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DOES DENSITY MATTER?

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"Well-educated professionals and creative workers who live together in dense ecosystems, interacting directly, generate ideas and turn them into products and services faster than talented people in other places can." Richard Florida, "How the Crash Will Reshape America" *Atlantic* (March, 2009)

INTRODUCTION

Since World War II, economic and demographic forces, possibly along with the consequences of earlier housing and infrastructural policies,[1] has flattened the population-density gradient in metropolitan areas across the United States, while presumably reducing the vitality and dense social networks associated with most traditional city centers. In response, planning ideologies that are hostile to "unplanned," low-density development and that seek to promote high-density, pedestrian- and environmentally friendly communities have been developed to combat these trends. But do scholars who study cities even understand the nature of cities well enough to formulate policies that impact cities in a positive way?

Economists do know that institutions matter, that human capital is important, and it is almost a cliche that cities are "engines of growth." All three of these views are thought to involve prompting the cultivation of ideas that contribute to entrepreneurship and innovation. But is our understanding of the relationship among cities, human capital, and economic development sufficient to effectively guide top-down urban and regional planning? We argue that the work of F.A. Hayek and Jane Jacobs strongly suggests the answer is "no." Specifically, studies at the metro-level that purport to show a positive correlation between density and economic growth and between density and the migration patterns of creative types do not stand up to closer examination. But this is not to deny that density, creativity, and economic development are linked, and we offer a different way of looking at density, "Jacobs density," that is more helpful in highlighting the limits of conventional land-use planning. We also argue that Hayek-Jacobs knowledge problems prevent even well-intentioned planners from solving many of the problems, some of their own making, that plague many central cities. In this light, reliance on entrepreneurial solutions, emerging from congenial micro-environments, offer the best hope for confronting urban land-use questions.

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The outline of our paper is as follows. We begin by briefly discussing how spontaneous or unplanned orders, such as cities and related institutions, remedy the so-called knowledge problem without recourse to top-down direction. Next, we discuss the ways in which Smart Growth and the some of the policies of New Urbanism, by failing to appreciate the nature of living cities as spontaneous orders,[2] at least to the extent that Jacobs does, tend to adopt such a top-down approach in their land-use policies. We then offer a different way of looking at density that implies a significantly less aggregated measure of density, one that we feel is more consistent with the Hayek-Jacobs approach. Using Public Use Microdata Sample (PUMS) data from the American Community Survey, we re-examine the correlations between density and economic growth. Given the severity of the knowledge problem, and thus what we <u>don't</u> know about the relation between human capital, cities, and economic growth, we argue that economic growth is best facilitated by enabling the formation of "congenial micro-environments," and that these cannot be the result of top-down planning. Finally, we offer some closing thoughts.

ORGANIZTION, CITIES, AND EMERGENT ORDER

The role of organizations is fairly well understood, although much of economic activity involves building "organizational capital" rather than "widgets" (Kling, 2009). Moreover, there are other "shells" involved in production. The built

[1] See Jackson (1985: Chapter 11). However, Cox, Gordon and Redfearn (2008) challenge the idea that the Interstate Highway System caused U.S. suburbanization.

[2] A "spontaneous order" – sometimes called an emergent order (Johnson 2001) – is sometimes described as "the result of human action but not of human design" (Hayek 1967). That is, it is a set of complex social relations that tend to arise and evolve without the necessity of an overarching plan or supreme planner. In addition to markets and market prices, other examples include language, case law, and scientific paradigms.

environment, meaning structures and their relations in urban space, is an obvious example. The nature of urban form has been studied for many years, giving rise to a rich set of ideas and hypotheses. But the interaction question we pose above – regarding cities, human capital, and growth – is not easily treated via the canonical spatial equilibrium model of urban economics.[3]

On the other hand, from Adam Smith to F.A. Hayek and Jane Jacobs, from the Invisible Hand to the Emergent Order, economists have developed and honed the idea that the bottom-up flow of information facilitates social cooperation and coordination in markets and, in particular, in cities. This result remains counter-intuitive to many, who associate order with top-down control and are not ready to part with the idea that cities require some sort of top-down planning.[4] Urbanization does bring with it the potential for externalities and coordination problems, and an emphasis on these problems has pushed many analysts towards advocacy of strict land use controls. But it is also true that many externality and coordination problems are resolved in land markets while others are resolved via private planning.

We are not, of course, the first to suggest that cities are spontaneous *spatial* orders (Jacobs 1961 & 1969; Webster and Lai, 2003). Cities have been recognized as places where entrepreneurial discoveries, transactions-cost economies, and many potential *positive* externalities that can be realized. Indeed, the popularity of the writings of Jane Jacobs (among others) has prompted the recognition that spatial arrangements can emerge that cause the positive externalities (agglomeration economies) to dominate, so that it is possible to see cities as an emergent spatial order whereby flexible land markets facilitate favorable spatial arrangements.

Jacobs (1961), for example, has analyzed how the character of public spaces can help or hinder the emergence of safety and the kind of land-use diversity that is the foundation for entrepreneurial discovery, especially in large cities. The object is to place "eyes on the street" in large numbers around the clock so that people feel secure enough in public, where the majority of users are strangers to one another, to have the kind of informal contact that forms what Mark Granovetter (1973) has termed "weak ties" – the indispensible conduits through which knowledge of profit opportunities is transmitted. And this is achieved by allowing public spaces to create a diversity of interesting destinations, what she termed "primary uses," to attract people from outside the locality into the district or neighborhood and the population density to support this volume of traffic.

But such attractors presuppose that owners have the economic freedom to adjust land uses to unexpected changes in the socio-economic environment. That is, under normal circumstances local rules need to be flexible enough to enable owners to do this, even if it means a drastic departure from traditional uses or scales of operation. Converting old factories into mixed-use residential-shopping centers is one common example, but razing an historic shopping district and erecting an office complex in its place is another, keeping in mind that both the factory and the stores were quite possibly in their own day considered by some to represent sharp breaks with past uses. It is all part and parcel of competitive "gales of creative destruction" at the heart of "living cities,"[5] which can be seen as a process in which entrepreneurs, both social and economic, cast aside established social ties in favor of newer, more profitable ones.

Again, in this light Jacobs (1961), with her emphasis on the microfoundations of cities, is remarkably similar to the ideas of Hayek with respect to how complex social networks emerge spontaneously to handle and cultivate dispersed local knowledge and human capital.[6] As human capital is widely recognized as the key to economic development, the main question involves identifying the spatial arrangements where it thrives through interaction and communication via social networks. This, however, does not favor centralized decision-making.

Top-down governmental planning at the local level is hobbled by the well known limitations of central planning (Hayek 1945; Mises 1922): top-down planners have no way to tap into dispersed local knowledge, what Jacobs (1961) refers to as "locality knowledge," and their actions are prone to politicization. In this way, private, non-governmental responses to collective-action and public-goods problems are instructive. For example, the fact that most Americans have the bulk of their assets (about two-thirds on average) tied up in their home has itself stimulated a demand for rules of neighborhood land use and neighborhood change, and so it is now standard practice in many places for developers to attach homeowner associations (HOAs) along with detailed governance documents to their residential developments (Nelson, 2005).

Of course, such rules can come from city councils and zoning boards as well as from developers, but some scholars have pointed to a recent trend in the form of the emergence of "homevoter cities," typically small suburban municipalities

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[3] The recent survey of urban economics by Glaeser and Gottlieb (2009) describes some of the difficulties that urban economists have encountered when they address economic growth questions.
[4] See, for example, Calthorpe and Fulton (2001).
[5] We borrow the term "living city" from Roberta Brandes Gratz (1989) and use it in the sense of Jane Jacobs's concept of a "city" as "a settlement that consistently generates its economic growth from its own local economy" (Jacobs 1969:262). This usage is also consistent with that of the sociologist Max Weber (Weber 1958) and the historian Henri Pirenne (1952).
[6] See especially Jacobs (1961), Chapter 22.

with governments devoted to the maintenance of residential property values (Fischel, 2001) which has blurred the distinctions between HOAs and homevoter cities. It is unclear that the differences are significant.[7] Suffice it to say that each emerges in response to a demand for property rights clarity. Each governance arrangement offers a trade-off of rights surrendered for protections gained; each of which are subject to competitive pressures, suggesting that market forces vet the trade-offs. This process can be seen as bottom-up planning which is a source of flexibility as we have been discussing it.

But there is much more. Developers of shopping malls (and other planned unit developments) carefully plan and design all aspects, including use arrangements and common areas and facilities, to maximize rental incomes. This is simply planning in the pursuit of profit, benefiting from trial-and-error and very much dependent on local knowledge. It is a key aspect of what we might call bottom-up planning in order to highlight contrasts with the conventional association of "planning" with a top-down activity. The usefulness of bottom-up planning could be enhanced if top-down planning were left as the default, where private planning is least likely, perhaps a "governance of last resort." Holcombe (2004) has suggested such an approach. The actual division of responsibility between top-down and bottom-up planning would differ from place to place, although there are now significant efforts to strengthen the top-down role, in the name of "sustainability" (Utt, 2009).

SMART GROWTH, DENSITY, AND ALL THAT

Still, it is interesting that policy movements not known for their libertarianism, such as "smart growth," "new urbanism," "sustainable development," "livable communities," now claim Jane Jacobs as their own. Indeed, Jacobs's once-controversial ideas seem to have become the new orthodoxy, including her emphasis on the importance of population density, and today's conventional planning employs the concepts of "pedestrian-friendliness," "diversity," and "mixed use" as though they were taking their cue from Jacobs. Their interpretations of these concepts, however, tend to be off the mark.

Density or Diversity?

In the present discussion, it is crucial to understand that for Jacobs high population density is important because it helps to generate land-use diversity, and diversity in turn is key in fueling dynamic economic development. That is, density alone is not sufficient to generate economic development or land-use diversity. If it could, county prisons or the streets around Yankee Stadium as fans crowd into and out of games would be economically diverse and dynamic places – they are not. The former for obvious reasons and the latter because, while it may sustain specific consumer-oriented businesses such as baseball cap and hotdog sales, it is hardly the foundation for dynamic, long-term growth.

At the same time, long-term growth cannot take place without relatively high levels of population density. This is not only to generate high levels of demand for local products and services, but more importantly, again, to encourage "eyes on the street" in high concentrations at various times of the day, promote security, and the formation of social networks (Granovetter 1973) and social capital. These constitute the foundations of great cities, according to Jacobs, because they facilitate the informal flows of knowledge that entrepreneurs use to appropriately adjust land uses. Sustaining this diversity requires more economic activity than local residents can provide, which is why the ability to attract people, via primary uses, from outside the immediate area is so important for long-term development.

As areas grow economically, whether downtowns or suburbs, local population density rises, and as areas decline (again, whether downtown or suburbs) density falls. There is positive feedback as the expectation of economic opportunity in an area itself acts as an attractor.[8] People then attract more people, and this tends to create more economic opportunities, which in turn increases density.[9]

Primacy of Diversity

For Jacobs, "diversity" refers mainly to the uses of public space.[10] We have already noted how population density is but one of the factors Jacobs identified as "generators of diversity" and that her primary concern was with diversity rather

[7] An interesting debate between Fischel and Nelson concerns the question of whether HOAs and homevoter cities are complements or substitutes; see Nelson (2004) and Fischel (2004).

[8] The complementarity of the health of cities and their suburbs is articulated in Voith (1992).

[9] As Jacobs explains, however, this "virtuous spiral" can also work in reverse, generating a "dynamics of decline" (1961: Chapter 13).

[10] There have been various tests by urban economists of Jacobs' diversity idea (Quigley, 1998). The empirical evidence is seemingly mixed. Dumais, Ellison and Glaeser (2002) found evidence of significant localization and agglomeration economies among firms in the same industry. Henderson (1994) tried to assess the relative importance of the four

than density *per se*, and how density and diversity work together to promote the foundations of long-term entrepreneurial development. Diversity for her is diversity of land use, especially diversity in primary uses/attractors into a given area, as well as in the form of specialized shops (e.g., the Tokyo electronics district, "Akihabara"). This is "supply-side diversity."

Although not the same as ethnic diversity, but related to it, is an equally important "demand-side diversity," or a diversity in tastes. Jacobs (1969) argues that in order to sustain a diversity of uses that generate products on the supply side, there needs also to be a diversity of tastes to consume them. Fortunately, because great cities, cities with, say, populations in excess of one million, tend to attract misfits from smaller communities, one tends to find in them a disproportionately wide range of backgrounds and tastes compared to smaller cities and towns. The consumers of unusual products can reside in other cities, of course, but selling to consumers locally entails lower transactions costs, especially, again, in a dense urban environment, and demand-side diversity makes that possible.

As noted, one of the conditions Jacobs mentions for generating land-use diversity is that lively neighborhoods need "two or more primary uses" in order to encourage people to spend time in public space (e.g., sidewalks, roads, and plazas) at different times of the day. This sounds similar to what developers and planners today call "mixed uses," but Jacobs emphasizes that the uses in question be unique enough to attract people from outside the locality, which is why she distinguished them from what she termed "secondary diversity" – e.g., the restaurants, dry cleaners, and grocery stores – that merely service the people brought into an area by the primary uses (e.g., apartments, schools, office buildings, concert halls, notable restaurants).

Moreover, while there may be some justification for contemporary planners to describe planned developments that combine retail, entertainment, residential, and commercial uses as "mixed use," the kind of diversity Jacobs sees as the characteristic of long-term economic vitality is largely, though perhaps not exclusively, the result of an "organic" process, typically small-scale and at the level of the individual entrepreneur (although she didn't object to large-scale development *per se*). Today, developers and smart-growth planners, inspired by New Urbanism,[11] seem to want to skip the organic, evolutionary process and instead construct what they regard as the ideal outcome of that process. While some of these developments are small scale, many are very large-scale developments, (e.g., Hudson Yards in New York or "life-style communities") that purport to take advantage of the traditional downtown aesthetic. Many appear to be successful up to a point.

But as Jacobs points out, building on a large-scale in a given location not only imposes a deadening visual homogeneity, but also a homogeneity in the age of buildings (1961: Chapters 10 & 19). New buildings require higher rents to cover construction costs compared to more aged buildings. Thus, what large-scale projects lack are cheap spaces in which to experiment with new ideas. Jacobs famously argued that "new ideas need old buildings" because aged or run-down buildings represent cheap space for new, typically young and relatively cash poor, entrepreneurs to experiment and, importantly, to fail without courting financial disaster. Unfortunately you can't build old buildings, which are the "naturally subsidized spaces" of economic development.[12] These problems are multiplied when it comes to public-private "mega-projects." The combination of new construction over a very large area with homogenous architecture (even when several architects are employed) rules out the kind of "old buildings" (or their equivalent) that can serve as incubators of entrepreneurship. While their high-priced spaces may sell, mixed-use or no, their prospects as engines of future economic growth are dim.[13]

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possibilities: static-between firms in the same industry; static-between firms in different industries; dynamic-between firms in the same industries; and dynamic-between firms in different industries. In the Rosenthal-Strange (2003) survey of ten recent empirical studies, they find evidence in support of urbanization and localization and diversity (Jacobs) economies. These categories describe the range of parties involved, but the authors also emphasize that the geographic and temporal scope are also of great interest. Henderson (1994) found evidence for localization as well as urbanization economies. He also presented strong evidence of dynamic externalities that are realized over years and reports a five-year lag before the full effect of externality benefits are experienced.

[11] *The Charter of the New Urbanism* is at http://www.cnu.org/charter

[12] Of course, subsidized construction done privately as part of a larger development scheme (c.f. the Walentas family in the DUMBO district of Brooklyn) or through government transfers may also accomplish this in some cases. The latter, however, are especially subject to interest-group rent-seeking and political manipulation. Jacobs emphasis on old buildings reflects her attempt to explain how cities don't necessarily have to deliberately plan the construction of entrepreneurial incubators, but that these are and have historically been part of successful urban development.

[13] The recent economic woes in Dubai are testament to the risks of undertaking such colossal construction, where perhaps "giga-project" would be a more apt description. http://www.economist.com/displaystory.cfm?story_id=15016168

Walkability

Pedestrian friendliness is another lesson Smart Growth and New Urbanism seem to have drawn from Jacobs. Yet, making an existing area or a new development "pedestrian friendly" is a virtue only insofar as people have somewhere interesting to go to. Living cities are not full of pedestrians; they are full of people who are going somewhere. Mega-project developers often tout parks, sports complexes, or esplanades that will give people a place to go, but the really interesting aspects of cities are the unplanned niches that appear in the interstices of someone's grand plan – the space between the buildings. Otherwise the result is places that have the feeling of a "Disneyland" – nice places to visit but they lack the kind of real economic opportunity that comes with spontaneous diversity.

In sum, too many of those who claim Jacobs as a major influence have missed the spontaneous-order message (Jacobs 1961, Chapter 22) and have instead interpreted her descriptions of successful living cities more prescriptively than she intended.

DENSITY, JACOBS, AND DEVELOPMENT

Urbanization and economic development facilitate each other. Investigators study the nature of cities to identify which attributes make a difference -- and how. But there is no agreement on what and how to measure. As an indicator of success, many have settled on some measure of city growth as the dependent variable. But what about the explanatory variables? How do we describe the nature of these cities and their built environment? Urban economists have looked for correlations between population (or employment) densities and growth -- or with enhanced productivity or inventiveness. But this approach is undermined by the fact that average densities over large geographic areas mask considerable variation. Some authors even use a state's proportion of urbanized population as a proxy for density. But even the measurements well below the state level are inadequate. The Los Angeles urbanized area (census definition) has had a higher average population density than the New York urbanized area since at least 1990, but this comparison is an artifact of the boundaries chosen. One can easily identify central areas of both urbanized areas such that New York has the higher density. But there is no science to guide the choice of boundaries. Table 1 summarizes recent research on this topic and highlights the geographic areas that investigators have studied.

TABLE 1 HERE

All of these areas are too large. Their average densities tell us very little. Whereas the importance of human capital to economic growth is well known and whereas the importance of urbanization is also clear, it is much more difficult to identify simple relationships between these two phenomena. We are unconvinced by the simple "density" and human capital relationships suggested by the authors cited in Table 1.

Urban economists, including those who study creativity, simply define density as "number of persons per square area" per time period. There are at least two problems with measures of this kind. First, as Jacobs (1961: 205) pointed out, it is easy using this approach to conflate high density with "overcrowding," where the latter is based on "number of persons per room per dwelling." Thus, critics of density will point to poor, typically overcrowded cities with high density but low measured development to refute the density-development nexus. Indeed, overcrowding in this sense does occur in very low-income areas and does not promote economic development. But note that very high population density is consistent with the absence of overcrowding (e.g., the Upper East Side is one of the densest districts in New York City) and overcrowding is consistent with low population density (e.g., Appalachia). In fact, rising density and economic prosperity go hand in hand, even in the suburbs, towards which it is well documented that economic activity has been shifting since at least World War II. That is, while the population-density gradient has been flattening, especially in the United States, in the past half-century the right-side of the gradient, where economic activity has been shifting, has been rising as the left-side has been falling. In this way high and rising densities, without overcrowding, is still an indicator of prosperity.

But, second, we have already noted how the areas that form the denominator of the density ratio are typically far too large and fail to capture important differences at the neighborhood level, especially where, as has been the case in post-WWII urban development, cities have multiple "employment subcenters."[14] Typical measures cast too wide a net to capture meaningful relationships. One way to take these concerns into account is simply to select as a denominator the smallest areal unit for which credible data are available. American Community Survey data for the PUMS areas (PUMAs), which incorporate areas that are significantly smaller and far less aggregated than the usual metro or urbanized area measures.

NEIGHBORHOOD DENSTIES AND HUMAN CAPITAL: The Data

[14] See, for example, Glaeser and Kahn (2001).

In defense of the authors cited in Table 1, data for sub-city units are not easily found. For example, economic data for downtowns (Central Business Districts, CBDs) are hard to come by because there are no official or widely agreed on definitions. There are some employment as well as employment density data for the 50 largest CBDs at *Demographia* (http://www.demographia.com/db-cbd2000.pdf). We also have 50-year (1950-2000) population growth rates for 46 of the 50 surrounding Urbanized Areas and find that the correlation between CBD job density and urbanized area growth was -0.26. The importance of strong downtowns is seemingly not a driver of growth.[15]

Therefore, in an effort to study the effects of population density at the level of the smallest geographic units for which we could find useful data, we analyzed the American Community Survey (ACS) migration data for 2005 (5 percent sample). These are reported for areas as small as the PUMS (Public Use Micro-Sample) areas (PUMAs) which are the closest spatial units we have that might approximate neighborhoods (Murphy, 2007). In 2005, there were 2077 of them in the U.S. (excluding Alaska), 1722 in metropolitan areas. Their minimum size is 100,000 inhabitants and their average population was just over 145,000. The PUMA-level migration data most useful for us involve moves between PUMAs, which accounted for 79 percent of all (within one-year) movers. The highest education level recorded in this file is MA+ (holders of all Masters and professional degrees and higher).

Table 2 shows the top-25 PUMAs in terms of MA+ arrivals. Substantial human capital (as measured by people with advanced degrees) can be seen to migrate to parts of Manhattan as well as to areas such as Silicon Valley. These people are seemingly attracted to opportunities found in “low density” as well as in “high density” places. Four of the top 25 (out of 2069 areas included after discarding ones with only partial data) were in Manhattan and four of the top 25 were in Silicon Valley; other top-25 destinations included West Los Angeles or suburban Washington DC, suburban Seattle, Boston, suburban Chicago, Austin or San Diego. The densest receiving area (in Manhattan) was thirty-eight times as dense as the most spread out (in Silicon Valley, California), yet each one succeeded in attracting highly educated, (and presumably creative) people. Note that the sizes of areas in the Table vary from below ten square kilometers (in Manhattan) to one just over 300 square kilometers (in the Washington DC suburbs) and one just over 250 square kilometers (in Silicon Valley). Even density at the PUMA level is apparently a poor predictor of the arrival of highly educated migrants.

TABLE 2 HERE

We can look further by starting with an inspection of simple correlations in Table 3. These show correlations over the set of all “metropolitan” U.S. PUMAs, and suggest some of the complexity We added data on migrants in PUMS occupation group 2600 (“Arts, design, entertainment, sports, and media occupations”) as a proxy for people doing “creative” work (an idea popularized by Richard Florida [2002] and others). The correlation between PUMA density and arrivals of “creative” people was 0.25. But it was lower for the MA+ arrivals (0.180), even lower for arrivals with BA or BS degrees (0.13) and negligible for all arrivals (0.01). Nevertheless, one could argue that there were intriguing differences in the propensity to move to the denser places. But when we conduct the same analysis at the level of the nine Census Divisions (Tables 3-1 to 3-9) even this pattern disappears. For Divisions 1, 3,6,7,8 the correlation of density with arrivals is highest for all arrivals; for Divisions 2, 5, 9 they are highest for “creative” people; for Division 3, it is highest for the BA holders. And magnitudes of the correlations vary greatly among the Divisions.

TABLE 3 HERE

[15] In light of the declining important of traditional downtowns, urban economists have devoted substantial effort in recent years to (i) theorizing about the rise of metropolitan sub-centers – and moving beyond the monocentric model of cities; and (ii) finding ways to identify them. McMillen and Smith (2003) summarize much of this work. Using 1990 data, they also report their own findings on sub-center identification for 62 U.S. urban areas. They use these to test and confirm the implications of the Fujita-Ogawa model, in which the expected number of subcenters increases with metro area population and commuting costs. Redfearn and Giuliano (2007) present a case study of the twenty-year (1980-2000) evolution of sub-centers (that they identify) in the Los Angeles area. Generalized accessibility explains less than does historical importance. Lee (2006) describes a two-dimensional categorization of metropolitan areas which considers the number of employment sub-centers as well as the degree of employment dispersion. He identifies employment sub-centers for the largest metropolitan areas. The fourteen areas with populations of more than 3-million in 2000 were shown to have 233 sub-centers; the range was from as few as six (Philadelphia, Atlanta, Miami) to as many as 53 (Los Angeles). But the proportion of jobs not in any center (not in the downtown nor in one of the subcenters) varied from a high of 86.9 percent (Philadelphia) to a low of 68.4 percent (Los Angeles). Lee found that, as a group, commuters in dispersed job locations had shorter duration commutes than those working in sub-centers or in CBDs. Lee and Gordon (2007) estimate a metropolitan area growth model and find evidence that jobs dispersal contributes to commuting economies among the largest metropolitan areas; they accommodate growth by dispersing.

We can go a step further via multiple regressions. Tables 4a and 4b show estimation results for a migration model for all 2005 (inter-PUMA) migrants – in raw data (4a) as well as log-transformation form (all but 0,1 variables in logs in 4b). The model's explanatory variables are the population density of the receiving PUMA, the size (population) and per capita income of the metro area surrounding that PUMA as well as dummy variables for the nine census divisions (Pacific, Division 9, is the reference area). The metro area descriptors are included for the obvious reason that geographic context matters a great deal. All the independent variables are significant with the expected signs. People prefer to move to dense PUMAs located in high-income but small metros; they prefer New England or the Pacific. The long standing frostbelt-to-sunbelt migration is only partly in evidence.

Interestingly, this model breaks down when we use it to predict in-migration of our subgroups, those with BAs or with MA+ training or in the ENT occupations (Tables 5a and 5b); the model's explanatory power and the elasticities with respect to destination densities are much lower. The highly trained and the creative movers seemingly make more idiosyncratic choices than the general population.

TABLES 5a AND 5b HERE

More than one researcher has shown that the established universities are now the magnets for enterprises that employ creative people (see, for example, Anselin, Varga, Acs, 1997). But prominent universities are not quickly or easily created. This suggests that such magnets cannot be easily manufactured via policy measures, as Florida's idea suggests.

While we believe these findings cast serious doubt on the usefulness of standard measures of density, they do not contradict the relation between development and density, rightly understood.

As we have seen, for Jacobs population density is important because it fosters the informal contact that creates complex social networks, the matrix of economic development, to form. Until recently the main source of this kind of contact was through foot-traffic. Today, of course, the car has perhaps irrevocably altered the shape of cities. But we believe that Jacobs's underlying idea is still relevant.

With the car, having a high concentration of residents, workers, and users of public space within a particular area is not necessary. Thinking of density in terms of optimizing the number of potential informal contacts makes it consistent in principle with relatively low-density development and a car-dominated transport system. But what we will call "Jacobs density" refers to *the level of potential informal contacts of the average person in a given public space*[16] *at any given time*. This we believe captures the essence of the Jacobsian emphasis on density – i.e., as one of the conditions that promote the diversity of use and taste that is needed for long-term economic development – without being constrained by any particular historical context – e.g., Hudson Street in the Greenwich Village. The drawback to this measure is that data on Jacobs density may be hard to get, because it would have to combine measures of distance travelled per hour (say) of the average user of public space and the average number of public stopping points in which informal contacts could take place. (This goes as well for the kind of data that could distinguish between the overcrowding of rooms from high density, although we suspect there may be real-estate data that could supply this.)[17] However, we can say that the informal contacts that form social networks valuable for entrepreneurial discovery would be hard to imagine taking place absent an environment of economic freedom,[18]

CONGENIAL MICRO-ENVIRONMENTS

Congenial environments are micro-environments, perhaps smaller than PUMAs, and come in many "flavors". And although we would like to find a simple way to describe and summarize them, the available data do not permit it. Indeed, because urban environments are "spontaneous orders" *par excellence* (Ikeda 2007), what an "optimal" density looks like adapts over time in unpredictable ways, and this means that such a measure is unlikely to be found. Here then our discussion will necessarily be more descriptive than quantitative.

For example, the rise of the "consumer city" is the logical response to the declining importance of location near prominent natural features, including ports, rivers, and canals. The increasing "footlooseness" of employment opportunities has meant that capital could follow labor, rather than the reverse, which had been the rule for centuries (Carlino and Mills, 1987). This means that the quality of urban life is more important than ever. As Florida (2002) has

[16] We define "public space" here, not in the sense of publicly owned, but as places where one expects to encounter strangers. These spaces can be either privately or publicly owned.
[17] The "contacts per hour" approach to density also would appear to depend on making a number of assumptions that would then enable us to connect (1) miles driven per day by the average user, (2) average number of people occupying the various spaces in which informal contact could be made, (3) the likelihood of such contact.
[18] See Gwartney & Lawson (2009) at http://www.freetheworld.com/release.html..

emphasized, successful and attractive urban forms, then, must inspire productivity at work, but they must also be satisfying for non-work activities.

Most non-work activities have a social side. Where and how are these activities facilitated? This question again causes us to ask: what is a meaningful "center"? And, once again, there are no easy answers. The International Council of Shopping Centers (ICSC) counts over 100,000 U.S. shopping centers of many types, a large number of which can be described as places where social interaction can occur (http://www.icsc.org/srch/lib/2009_S-C_CLASSIFICATION_May09.pdf). Many of these are now referred to as "neighborhood lifestyle centers," where shopping as well as socializing occur. Virginia Postrel has noted that Vienna émigré Victor Gruen had tried to fashion shopping malls that could fulfill the function of the European downtowns he grew up in, famous for providing coffee houses where people could meet. But Gruen's ideas, she wrote, have only recently come to fruition with the more open modern lifestyle centers where people are actually encouraged to sit and to linger (2006).[19] The developer Rick Caruso, who has achieved some acclaim for the centers that he has recently opened, reports that whereas the average mall visit is for about eighty minutes, people spend more than twice as much time when visiting his centers. The downside is that many of these new centers are populated with well known franchise stores and restaurants. There are few surprises. Jacobs would remind us that the charm of cities involves the possibilities of surprise – the good kind. Nevertheless, the suburbs do have places where people congregate. For example, Garreau has identified "edge cities," which typically begin as mall-like development, as just such places where, responding explicitly to Jacobs, he has declared that "density is back!" (1991:37).

CONVENTIONAL URBAN PLANNING

Many planners and policy makers have argued that low-density "sprawl" (the latter often undefined) is inefficient and have prescribed plans and policies to prompt more "compact" development. The commentator George Will has asked (of Al Gore and his fellow critics): "Does he worry that unsustainable growth will be sustained?" And it is unclear that any blanket prescription can be useful across the board. As we have noted, the well known Achilles Heel of central planning is planners' inability to discover or manage the dispersed knowledge that would be required. It is no different for cities. A Hayekian critique of urban dirigisme would also be a Jacobsian one. Large metropolitan areas include millions of parcels of land. Any presumption that managing the land uses involved is within the grasp of planners is naïve and hubristic. Open-ended free markets cannot easily be replaced.

The historian Kenneth T. Jackson wrote: "Since World War II, America's northeastern and midwestern cities have been in both relative and absolute decline. Their once proud central business districts have typically slipped into retail and business irrelevance; their neighborhoods have lost their once dense networks of bakeries, shoe stores and pharmacies; and their streets have too often become dispiriting collections of broken, broken windows and broken lives. After dark, pedestrians retreat from the empty sidewalks, public housing projects come under the sway of gangs and drug dealers, and merchants lower graffiti-covered metal gates. Too often, no one is home." (Ballon and Jackson, 2007). The Lincoln Institute (2005) reported similar alarming findings in terms of vacant and abandoned housing. From census 2000 records, they found that in Cleveland there were 25,000 vacant and 11,000 abandoned residential properties; in Baltimore the numbers were 40,000, (14 percent of the housing stock) and 17,000; in Philadelphia, there were 27,000 abandoned residential structures (10 percent of the housing stock), 2,000 abandoned commercial structures and 32,000 vacant lots; in St. Louis 29,000 units were vacant which was equivalent to 17 percent of the housing stock.

Census data also show (Table 6) that, for the set of ten largest central cities in these two regions, 50-year population growth (1950-2000) was negative – while the U.S. population grew by 85 percent. Only one of the ten showed positive population growth and that was New York City, but by only an almost negligible one-percent. But it was another story for these areas' suburbs (here, the respective Urbanized Areas – not the MSAs – less the traditional central city). These suburban areas all grew; all but Pittsburgh's grew by more than the national population growth rate. To be sure, the older U.S. central cities boast islands of vitality and rebirth, but these are apparently swamped by the conditions that Jackson describes.

TABLE 6 HERE

The mix of companies and industries in the economy is always changing. Churn is widely recognized as part of normal economic activity. Schumpeter famously referred to "gales of creative destruction." Churn also occurs in cities and accompanies productivity growth. An interesting line of urban research by Duranton (2007) suggests that metro areas' ability to "churn" industries, letting go of the old and accommodating the new, accompanies their success. In his theoretical model, cross-industry innovations lead to the churning of industries across cities and cities grow or decline as a result of the realized local industrial churn. Glaeser has shown how Boston (Glaeser 2005) and New York (Glaeser

[19] See also Hardwick (2004: 131).

2009) have survived repeated crises and declines triggered by technology shocks – such as the emergence of steamships, automobile, and information technology – by reinventing themselves and accommodating the newly flourishing industries. Among the key assets needed to successfully respond to the recast challenges were rich a rich base of human capital and entrepreneurship in the two cities. Unlike these “reinventive” cities, Detroit may not survive the decline of the traditional U.S. auto industry. Simon’s (2004) cross sectional analysis of 39 industries across 316 U.S. cities also demonstrated the role of industrial churn in the growth and decline of cities between 1977 and 1997, a period of burgeoning knowledge intensive economies. The presence of larger manufacturing shares and a sector’s own employment share in the beginning year was associated with slower subsequent growth, especially in the newer and skill-intensive industries.[20]

Three conclusions emerge from this discussion. First, an almost uncountable number of federal state and local plans and policies were supposed to change the reality that Jackson describes, but it is hard to find their effect. Most labor and capital have for many years migrated to the suburbs of the older cities or to the sunbelt. Preferences have trumped policies. Yet (perhaps ironically) in the new era of “sustainability” concerns, policy discussions elaborate the importance of even more of the standard politicized top-down policies. Second, it is meaningless to aggregate into metropolitan units of analysis because, in many cases, the cities and the suburbs are so different. Analysts who write about cities, but who conflate the health of metropolitan areas with the health of their central cities (Glaeser, 1998) are making a mistake. Third, many of the older metropolitan areas have survived by growing outward. Rather than abandoning certain physical and social infrastructures, these have been rearranged so that the high costs of abandoning and replacing central city building stock could be avoided. Glaeser and Gyourko (2005) have pointed out that much of the old housing stock found in run down areas of older cities can be maintained at low cost and can continue to provide housing services for the low-income population.

So critics of “sprawl” are unhappy with auto-oriented development – as well as with automobiles – which is naturally different from the cozy street life that many reminisce over. But whereas this position has often been cast as a concern over negative externalities (highway congestion, air pollution, etc.), a newer set of criticisms suggests a lack of opportunities for positive externalities (interactions at work or at play). But the “market failure” view is once again overdone. Just as some investigators have found that there are spatial accommodations that mitigate the commuting costs of spread-out development (namely, job decentralization), there is also evidence, such as the suburban lifestyle centers described above, that innovative and creative interactions can occur in modern dispersed cities.

LESSONS

The various cities examined here reflect complex and somewhat durable peculiarities. Their infrastructures (broadly speaking) had at one time served as congenial social and economic environments. But as circumstances change, some cities adapt better than others. Are there specific principles that top-down planners can implement? Or is a trial-and-error bottom-up approach better suited? We have claimed that Jane Jacobs looked at cities and neighborhoods in Hayekian fashion. She appreciated the immense complexities involved and was pessimistic that they could be fathomed and usefully manipulated top-down. We agree. Of course, density, as we have defined it, remains important, and the kind of face-to-face contact and informal network-building described by Jacobs still serves as the foundation of living cities today, as they ever have. But relying on crude measures of density to fashion policy, whether to promote economic development in the traditional sense or to foster growth by somehow attracting “creative” denizens is unhelpful. Finally, the way the physical environment of cities has evolved in the 20th century has perhaps made it harder to appreciate the role that the social infrastructure continues to play in economic development, and how it has adapted over time to changing circumstances of time and place. How it will adapt in the future no one can know, but we do know that, with economic freedom, adapt it will.

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[20] There is one more caveat to this discussion. Glaeser and Gottlieb (2009) note that “Housing supply elasticity will determine whether urban success reveals itself in the form of more people or higher income” (p. 983). This is, of course, correct but must it must be added that there is considerable research that demonstrates that housing supply elasticities have been substantially reduced in many areas because of local land use and development restrictions. In addition, when we study post-2000 growth of the 30 largest U.S. metropolitan areas, we see that eight of them (Dallas, Houston, Atlanta, Phoenix, Tampa, Denver, San Antonio, Indianapolis) experienced above-average *population* growth along with below average *income* growth; eight others (New York, Los Angeles, Boston, San Francisco, San Diego, Baltimore, Pittsburgh, Providence) experienced above average income growth and below average population growth. But five metropolitan areas excelled in both (Miami, Washington DC, Seattle Portland, Sacramento); nine “nonsuccesses” underperformed in both (Chicago, Philadelphia, Detroit, Minneapolis, St. Louis, Cleveland, Cincinnati, Kansas City, Milwaukee). The Brookings (2006) review of land use regulations suggests a typology of regulatory regimes. But the link between regulation, housing supply elasticity and the nature of growth is not clear in our 30-area analysis.

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TABLE 1: ACTIVITY DENSITY RESEARCH

Authors	Year	Brief Title	Appeared Where	Density Measure
McGranahan, Wohan	forthcoming	Recasting the Creative Class to Examine Growth Processes in Rural and Urban Counties	Regional Studies	County population density
Glaeser, Resseger	2009	The Complementarity Between Cities and Skills	unpublished	State population density
Decker, Thompson, Wohar	2009	Determinants of State Labor Producitvity	Journal of Regional Analysis and Policy	Share of state's population living in metropolitan areas
Knudsen, Florida, Gates. Stolarick	2007	Urban Density, Creativity and Innovation	unpublished	Metropolitan area population density
Gabe, Kolby, Bell	2007	The Effects of Workforce Creativity on Earnings in U.S. Counties	Agricultural and Resource Economics Review	County population density
Bettencourt, Lobo, Strumsky	2004	Invention in the City: Increasing Returns to Scale in Metropolitan Patenting	unpublished	Metropolitan area density of network connections
Acs, Armington	2004	Employment Growth and Entrepreneurial Activity in Cities	unpublished	Labor Market Area establishment density
Carlino, Chatterjee, Hunt	2001	Knowledge Spillovers and the New Economy of Cities	Federal Reserve Bank of Philadelphia Working Paper	Metropolitan area employment density
Glaeser, Kolko, Saiz	2001	Consumer City	Journal of Economic Geography	City population density
Glaeser, Shapiro	2001	Is There A New Urbanism?	NBER Working Paper 8357	City population density
Harris, Ioannades	2000	Productivity and Metropolitan Desnity	unpublished	Metropolitan area population
Ciccone, Hall	1996	Productivity and the Density of Economic Activity	NBER Working Paper	County population density
Abel, Dey, Gabe	n/a	Productivity and the Density of Human Capital	unpublished	Metropolitan area weighted average of constituent counties' population densities

TABLE 2: TOP 25 PUMAs Receiving MA+ In-migrants, 2005													
Rank	State	Receiving PUMA	County	AREA (Sq Km)	PUMA POP	PUMA POP DENSITY	Education Level of Migrants					Total
							N/A (less than 3 years old)	0-11th grad	HS & some college	Bachelor's degree	MA +	
1	New York	3806	New York County	12	216,899	17,408	1651	1659	5660	6389	11188	26547
2	New York	3805	New York County	8	214,455	27,319	479	2503	3329	9651	10781	26743
3	Virginia	305	Fairfax County, Fairfax city, Falls Church city	304	264,375	870	1759	6359	8585	9967	9351	36021
4	California	2701	Santa Clara County	258	185,680	720	839	5472	11922	8567	8947	35747
5	Maryland	1004	Montgomery County	155	174,117	1,125	1918	4731	4638	6567	7830	25684
6	Illinois	3510	Cook County	29	150,243	5,138	332	3110	11419	10996	7692	33549
7	District of Columbia	105	District of Columbia	28	108,693	3,855	471	2967	8970	9366	7323	29097
8	District of Columbia	101	District of Columbia	39	104,343	2,666	745	1206	6424	8594	7303	24272
9	Illinois	3502	Cook County	17	151,344	9,041	400	2991	13679	21066	7100	45236
10	Washington	2002	King County	143	149,639	1,048	1377	8097	11411	7860	7098	35843
11	New York	3810	New York County	17	147,115	8,825	275	1347	10797	9531	6904	28854
12	Virginia	100	Arlington County	67	199,697	2,965	1002	859	7288	10732	6837	26718
13	California	6125	Los Angeles County	73	224,065	3,091	282	3631	9646	12913	6677	33149
14	California	8101	San Diego County	135	249,239	1,845	1745	10882	32706	16762	6649	68744
15	Massachusetts	3302	Boston city	31	141,566	4,496	364	6611	12220	8543	6427	34165
16	California	2703	Santa Clara County	129	122,524	948	1525	6556	10633	5788	6229	30731
17	Texas	4607	Harris County	85	143,399	1,678	1189	6169	14667	8046	6122	36193
18	New York	3807	New York County	7	131,322	18,014	105	1130	5453	9125	6094	21907
19	Texas	5304	Hays County, Travis County	175	162,872	930	468	5813	21590	11644	5936	45451
20	Texas	4604	Harris County	49	144,982	2,963	1287	15391	12618	7448	5873	42617
21	California	2409	Alameda County	112	184,025	1,645	964	5493	8595	5060	5661	25773
22	California	5411	Los Angeles County	42	185,997	4,398	500	1585	17822	11958	5602	37467
23	Maryland	1003	Montgomery County	115	173,551	1,511	1310	11834	8538	8429	5494	35605
24	California	2702	Santa Clara County	44	144,337	3,281	877	6040	7900	6470	5476	26763
25	Texas	5303	Hays County, Travis County	187	194,399	1,039	1408	12196	13340	9621	5443	42008

TABLE 3: Correlation Matrices, US and 9 Census Divisions

Metropolitan PUMAs only

TABLE3: [U.S, all Metropolitan PUMAs, N= 1720]

	Total In	BA	MA+	ENT
Area Density	0.01420	0.13224	0.18049	0.25337
Area Size (sq km)	-0.08943	-0.09604	-0.09342	-0.03998
Area Population	0.46658	0.27946	0.21114	0.18005

TABLE 3a: [New England, Division 1, N= 97]

	Total In	BA	MA+	ENT
Area Density	0.65720	0.57936	0.43116	0.35675
Area Size (sq km)	-0.07322	-0.04625	-0.03509	-0.05221
Area Population	0.01750	-0.00960	0.04235	0.01594

TABLE 3b: [Mid-Atlantic, Division 2, N = 273]

	Total In	BA	MA+	ENT
Area Density	0.14475	0.25902	0.28099	0.40787
Area Size (sq km)	-0.28280	-0.25283	-0.19952	-0.19465
Area Population	0.48386	0.25366	0.25885	0.10186

TABLE 3c: [East North-Central, Division 3, N = 266]

	Total In	BA	MA+	ENT
Area Density	0.37486	0.32681	0.30844	0.28326
Area Size (sq km)	-0.26443	-0.13449	-0.14891	-0.09742
Area Population	0.39861	0.33289	0.28233	0.28347

TABLE 3d: [West North-Central, Division 4, N =93]

	Total In	BA	MA+	ENT
Area Density	0.37794	0.40081	0.38761	0.36004
Area Size (sq km)	-0.31086	-0.27308	-0.17373	-0.25000
Area Population	0.26610	0.09614	-0.02212	0.00870

TABLE 3e: [South Atlantic, Division 5, N = 318]

	Total In	BA	MA+	ENT
Area Density	0.15599	0.16602	0.23177	0.26133
Area Size (sq km)	-0.36851	-0.28482	-0.23166	-0.17633
Area Population	0.30145	0.26980	0.21080	0.15396

TABLE 3f: [East South-Central, Division 6, N = 81]

	Total In	BA	MA+	ENT
Area Density	0.53333	0.32450	0.21477	0.38094
Area Size (sq km)	-0.50970	-0.39013	-0.28702	-0.23610
Area Population	0.36146	0.30997	0.37720	0.01324

TABLE 3g: [West South-Central, Division 7, N = 187]

	Total In	BA	MA+	ENT
Area Density	0.34976	0.24316	0.30629	0.19812
Area Size (sq km)	-0.34798	-0.28582	-0.27303	-0.19169
Area Population	0.59284	0.50258	0.36268	0.31275

TABLE 3h: [Mountain, Division 8, N = 112]

	Total In	BA	MA+	ENT
Area Density	0.30158	0.06972	0.04732	0.06383
Area Size (sq km)	-0.27180	-0.20542	-0.21872	-0.00042
Area Population	0.49195	0.20723	0.18758	0.18980

TABLE 3i: [Pacific, Division 9, N = 293, excludes Alaska]

	Total In	BA	MA+	ENT
Area Density	-0.16194	0.08476	0.0295	0.21109
Area Size (sq km)	-0.03377	-0.17849	-0.14882	-0.07017
Area Population	0.63513	0.14299	0.11865	0.17187

TABLE 4a

Dependent Variable: All in-migrants

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	39256242846	3.6E+09	41.61	<.0001
Error	1708	1.47E+11	8.6E+07		
Corrected Total	1719	1.86E+11			

Root MSE	9261.53	R-Square	0.2113
Dependent Mean	19480	Adj R-Sq	0.2062
Coeff Var	47.5436		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	Intercept	1	16791	1771.72	9.48	<.0001	0
pop_den	pop_den	1	0.2008	0.08165	2.46	0.014	1.22625
msa_pop	msa_pop	1	-4E-06	5.1E-06	-0.7	0.4863	1.5795
msa_inc_pc	msa_inc_pc	1	0.42485	0.06237	6.81	<.0001	1.42962
Division1	Division1	1	32531	5466.15	5.95	<.0001	31.883
Division2	Division2	1	-14785	1178.69	-12.54	<.0001	4.70374
Division3	Division3	1	-9751.8	1141.68	-8.54	<.0001	4.35195
Division4	Division4	1	-10076	1383	-7.29	<.0001	3.76875
Division5	Division5	1	-7340.5	1124.61	-6.53	<.0001	4.64271
Division6	Division6	1	-8890.1	1428.99	-6.22	<.0001	3.79899
Division7	Division7	1	-2071.5	1204.48	-1.72	0.0856	4.01034
Division8	Division8	1	-529.58	141.986	-3.73	0.0002	4.5203

TABLE 4b

Dependent Variable: All in-migrants (non-dummy variables in logs)

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	203.63484	18.5123	82.44	<.0001
Error	1708	383.53256	0.22455		
Corrected Total	1719	587.1674			

Root MSE	0.47387	R-Square	0.3468
Dependent Mean	9.72404	Adj R-Sq	0.3426
Coeff Var	4.87316		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	Intercept	1	5.20394	0.83468	6.23	<.0001	0
ln_pop_den		1	0.12986	0.00848	15.32	<.0001	1.64977
ln_msa_pop		1	-0.0261	0.00943	-2.77	0.0057	2.01996
ln_msa_inc_pc		1	0.45456	0.08605	5.28	<.0001	1.66618
Division1	Division1	1	1.6743	0.27995	5.98	<.0001	31.9462
Division2	Division2	1	-0.8664	0.05973	-14.51	<.0001	4.61344
Division3	Division3	1	-0.5681	0.05856	-9.7	<.0001	4.37352
Division4	Division4	1	-0.5069	0.07072	-7.17	<.0001	3.76424
Division5	Division5	1	-0.3921	0.05738	-6.83	<.0001	4.61645
Division6	Division6	1	-0.4638	0.07314	-6.34	<.0001	3.80178
Division7	Division7	1	-0.1543	0.06228	-2.48	0.0133	4.09509
Division8	Division8	1	-0.0316	0.00698	-4.53	<.0001	4.16783

TABLE 5a

Dependent Variable: BA degree holders

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	1.3E+09	119289519	27.26	<.0001
Error	1708	7.5E+09	4376071		
Corrected	1719	8.8E+09			

Root MSE	2091.91	R-Square	0.1493
Depender	2775.51	Adj R-Sq	0.1439
Coeff Var	75.3701		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	Intercept	1	-870.487	400.18	-2.18	0.0297	0
pop_den	pop_den	1	0.08191	0.01844	4.44	<.0001	1.22625
msa_pop	msa_pop	1	3.56E-07	1.2E-06	0.31	0.7561	1.5795
msa_inc	msa_inc	1	0.18228	0.01409	12.94	<.0001	1.42962
Division1	Division1	1	3789.1516	1234.64	3.07	0.0022	31.883
Division2	Division2	1	-2075.032	266.232	-7.79	<.0001	4.70374
Division3	Division3	1	-1256.074	257.873	-4.87	<.0001	4.35195
Division4	Division4	1	-804.6404	312.38	-2.58	0.0101	3.76875
Division5	Division5	1	-867.3221	254.017	-3.41	0.0007	4.64271
Division6	Division6	1	-1111.949	322.766	-3.45	0.0006	3.79899
Division7	Division7	1	-437.6035	272.058	-1.61	0.1079	4.01034
Division8	Division8	1	-100.5895	32.0704	-3.14	0.0017	4.5203

Dependent Variable: MA+ degree holders

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	4.2E+08	37991354	27.1	<.0001
Error	1708	2.4E+09	1401782		
Corrected	1719	2.8E+09			

Root MSE	1183.97	R-Square	0.1486
Depender	1249.74	Adj R-Sq	0.1431
Coeff Var	94.737		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	Intercept	1	-1169.573	226.492	-5.16	<.0001	0
pop_den	pop_den	1	0.0569	0.01044	5.45	<.0001	1.22625
msa_pop	msa_pop	1	-4.84E-07	6.48E-07	-0.75	0.455	1.5795
msa_inc	msa_inc	1	0.1069	0.00797	13.41	<.0001	1.42962
Division1	Division1	1	1483.7697	698.7777	2.12	0.0339	31.883
Division2	Division2	1	-730.3855	150.6809	-4.85	<.0001	4.70374
Division3	Division3	1	-428.7114	145.9498	-2.94	0.0034	4.35195
Division4	Division4	1	-592.1937	176.7994	-3.35	0.0008	3.76875
Division5	Division5	1	-208.4643	143.7675	-1.45	0.1472	4.64271
Division6	Division6	1	-337.1121	182.678	-1.85	0.0652	3.79899
Division7	Division7	1	-157.9178	153.9781	-1.03	0.3052	4.01034
Division8	Division8	1	-31.92921	18.15105	-1.76	0.0787	4.5203

Dependent Variable: Enterntainment occupations

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	3.3E+07	3045378	19.78	<.0001
Error	1708	2.6E+08	153979		
Corrected	1719	3E+08			

Root MSE	392.401	R-Square	0.113
Depender	306.158	Adj R-Sq	0.1073
Coeff Var	120.17		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	Intercept	1	44.9433	75.06594	0.6	0.5494	0
pop_den	pop_den	1	0.03277	0.00346	9.47	<.0001	1.22625
msa_pop	msa_pop	1	6.65E-07	2.15E-07	3.1	0.002	1.5795
msa_inc	msa_inc	1	0.01193	0.00264	4.51	<.0001	1.42962
Division1	Division1	1	453.584	231.5949	1.96	0.0503	31.883
Division2	Division2	1	-196.582	49.93996	-3.94	<.0001	4.70374
Division3	Division3	1	-146.284	48.37193	-3.02	0.0025	4.35195
Division4	Division4	1	-87.3355	58.59637	-1.49	0.1363	3.76875
Division5	Division5	1	-69.3785	47.64866	-1.46	0.1456	4.64271
Division6	Division6	1	-142.268	60.34473	-2.35	0.0189	3.79899
Division7	Division7	1	-50.8048	51.03274	-1	0.3196	4.01034
Division8	Division8	1	-3.19854	6.01578	-0.53	0.595	4.5203

TABLE 5b

Dependent Variable: ln BA degree holders (all non dummy variables in logs)

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	299.26349	27.20577	32.05	<.0001
Error	1708	1449.9792	0.84893		
Corrected T	1719	1749.2427			

Root MSE	0.92138	R-Square	0.1711
Dependent	7.57142	Adj R-Sq	0.1657
Coeff Var	12.16913		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	Intercept	1	-12.01091	1.62293	-7.4	<.0001	0
ln_pop_den		1	0.10562	0.01649	6.41	<.0001	1.64977
ln_msa_pop		1	-0.06529	0.01834	-3.56	0.0004	2.01996
ln_msa_inc_pc		1	2.01811	0.16731	12.06	<.0001	1.66618
Division1	Division1	1	2.16571	0.54433	3.98	<.0001	31.94616
Division2	Division2	1	-0.87438	0.11613	-7.53	<.0001	4.61344
Division3	Division3	1	-0.68464	0.11386	-6.01	<.0001	4.37352
Division4	Division4	1	-0.42736	0.1375	-3.11	0.0019	3.76424
Division5	Division5	1	-0.41409	0.11156	-3.71	0.0002	4.61645
Division6	Division6	1	-0.58584	0.14221	-4.12	<.0001	3.80178
Division7	Division7	1	-0.41187	0.12109	-3.4	0.0007	4.09509
Division8	Division8	1	-0.04414	0.01356	-3.25	0.0012	4.16783

Dependent Variable: ln MA+ degree holders (all non dummy variables in logs)

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	382.0988	34.73625	17.35	<.0001
Error	1708	3419.4848	2.00204		
Corrected To	1719	3801.5836			

Root MSE	1.41493	R-Square	0.1005
Dependent M	6.53797	Adj R-Sq	0.0947
Coeff Var	21.64181		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	Intercept	1	-18.00641	2.49229	-7.22	<.0001	0
ln_pop_den		1	0.09009	0.02532	3.56	0.0004	1.64977
ln_msa_pop		1	-0.07705	0.02816	-2.74	0.0063	2.01996
ln_msa_inc_pc		1	2.53701	0.25694	9.87	<.0001	1.66618
Division1	Division1	1	3.01672	0.83592	3.61	0.0003	31.94616
Division2	Division2	1	-0.77617	0.17834	-4.35	<.0001	4.61344
Division3	Division3	1	-0.78331	0.17485	-4.48	<.0001	4.37352
Division4	Division4	1	-0.98193	0.21116	-4.65	<.0001	3.76424
Division5	Division5	1	-0.38527	0.17133	-2.25	0.0247	4.61645
Division6	Division6	1	-0.59116	0.21839	-2.71	0.0069	3.80178
Division7	Division7	1	-0.4186	0.18595	-2.25	0.0245	4.09509
Division8	Division8	1	-0.0597	0.02083	-2.87	0.0042	4.16783

Dependent Variable: ln Entertainment occupations (all non dummy variables in logs)

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	1046.1394	95.10359	17.7	<.0001
Error	1708	9175.435	5.37203		
Corrected T	1719	10222			

Root MSE	2.31776	R-Square	0.1023
Dependent	4.32849	Adj R-Sq	0.0966
Coeff Var	53.5467		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	Intercept	1	-17.87708	4.08255	-4.38	<.0001	0
ln_pop_den		1	0.28857	0.04147	6.96	<.0001	1.64977
ln_msa_pop		1	-0.05567	0.04613	-1.21	0.2277	2.01996
ln_msa_inc_pc		1	2.19786	0.42089	5.22	<.0001	1.66618
Division1	Division1	1	5.0507	1.3693	3.69	0.0002	31.94616
Division2	Division2	1	-1.48676	0.29213	-5.09	<.0001	4.61344
Division3	Division3	1	-1.46981	0.28642	-5.13	<.0001	4.37352
Division4	Division4	1	-1.26218	0.3459	-3.65	0.0003	3.76424
Division5	Division5	1	-0.71648	0.28065	-2.55	0.0108	4.61645
Division6	Division6	1	-1.09387	0.35775	-3.06	0.0023	3.80178
Division7	Division7	1	-0.82783	0.3046	-2.72	0.0066	4.09509
Division8	Division8	1	-0.05571	0.03412	-1.63	0.1027	4.1678

TABLE 6: Population Growth, Northeast and Midwest Metro Areas and Central Cities, 1950-2000

			GROWTH
US	152,271,417	281,421,906	85%
	1950	2000	
New York, N. Y.-Northeastern N.J	12,296,117	17,799,861	45%
New York CC	7,891,957	8,008,278	1%
Chicago, Ill-Northwestern, Indiana	4,920,816	8,307,904	69%
Chicago CC	3,620,962	2,896,016	-20%
Philadelphia, Pa.-N.J	2,922,470	5,149,079	76%
Philadelphia CC	2,071,605	1,517,550	-27%
Boston, Mass	2,233,448	4,032,484	81%
Boston CC	801,444	589,141	-26%
Detroit, Mich	2,751,971	3,903,377	42%
Detroit CC	1,849,568	951,270	-49%
Minneapolis-St. Paul, Minn.	987,380	2,388,593	142%
Minneapolis CC	521,718	382,618	-27%
St. Louis, Mo.-Ill.	1,400,865	2,077,662	48%
St. Louis CC	856,796	348,189	-59%
Baltimore, Md	1,161,852	2,076,354	79%
Baltimore CC	949,708	651,154	-31%
Cleveland, Ohio	1,383,599	1,786,647	29%
Cleveland CC	914,808	478,403	-48%
Pittsburgh, Pa	1,532,953	1,753,136	14%
Pittsburgh CC	676,806	334,563	-51%
UZAs	30,604,091	46,886,504	53%
CCs	20,155,372	16,157,182	-20%