashok K. Dutt (1993), 'Slum dweller's daily movement pattern in a Calcutta slum', *GeoJournal*, Vol. 29 No. 2, pp. 181-186.

Musterd, Sako and Alan Murie (2001), 'The Spatial Dimensions of Urban Social Exclusion and Integration in Neighbourhoods in 11 Cities in 6 European Countries', *URBEX Series No. 20*, Amsterdam. http://www2.fmg.uva.nl/urbex/resrep/r20_cr2.pdf

Ortiz-Gómez, Andrés & Roger Zetter (2004), 'Market enablement and the reconfiguration of urban structure in Colombia', in Zetter & Hamza (eds.) *Market Economy and Urban Change: impacts in the developing world*, London: Earthscan, pp. 185-204.

Peng, Zhong-Ren (2004), 'Urban transportation strategies in Chinese cities and their impacts on the urban poor', presented at *Forum on Urban Infrastructure and Public Service Delivery for the Urban Poor,* New Delhi. http://wilsoncenter.org/topics/docs/Edit6Peng_Delhi.doc

Pérouse de Montclos, Marc-Antoine (2003), *Villes et violence en Afrique noire,* Paris: Karthala.

Pineda, J. F. (1982), 'Residential location decisions of multiple worker households in Bogotá, Colombia', *Revista Camara de Comercio de Bogota*, 46, pp. 163-187.

Pírez, Pedro (2002), 'Buenos Aires: fragmentation and privatization of the metropolitan city', *Environment & Urbanization*, Vol. 14 No. 1, pp. 145-158.

Portes, Alejandro, José Itzigsohn & Carlos Dore-Cabral (1997), 'Urbanization in the Caribbean Basin: social change during the years of the crisis', in Portes, Dore-Cabral & Landolt (eds.) *The urban Caribbean: transition to the new global economy*, Baltimore & London: Johns Hopkins University Press, pp. 16-54.

Portnov, Boris A. (2002), 'Intra-urban inequalities and planning strategies: a case study of Be'er Sheva, Israel', *International Planning Studies*, Vol. 7, No. 2, 137-156.

Prud'homme, Rémy, Hervé Huntzinger, Pierre Kopp (2004), 'Stronger municipalities for stronger cities in Argentina', paper for the Inter-American Development Bank.

Robinson, Ira M. (1996), 'Emerging spatial patterns in ASEAN mega-urban regions: alternative strategies', in McGee & Robinson (eds.) *The mega-urban regions of Southeast Asia*, University of British Columbia Press, pp. 78-108.

Rodgers, Dennis (2004), 'Disembedding the city: crime, insecurity, and spatial organisation in Managua, Nicaragua', *Environment and Urbanization,* Vol. 16 No. 2, pp. 113-124.

Rospabe, Sandrine & Harris Selod (2006), 'Does city structure cause unemployment? The case of Cape Town', in Bhorat & Kanbur (eds.) *Poverty and policy in post-apartheid South Africa*, Cape Town: HSRC Press, pp. 262-287. http://www.hsrcpress.ac.za/product.php?productid=2178&freedownload=1

Rowbottom, Sara (2007), 'Whose Urban Mobility? Transport investments and youth in Dakar, Senegal', MA thesis, Graduate Program in International Affairs, New York: The New School.

Sassen, Saskia (1991), *The Global City*, Princeton: Princeton University Press.

Schelling, T.C. (1978), *Micromotives and Macrobehavior*, New York: Norton.

Schwela, D., & O. Zali (1999), *Urban Traffic Pollution*, London: E & FN Spon.

Seater, J. (1979), 'Job search and vacancy contacts', *American Economic Review*, Vol. 69, pp. 411-419.

Small Arms Survey (2007), *Guns and the city*, Geneva: Small Arms Survey.

Smith, Gillian R. (1999), 'Area based Initiatives: the Rationale and Options for Area Targeting', Centre for Analysis of Social Exclusion, London: LSE. http://sticerd.lse.ac.uk/dps/case/cb/CASEbrief11.pdf

SMDTS (2002) Desigualdade em São Paulo: o IDH Prefeitura da Cidade de São Paulo, São Paulo

Summers, A. & B. Wolfe (1977), 'Do schools make a difference?', *American Economic Review*, Vol. 67, pp. 639-652.

Thirkell, Allyson J. (1996), 'Players in urban informal land markets; who wins? who loses? A case study of Cebu City', *Environment & Urbanization*, Vol. 8 No. 2, October 1996.

Tiebout, C. (1956), 'A pure theory of local expenditures', *Journal of Political Economy*, Vol. 64, pp. 416-424.

Turkstra, Jan & Martin Raithelhuber (2004), 'Urban slum monitoring', presented at the *24th Annual ESRI International User Conference*, 9th-13th August 2004, http://gis.esri.com/library/userconf/proc04/docs/pap1667.pdf

UNDESA (2005), 'World Urbanization Prospects: the 2005 revision', New York: UN-DESA.

UNDP (2007), 'More slums equals more violence: reviewing armed violence and urbanization in Africa', Regional Consultation Background Paper for the *Geneva Declaration on Armed Violence and Development*, October 2007, Geneva: UNDP. http://genevadeclaration.org/pdfs/urban.pdf

UN-HABITAT (1998), *Global urban indicators,* Nairobi: UN-HABITAT, *http://ww2.unhabitat.org/programmes/guo/documents/1998.zip*

UN-HABITAT (2003a), *The challenge of slums*, London: Earthscan & UNCHS.

UN-HABITAT (2003b), *Slums of the world: the face of urban poverty in the new millennium?*, Nairobi: UN-HABITAT. http://www.unhabitat.org/pmss/getElectronicVersion.asp?nr=1124&alt=1

UN-HABITAT (2003c), *Water and sanitation in the world's cities: local action for global goals*, London & New York: Earthscan.

UN-HABITAT (2004), *State of the World's Cities 2004/2005: Globalization and Urban Culture*, London & New York: Earthscan.

UN-HABITAT (2006), *State of the World's Cities 2006/2007: the Millennium Development Goals and Urban Sustainability,* London & New York: Earthscan.

Van der Wusten, Herman & Sako Musterd (1998), 'Welfare state effects on inequality and segregation', in Musterd & Ostendorf (eds.), *Urban Segregation and the Welfare State: Inequality and Exclusion in Western Cities*, London: Routledge, pp. 238 248.

World Bank (2002), *Cities on the move: a World Bank urban transport strategy review*, Washington DC: World Bank. http://www.worldbank.org/transport/urbtrans/cities_on_the_move.pdf

World Bank (2005), *World Development Report 2006: Equity and Development*, Washington DC: World Bank.

World Bank (2007), 'Movement and access restrictions in the West Bank: uncertainty and inefficiency in the Palestinian economy', World Bank Technical Team report, 9th May 2007, Washington DC: World Bank. http://siteresources.worldbank.org/INTWESTBANKGAZA/Resources/WestBankrestrictions9Mayfinal.pdf

Wu, Weiping (2005), 'Migrant settlement and spatial transformation in urban China: the case of Shanghai', presented at the *World Bank Third Urban Research Symposium*, 4th-6th April 2005, Brasilia, Brazil. http://www.worldbank.org/urban/symposium2005/papers/wu.pdf

Zenou, Yves (2003), 'The spatial aspects of crime', *Journal of the European Economic Association*, Vol. 1, No. 2-3, pp. 459-467.