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INCOME INEQUALITY IN U.S. METROPOLITAN AREAS: WHICH AREAS
HAVE THE GREATEST INEQUALITY AND WHY?

A Thesis

Presented to

The Faculty of Social Sciences

University of Denver

In Partial Fulfillment

Of the Requirements of the Degree

Master of Economics

by

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November 2012

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Title: INCOME INEQUALITY IN U.S. METROPOLITAN AREAS: WHICH
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Degree Date: November 2012

ABSTRACT

In recent years, much focus has been placed on the high and growing level of income inequality in the United States. This composition begins to fill a void in the existing literature by examining specific urban areas that have particularly high levels of inequality and the characteristics that factor into inequality. In this paper, I construct a qualitative model for a particularly unequal metropolitan area. I then apply the model to a set of U.S. metros that are among the most unequal in the country and share a particular set of characteristics consistent with the model.

Table of Contents

Chapter I: Introduction.....	1
Chapter II: The High-Inequality Location Model and Application to the Coastal Metros	12
A. Urban Areas Have Higher Inequality.....	12
B. High-income Households Drive Inequality.....	16
C. Demand for High-Inequality Locations	19
i. Industrial Location and Agglomeration.....	20
ii. Amenities.....	30
D. Supply of High-Inequality Locations.....	36
E. Low-Income Households.....	38
F. Immigration	45
Chapter III: The Psuedo-Coastal Metros: Chicago & Houston	50
Chapter IV: A Different High-Inequality Location Model.....	55
Chapter V: Conclusion.....	60
References.....	63
Appendix.....	66

Chapter I: Introduction

Relative to developed nations across the globe, the United States has a high and growing level of income inequality. This phenomenon has sparked a significant amount of research and debate regarding severity, implications, and responsive policy measures. But the United States is a large, unique, and diverse country, and considerable attention should be given to understanding which areas of the country have particularly high income inequality and to the factors that contribute.

This composition renders a qualitative model that establishes a particular set of phenomena that come together resulting in a location with a particularly high measure of income inequality. Each portion of the model is applied to a small group of U.S. metropolitan statistical areas (MSA's) that are among the most unequal, significantly-populated areas in the country: New York, Boston, Los Angeles, and San Francisco. Of the 51 metropolitan areas in the U.S. comprised of at least one million residents, these four "coastal" metros are among the 10 most unequal metropolitan areas, measured by the Gini coefficient (Weinberg, 2011). The Gini coefficients of these 10 most unequal large metros

are displayed in Table 1. While this paper focuses primarily on the four coastal metros, two other pseudo-coastal metros, Chicago and Houston, are also found among this top 10 and neatly fit the model proposed here.

Table 1: Top 10 Highest Gini Coefficients of MSAs With Population > 1 Million

Rank	MSA	Gini
1	New York	0.502
2	Miami	0.493
3	Los Angeles	0.484
4	Memphis	0.478
5	Houston	0.478
6	New Orleans	0.476
7	San Francisco	0.473
8	Birmingham	0.472
9	Chicago	0.466
10	Boston	0.465

Note: The national Gini coefficient is 0.467.

Source: U.S. Census Bureau, American Community Survey, 2005-2009

Chapter II of this paper depicts the components of the model, applying each to the four coastal metros. The first characteristic of the model high-inequality location is the urban nature of the place. Urban areas in the U.S. tend to have greater income inequality than rural areas (U.S. Census Bureau). Though there exist plenty of exceptions to this, empirical evidence supports the assertion on average. At the state level, Weinberg (2011) finds a distinct positive correlation between population and Gini index. There exists a weaker, though

notable, positive correlation between population density at the state level and the Gini index. Glaeser, Resseger, and Tobio (2008) find a statistically significant correlation between population density among counties with more than one person per every two acre and Gini index, with a correlation coefficient of 0.45. Investigating large, dense metros appears to be the relevant starting point in understanding income inequality in particular places in the U.S. The 51 metros of over one million residents comprise 56% of the U.S. population, while the four unequal coastal metros alone comprise over 13%. The four coastal metros rank among the 11 largest metros in the country by population (New York, 1st, 18,919,649; Los Angeles, 2nd, 12,844,371; Boston, 10th, 4,559,372; San Francisco, 11th, 4,343,381) (U.S. Census Bureau).

The second characteristic of the high-inequality location model is the significant presence of high-income households. Glaeser, Resseger, and Tobio (2008) find that, although inequality in U.S. cities was related more to the presence of poverty prior to 1990, inequality in urban areas has shifted to being more associated with the presence of high incomes rather than that of low incomes. This is certainly related to the expansion in recent decades of the economy as a whole and of the incomes of the wealthiest segment of the U.S. population in particular.

The four coastal cities are home to some of the highest concentration of high-income households, and these concentrations are growing. Gordon and Dew-Becker (2008) find that, while historically poorer Southern metros and historically wealthier Midwestern metros have been converging toward the national mean, the historically wealthy coastal metros continue a steep upward trend. For example, when indexed to the national average per capita income, Boston moved from 108 to 122 from 1969 to 2005, and Washington, D.C. rose from 112 to 129 in the same timeframe. Gyourko, Mayer, and Sinai (2006) show that supply constraints in coastal metros lead to disproportionately high house value growth and that wealthy households are more likely to relocate to these places than the middle- or low-income households that are often priced out of these places.

Because urban inequality in the U.S. is primarily a function of the presence high-income households, the factors that draw such households to certain places is another key element of this study. The factors that drive “demand” amongst high-income households for these unequal places is the third element of the model. The forces attracting them to and keeping them in these places can be broken into two categories: 1) the geographic location of industries and associated agglomeration and 2) amenities.

The attraction of high-income households to certain places, such as the coastal metros in this case, is primarily driven by the location of certain industries

and firms, exacerbated by an agglomeration effect. Zucker and Darby (2007) and Rosenthal and Strange (1999) bring empirical evidence to the table showing that particular high-paying cities attract the most educated and highest-paid individuals to that metro, increasing the number of high-income households. A number of evident examples exist: the finance industry in New York, scientific research in Boston, and technology in the Bay Area. The concentration of such industries in specific places implies a high number of high-earning households located there, and the attraction of top performers in the given industries to such metros from across the country compounds the effect.

The notion of amenities includes an array of desirable attributes that make living and working in a particular place more enjoyable and efficient. They include, but are not limited to, natural features such as bodies of water, man-made features such as infrastructure, and cultural features such as museums and restaurants. Amenities in this sense should not be understood simply as “amenities” offered by hotels or multi-family residences. The quality and quantity of amenities offered by a particular location serve as a driver of demand for residents in that place albeit to a lesser extent than industrial location and agglomeration. The coastal metros at hand offer some of the largest shares of high-quality amenities available in the United States, adding to the attraction and retention of high-income households.

The nature of the “supply” of a location is the fourth piece to the model. Even as the type of metro discussed here tends to be in high demand, particularly among high-income households, supply in the model location is more limited than in most places. This is perhaps the most obvious geographic similarity shared by the coastal metros. By virtue of being located on the coasts, the housing markets in these metros are supply constrained. Bodies of water limit the amount of land available to build and live on. More importantly, the urban cores of these cities are in close proximity to the bodies of water, limiting housing supply in the vicinity of those urban cores.

As in any market, supply that is limited relative to demand results in rising prices. Gyourko, Mayer, and Siani (2006) find that the coastal metros are among the most expensive places to live in the country, and prices have been rising faster in these places than they have elsewhere in recent decades. The key implication for this study is that low- and middle- income households are often priced out of these metros and unable or unwilling to move into them. On the other hand, high-income households that desire to capture the benefits of the coastal metros’ agglomeration and amenities can afford to live there. So a further disproportionate number of high-income households locate within them, even as the urban poor residing there remain.

The remaining presence of low-income households represents the fifth element of the model. While high levels of inequality in a given place may be more associated with wealth than poverty at present, a significant presence of poverty remains in the coastal metros, widening the income distribution. According to Cutler (2007), the urban poor remain in these prosperous coastal cities despite being increasingly accompanied by wealthy households. Ortalo-Magne and Rady (2006) set forth efforts to explain how poor households are able to remain amid rising living costs. They suggests common situations such as the poor households owning their homes prior to and during outsized value growth and either being able to afford living there due to the absence of housing payments or financially benefiting from the value rise and supporting otherwise insufficient wages. Other factors making it easier for low-income households to remain in these metros include subsidized housing and rent control. Poor households who are long-term renters of rent-controlled housing units can more easily afford to live amongst wealthier households who pay higher rent for comparable housing. Another, and likely the most common, scenario is that of poor households being priced out of one portion of a city and forced into a lower-cost area of the city or metro. The retention of low-income households in the coastal metros, even as more and wealthier high-income households move in and are produced from within the metro, completes the left side of the wide income

distribution in these places, making them more unequal than the vast majority of U.S. cities.

The sixth and final element of the high-inequality location model is a high concentration of immigrants. Large immigrant populations serve to exacerbate the bifurcated income groups already creating high inequality, particularly in the coastal metros. Card (2009) points out that immigrants are distributed at the extremes of the education spectrum, and as a group, they have greater income inequality. Because the coastal metros have very large immigrant populations (New York and Los Angeles have the top two, by nominal population and percentage of population), their income inequality measures higher than they otherwise would be.

Chapter III examines two pseudo-coastal metros that also fit the model and could also be categorized as “coastal.” Despite their central locations in the U.S., Chicago and Houston should be considered in the same vein as the prominent coastal metros. These places also have high levels of inequality and share with the coastal cities the aforementioned traits associated with high levels of inequality. Like the true coastal metros, these two are among the largest metros in the country (third and fourth, respectively) and are home to considerable personal wealth created and attracted by successful local economies. Chicago also deals with land constraints due to its location on Lake Michigan,

which drives up property values in the same manner as the coastal cities. The agglomeration effect also takes place in these two metros with Chicago's renowned law industry and Houston's thriving energy industry and each city's disproportionate number of Fortune 500 headquarters. The result is an increasing number of high-income households emerging from or migrating to these two metros, while the poor households remain.

Of the same 51 metropolitan areas comprised of at least one million residents, three of the 10 most unequal metros share a completely different set of commonalities. Birmingham, Memphis, and New Orleans are all Southern metros with relatively weak local economies, low median household incomes, and some of the largest African American populations in the country. While this paper focuses on the coastal metros, Chapter IV investigates this secondary model and the three metros to which it applies.

Methodology

The data in Table 1, which ranks the top 10 large metros by Gini coefficient, provides the foundation of this paper and associated research. With the question "Which U.S. metros have the highest income inequality?" answered, my focus falls on the factors that make these places home to substantial

inequality. Upon initial examination of these particularly unequal metros, I found two distinct groups. The primary group, which this paper focuses on, is made up of the six large, prosperous, coastal (and psudeo-coastal) metros. The secondary group is comprised of the three smaller, poorer, more economically stagnant Southern metros. Miami, the only metro of the ten that does not distinctly fit into one of the two categories, turns out to represent a hybrid of the two models.

Quantitative research of the 51 large metros served to confirm and further define initial indications that these two sets of metros share two distinct sets of circumstances creating high levels of income inequality. By examining population, per capita income, median household income, gross metro product (GMP), poverty rates, ethnicities, and other demographic statistics, it became clear that the combination of factors outlined in the model are a recipe for a particularly unequal income distribution. From the key characteristics common among the coastal metros, I formed the qualitative model described in Chapter II.

The United States Census Bureau serves as the key data sources for this study. Gini coefficient data comes from the 2005-2009 American Community Survey (ACS), and 2010 Decennial Census provides the remaining demographic and income-related data.

While the topic of inequality in the U.S. is loaded and polarizing, it is my effort in this paper to provide an objective approach to the matter. Much of the literature on this topic is either critical or defensive of inequality, but this composition seeks to impartially answer the questions “where?” and “why?” rather than argue for a particular perspective.

Chapter II: A High-Inequality Location Model and Application to the Coastal Metros

A. Urban Areas Have Greater Inequality

The initial key to the model high-inequality location is that the location is urban. At present in the United States, urban areas are home to greater income inequality than rural areas, and this reality is becoming more pronounced. While exceptions do exist, a wealth of empirical evidence displays the trend. At the state level, states with larger populations and greater population density tend to have higher Gini coefficients. Data from the American Community Survey (ACS) in the 2005-2009 period show that the four most populated states (California, Texas, New York, and Florida) are among the eight most unequal states when measured by the Gini (Weinberg, 2011). Figure 1 shows a positive correlation between states' Gini figures and the log of their populations, with an R-square value of .3847. The correlation grows noticeably stronger as population and inequality increase, until the extreme cases of California (by far the most populated) and New York (by far the most unequal) are reached. The correlation between state Gini and population density, shown in Figure 2, exists but is

slightly less compelling. However, eight of the 15 most densely populated states are among the 15 most unequal states, as measured by the Gini.

A similar examination applied to the county-level provides greater evidence for the urban inequality phenomenon and is even more suitable to the study at hand, given its granularity. ACS data from the five-year period ending in 2010 provides Gini, population, and population density data at the county level. Of the 3,143 counties in the country, county-level Gini figures range from .207 to .645 and have a median of .430, compared to the U.S. Gini of .467 (Bee, 2012). Bee (2012) ranks counties by Gini and breaks them into quintiles, finding that 34% of the population lives in the most unequal 20% of counties in the country. The second, third, fourth, and fifth quintiles of counties ranked by household income inequality represent 27%, 17%, 13%, and 9% of the U.S. population, respectively. An inspection of the 25 most populated counties reveals that all but two have Gini coefficients above the national county median. The exceptions, San Bernardino County, CA and Suffolk County, NY are odd cases, as they are geographically large (San Bernardino is the spatially largest county in the nation and encapsulates both urban and very rural areas) and, therefore, sparsely populated. Suffolk County, situated on the eastern two-thirds of Long Island is also unique due to its predominately wealthy population. Glaeser, Resseger, and Tobio (2008) find a statistically significant correlation between population density

among counties with more than one person per every two acre and Gini index, with a correlation coefficient of 0.45.

This compelling evidence of urban areas hosting populations with relatively high income inequality begs for an explanation. While the rationalization of this trend is complicated and involves numerous contributing dynamics, a growing literature points to a few key factors – the rise of top incomes, education, and disproportionate returns to skill. Average educational attainment has historically been higher in urban areas, and the gap between urban and rural educational rates is growing. Wheeler (2004) finds that, among white males, in 1950 17% of urban workers had at least some college education, compared to 12% in rural areas. By 1990, that five-percentage-point gap had grown to fifteen percentage points, and the separation has continued to widen since. Consequently, urban workers generally earn more than their equivalent rural counterparts, and this wage premium is highest among skilled workers. Within that same 1950-1990 timeframe, the wage gap between workers with a high school diploma and workers with a college degree grew by nine percentage points in rural areas, compared to 18 percentage points in urban areas (Wheeler, 2004).

Much research points to skill-biased technological change (SBTC) as a primary contributor to income inequality in general. With technological

improvements, educated, tech-savvy workers benefit disproportionately, and a majority of such workers reside in or near cities. This exacerbates the effects of the educational gap and is compounded by the growing returns to education.

A more general look at income inequality in urban places relative to rural areas fortifies the story that, though urban areas have not always been inequality hot beds, they have and continue to increase in terms of virtually all measures of inequality. In 1950, non-urban areas were actually considerably less equal than urban areas per the 90/10, 90/50, and 50/10 income percentile ratios (Wheeler, 2004). By 1990, that had completely reversed, as urban areas had considerably greater levels of inequality by all three measures. A stark example of this sea change in the latter half of the 20th century is that the 90/10 ratio rose by 21 percentage points in rural areas from 1970-1990, while it rose by 34 percentage points in urban areas. Perhaps Wheeler's greatest contribution to the scope of this paper is his analysis of the 90/10 ratio change in the three largest urban areas in the country. From 1970-1990, the ratio rose by 44 percentage points in New York, 54 percentage points in Los Angeles, and 47 percentage points in Chicago – all more than double the rise in rural areas and well in excess of urban areas in general. In the two decades since, this trend has not only continued; it has accelerated.

Obviously, the four coastal metros are urban areas, but they are among the largest and most dense population centers in the country. Table 2 shows that the four coastal metros are all among the 11 most populated U.S. metros. As population and income inequality of a location are correlated, it would follow that these particular metros are home to especially unequal populations.

B. High-income Households Drive Inequality

A strong concentration of high-income households is the second characteristic of the high-inequality location model. In the United States, the presence of wealth drives measures of inequality more than the presence of poverty. This has not always been the case, as a high level of inequality in a given place was more a function of the presence of poverty prior to the 1990s (Glaeser, Resseger, and Tobio, 2008). The recent paradigm shift comes as a result of expanding incomes at the top at of the income distribution, especially within a handful of metropolitan areas.

With the national income distribution spreading and skewing substantially to the right, there are a larger and growing number of high-income households that bring in a large and growing share of national income. Piketty and Saez (2004) report that the percent of income earned by the top decile of tax units grew

from 32% in the late 1970s to 42% in the early 2000s and that the income share enjoyed by the top one percent of tax units grew from 8% to about 15% in the same timeframe. Saez (2012) also finds that in the period 1993-2000, the top one percent enjoyed real income growth of 58%, while the remaining ninety-nine percent saw real incomes grow by just 6%. The enormous spread of incomes at the top is driving a general increase in inequality measures for the nation as a whole, and the disproportionate presence of high-income households in a handful of metropolitan areas is putting upward pressure on inequality in those places. This highlights that key to understanding urban inequality in the U.S. today are the factors that attract, retain, and further endow these high-income households to and within metropolitan areas, particularly those metros with the highest levels of inequality.

A few key factors play into the increase of income share at the top. Tax breaks for high-income individuals and laissez-faire policy adoptions under the Reagan administration are often pointed to as benefiting higher income brackets. The technology boom of the 1990s bolstered incomes, especially among entrepreneurs and upper management, and financial market deregulation in the 2000s led to the ballooning of incomes in that sector. The contributing factors to income expansion at the top are far more diverse and complicated than these attributing elements and largely beyond the scope of this study. However, the

forces that draw high-income households to certain metropolitan areas, adding to their inequality, are of great importance to this study and are detailed later in this chapter.

The highly unequal coastal and coastal-esque metropolitan areas this study focuses on are home to a greater concentration of high-income households than other metros in the U.S. and continue to extend their lead in this department. This results in higher than average per-capita incomes in these places. Gordon and Dew-Becker (2008) use Bureau of Economic Analysis (BEA) data to assign ratios of metropolitan area per-capita income to the U.S. average (U.S. average indexed to 100). When the data were first observed in 1969, the poorest metro area with more than one million residents was Raleigh-Durham with a per capita income index of 75 (75% of the national average), while New York topped the chart at 127 (127% of the national average). The range remained similar through 2005, with New York's index of 130 keeping it at the top, and Salt Lake City's index of 80 rounding out the bottom. However, a distinct pattern emerges upon assessing regional trends. Historically high-income Midwestern metros and historically low-income Southern metros have been converging on the national average, while the historically wealthy coastal metros widen their gap between themselves and the rest. Raleigh-Durham's index jumped from 75 to 90, and Nashville's rose from 77 to 92, while Detroit's index fell from 114 to 100. On the other hand,

New York's index increased by the aforementioned three percentage points, and, more tellingly, Boston's index sprung from 108 to 122 percent. On the whole, the average resident of the coastal metros has seen relatively high incomes rise at a rate faster than that of the average U.S. worker. This includes Los Angeles and San Francisco in addition to New York and Boston.

Table 3 ranks large (more than one million residents) metropolitan areas by median household income. The four coastal metros rank among the top 16 metros, with San Francisco and Boston in ranked second and third, respectively. Because income inequality in a location is largely a function of the presence of high-income households, the coastal metros share this second key ingredient typical of high-inequality U.S. metros.

C. Demand For High-Inequality Locations

This model of a high-inequality location hinges on the concentration of high-income households within the area. The four prosperous coastal metros are home to a disproportionate and growing number of wealthy individuals, but why? Initially, there is simply a greater number of high-income individuals, both in the United States and across the globe, than there were in past decades. Gordon and Dew-Becker (2008) and a host of other researchers conclude that the vast

development and modernization of the national and global economies has brought the most significant benefit to the top. Piketty and Saez (2004) support this with their work on top income share. Additionally, the transportation and communication revolutions of the 20th century have provided people, particularly the wealthy, with the ability to move across state, country, and globe with relative ease and with the ability to remain in contact with those they leave behind. With the mobility to locate where they please, high-income households are driven to the model location (specifically, to the coastal metros) by two factors: 1) the location of job sectors and associated agglomeration and 2) amenities.

i. Industrial Location and Agglomeration

Industrial Location

The geographic distribution of industry and associated agglomeration effects are the primary factors drawing and retaining high-income residents in the model metro and to the coastal metros themselves. New York, Boston, Los Angeles, and San Francisco all benefit from hosting vital portions of lucrative professional industries. New York is the financial capital of not only the country, but of the world. Boston is the global hub for higher education and scientific research and is home to considerable finance and technology sectors. Los

Angeles is the heart of the entertainment world. San Francisco lies adjacent to Silicon Valley, the world's technology nucleus, and boasts a substantial financial industry itself. With few exceptions, if an individual wishes to reach the heights of one of these industries, he or she must reside and work in the aforementioned corresponding metropolitan area. As a result, high-income individuals who work in these sectors flock to these places in search of the most gainful employment available to them.

Strikingly, each of the coastal metros, while home to a key part of a prominent industry in the global economy, is the hub of a different industry. No single large industry drives all of these metros' economies. Moreover, each coastal metro is diversified with a large number of firms in the driving sector, as well as a wealth of ancillary industries, supporting the local economy. Table 4 ranks U.S. metropolitan areas by their number of Fortune 500 headquarters. Each of the four coastal metros ranks among the top 13 metros, and each has at least 10 such headquarters (Fortune, 2012). The presence of these firms alone attracts and retains a large number of high- and very high-income households to these metros.

The presence of each metro's foremost industry is seen in the makeup of these company headquarters. Sixteen of New York's 67 Fortune 500 headquarters are in the financial services sector. Of Boston's 10 headquarters, three are in the scientific research field while two apiece are in the technology and

financial services sectors. Four of San Francisco's headquarters are financial services firms, to go with its two technology firms, but all 14 of adjacent San Jose's Fortune 500 headquarters are tech firms. Los Angeles' makeup of 20 headquarters is more diverse, but three of the firms are entertainment-related. It is not merely the presence of large corporations that attracts high-income households to the coastal metros. Some of the most lucrative and highest-paying industries – finance, tech, scientific research, and entertainment – make up the lion's share of these large firms headquartered in the coastal metros. Because of this, many of the nation's highest-paying jobs, and therefore the highest-income households, are located in the coastal metros (Fortune, 2012).

These metros are fortunate to be the site of these industries due to a variety of factors. New York and Boston largely have history and historical amenities to thank, as they were two of the first large port cities in the country that would become the world's largest economy. They were established as national power and economic centers at a time when maritime commerce was essential to the national economy. With key industries rooted in these places, they have remained vital economic centers, with New York growing into the financial capital and Boston the educational capital of the world. The Californian metros' economies benefit more from the vision and execution of certain individuals who built their primary industries more so than general history and national development.

Chinitz (1961) suggests that local economies often benefit from regional differences in the availability of capital. While physical production inputs are not as prevalent in the areas surrounding these metros as they have been in some metros throughout time and the globe, human capital has been more abundant in these cities than nearly all other places in the United States.

Human Capital Dispersion

The concentration of high-paying, skilled-based industries in the coastal metros attracts and retains a disproportionately high level of human capital. The dispersion of human capital in America is increasing (Moretti, 2003). Wheeler & La Jeunesse (2006) confirm that the geographic segregation of college graduates grew from 1980-2000 and that college graduates became increasingly concentrated in urban areas, leading to disproportional gains in productivity in those areas in a non-uniform fashion. Not only have urban areas been benefiting from the most substantial gains in human capital, but the largest gains have come in cities which were already home to the highest educational attainment rates. Berry & Glaeser (2005) find a 52% correlation between metros' initial share of people with college degrees in 1990 and the growth in that share 1990-2000. Their explanation entails that skilled individuals innovate in ways that employ more skilled individuals, resulting in agglomeration and bringing more skilled individuals to cities already home to the highest proportions of skilled individuals.

They also find that the relationship between education and income is strengthening. In 1970, the correlation between metros' share of adults with college degrees and log of income was 21%. By 2000, it had risen to 63%. As educated cities become more educated at a greater than average rate, incomes among educated people there are also rising disproportionately. Wheeler and La Jeunesse also find that rising educational segregation is associated with rising income inequality in a place.

In their study of location preferences of "power couples," Costa and Kahn (2000) reveal an increase in the number of marriages in which both husband and wife hold bachelor's degrees. Increasingly, these couples are locating in urban areas, while other couples' location preferences have largely remained the same. As the average marrying age of educated individuals rises, men and women are more frequently starting their careers in cities before marrying and live in metro areas after marrying to give both individuals the best chance at a career commensurate with their education. Power couples may also work as a team to maximize household income by seeking business contacts for themselves and their spouses, which is more easily done in a large metro with a strong economy. Even more today, smaller metros and rural areas face a "brain drain" as highly-educated individuals and couples alike flock to urban areas in search of amenities and job prospects.

Whether through a “power couple” marriage or as individuals, highly-educated people have been moving increasingly to urban areas with high-skill job prospects. The coastal metros attract a disproportionately large number of educated households, exacerbating the existing bifurcation of human capital levels in these places.

Agglomeration

Shedding light on high concentrations of human capital in locations that are home to large shares of top industries is a primary focus of agglomeration economics. While the origins of coastal metro’s local economies involve a variety of historical and geographical factors, the growth and thriving nature of these local economies is largely summed in this broad phenomenon. As it applies to urban economics, Glaeser (2010) describes agglomeration as the benefits associated with firms and people located near one another in urban areas and industrial clusters. In these clusters, highly-educated individuals are employed in thriving industries and firms. More highly-educated individuals are attracted by these industries and firms, in turn making them more productive and successful. This snowball effect builds on itself, growing larger and more prominent relative to non-agglomeration economies. Silicon Valley, adjacent to San Francisco, provides an excellent example of this phenomenon. Three separate industries – chip manufacturing, technological development, and financial services – all

benefit from their proximity to one another, as firms from each particular industry benefit from their proximity to other firms within the industry.

Glaeser (2010) lists three primary signs urban economists tend to point toward as being indicative of a successful agglomeration economy: high wages, high prices, and population growth. If people were indifferent across space, creating a spatial equilibrium, higher wages would be countered by higher prices or a lack of amenities. But in reality, educated people flock to those places with high wages. Outsized local wages reflect greater productivity or an abundance of production inputs (Pugo, 2009). Additionally, Glaeser finds a strong positive relationship between population density and wages and that the wage premium for skilled workers is rising. Also of substantial importance is that wage level in a place's dominant industry influences the wage level in other industries (Chinitz, 1961). This impact, applied to the four coastal metros, is especially significant, since the dominant industry in each metro is high-paying. The effect stemming from wages in New York's financial industry must be particularly significant, as compensation in that local industry has become so robust that it has drawn considerable criticism.

As the supply section of this chapter later details, prices in the four metros at hand are among the highest in the country. Glaeser (2007) states, "high prices in a region can reflect economic vitality that pushes up wages, consumer

amenities that increase willingness to pay to live in that area, or a rigid housing supply.” Because all of these factors are present in New York, Boston, Los Angeles, and San Francisco prices in these places are among the highest in the nation.

Recent population growth in the coastal cities has not been extraordinary on a percentage basis. However, the sheer size of these places implies tremendous population growth during the past two centuries. In fact, Los Angeles and the Bay Area as a whole grew from ground zero to the second- and sixth-largest metropolitan areas in the country less than 150 years.

Large, thriving agglomeration economies, especially the four coastal metros, also benefit from outsized productivity. Industries in such places are particularly productive thanks to low transportation costs, labor market pooling, input sharing, and knowledge spillovers (Glaeser, 2007). While the classic example of agglomeration economies benefiting from low transportation costs applies less now than in the past, due to technological advances, it remains relevant. A larger and more educated labor pool grants workers a greater likelihood of being able to change jobs without moving, keeping high-earning, well-educated individuals in a given metropolitan area. Additionally, businesses are more likely to spawn and thrive where talent is most abundant. Innovation proves to be more encouraged in such urban areas as well, thanks to knowledge

spillovers. In Glaeser's work, Marshall and Jacobs assert that individuals' knowledge is a function of the knowledge they are surrounded by, suggesting that high levels of knowledge are more likely to be attained in large, industrious metros (Glaeser, 2007). Kerr finds that patents are increasingly concentrated in certain urban locations (Glaeser, 2007), indicating more innovation in those locations.

Entrepreneurship is also more prevalent in such metropolitan areas. According to Rosenthal and Strange (2003), inter-industry competition in an area encourages firm births and employment increases. Intra-industry competition does as well, though to a lesser extent. Saxnian's (1994) study of the Silicon Valley technology industry revealed that a culture and system encouraging of entrepreneurship and innovation led to unprecedented firm creation and great employment expansion, as well as individual wealth increases and collective economic growth.

Agglomeration Case Study: Star Scientists

An industry-specific study of agglomeration conducted by Zucker and Darby (2007) fleshes out the type of phenomenon occurring in the wealthy coastal metros. They follow the careers of 5401 scientists listed as most highly cited by their peers, arguably a group of the top scientists in the world. Thanks in part to

America's effective system of research universities, 62% of this group resides and works in the U.S. In addition to the indirect economic impacts their innovations and research provide, one-third of these star scientists commercialize their work, frequently starting successful high-tech and other innovation-driven firms.

Not surprisingly, star scientists work in proximity to one another, often due to the presence of a premier university or universities. Boston, generally considered the education and research hub of the world, benefits the most. The presence of Harvard University and Massachusetts Institute of Technology (MIT) certainly started the trend and continues to draw scientists today, but the historical agglomeration effect has continued to grow, with more and more startups and research laboratories. Of course, the employees of these firms are well compensated. San Francisco also benefits from the same effects, though to a lesser extent, to be certain. Nearby UC-Berkeley and Stanford produce a similar effect. Perhaps intuitively, Zucker and Darby find that scientists are more likely to remain in the agglomeration economy they started their careers in for the duration of their career. This deepens the roots of agglomeration and amplifies the effects.

Gordon and Dew-Becker (2008) assert, related to this research, that investment bankers, lawyers, and other high-paying professionals generally act in a similar fashion to these star scientists. Many top financial services workers

relocate to New York and San Francisco to be surrounded by other top firms and industry employees. Silicon Valley continually attracts the brightest tech minds in the world who seek out the top tech firms and workers. While perhaps representative of a smaller number of people, the vast majority of top entertainers live in Los Angeles, and high-profile entertainers from across the country and globe move there to be in proximity to the industry and its key players.

ii. Amenities

While the geographic location of industries and employment sectors and the associated agglomeration are the key drivers drawing and retaining high-income households to the model metro, amenities play a significant role as well. The spatial location of various amenities is a key factor explaining why cities are established where they are, why and how much they grow or do not grow, and why industries exist and thrive there or not. Places with substantial amenities, quantitatively and qualitatively, are simply demanded by a greater number of households, all else equal. In this model, residing in a metropolitan area with considerable amenities can be considered a luxury good. Urban living can be categorized as such because it is not an essential need, and more of it can be and is demanded by individuals with greater purchasing power. All else equal, the

amount and quality of amenities in a place would be correlated with demand for dwelling in that place, with the most-amenitized places having the highest demand. Because the supply in the model metro is relatively inelastic, prices are higher. This effect is exacerbated by the supply constraints in the coastal metros, placing even more upward pressure on the prices associated with living there. The individuals at the extreme high end of the income distribution frequently tend to gather in the most expensive places with the highest levels of amenities.

Brueckner, Thisse, and Zenou (1999) masterfully analyze the varieties and characteristics of amenities, particularly those associated with urban areas. They break urban amenities into three categories: natural, historical, and modern, acknowledging that the first two are largely exogenous, while modern amenities are largely endogenous.

Natural amenities are those that existed prior to and outside of human interaction with a given locale. They are provided by the area's geographical features such as mountains, hills, coastline, bodies of water, climate, and so on. This variety of amenity is what prompts the founding of a city in a particular place and attracts residents as well as foundational industry.

Historical amenities, which largely result from public investment and other governmental decisions, include parks, monuments, buildings, and

infrastructure. They can be both aesthetically pleasing as well as functionally convenient. Because such amenities depreciate over time, they require ongoing public investment for upkeep and for the preservation of tourism appeal. These forms of exogenous amenities attract people to places that have them, given that demand for the amenities is strong enough.

Modern amenities are foundationally endogenous to the migration of high-income individuals to urban areas, as they largely depend on current economic conditions of a given place and income levels of area residents. They include museums, restaurants, bars, theaters, recreational facilities, and the like and often arise through the renovation of central business districts (CBDs) and historical areas. Such amenities enhance the effect of historical amenities and even some natural amenities. Though initially a consequence of the presence of high-income households, they become attractive to wealthy individuals outside of a given metro area, compounding the wealth-attracting effect. In fact, area income itself functions as a modern amenity, as wealthy neighborhoods with low crime rates and quality schools draw additional households who can afford living there.

New York, Boston, Los Angeles, and San Francisco can boast an abundance of each variety of amenity, to a degree that perhaps no other American metropolitan area can. In each city's case, and in the case of the model metro, there has been a compounding effect of existing amenities attracting the

production of more amenities. Applying the three-category amenity breakdown to these metros reveals that they are attractive places, indeed.

Natural amenities abound in these four locations. Each city was established on the coast in order to take advantage of such natural conveniences. Such positioning was seen as tactically advantages for defense, especially in the cases of New York, Boston, and San Francisco, which are situated on near-perfectly protected bays. Coastal access also proved advantageous for trade and transportation, helping build the foundations of strong local economies. Today, the Port of Los Angeles is the busiest by container traffic in North America, providing a substantial trade industry. The Port of New York and New Jersey ranks second, and the Port of Oakland (within the San Francisco MSA) ranks sixth (American Association of Port Authorities, 2012). The modernization of the global economy has made these global trade and transportation hubs home to some of the world's busiest airports as well. The airports of three of the four coastal metros as well as Houston and Chicago all rank among the 30 busiest airports in the world by passenger traffic (Airports Council International, 2012).

Mountainous topography surrounding Los Angeles and San Francisco provide recreational opportunities such as hiking, biking, and skiing. They also add to the pleasant aesthetics of the area and attract wealthy households to establish residence, evidenced by Los Angeles' Hollywood and Beverly Hills

neighborhoods. Climate may do little in attracting people to New York and Boston, save a few who enjoy the variety of a full four seasons, but the absence of sub-freezing temperatures in San Francisco certainly appeals. Los Angeles' claim to the world's best weather is difficult to debate and adds to its attraction, given the area's consistent warmth and constant sunshine.

Historical amenities abound particularly in New York and Boston. As two of the oldest cities in the U.S., they provide uniquely rich history and architecture relative to most places in the country. Having been designed in an earlier era than most American cities, they, as well as San Francisco, are relatively pedestrian-friendly and have an abundance of park space. A strong argument could be made that these three metros are home to some of the most aesthetically pleasing urban areas in the country. The two Northeastern cities also have access to the nation's best local and regional mass transit systems.

A remarkable amount of modern amenities also exists in these coastal metros, entertaining its residents and helping to attract more. All are known to be homes to the most and best cultural offerings in the country. With an extensive list of museums, restaurants, theaters, and performances, New York and Los Angeles are as rich in such amenities as perhaps any city in the world. These four can also tout renowned nightlife scenes, adding to their appeal, especially to young adults.

Forbes' annual ranking of "America's Coolest Cities" provides an adept effort to quantify the appeal of modern amenities in metropolitan areas (Brennan, 2012). The study ranks the top 20 of the 65 largest metros in the country based on entertainment and recreation opportunities, restaurants and bars per capita, an ethnic diversity index, median age, net migration, and local unemployment rate. New York, Boston, Los Angeles, and San Francisco can all be found among the top 11 metros in the overall ranking. Further investigation reveals that these four ranked in the top eight in Forbes' arts and culture index and among the top five in their recreation index. While "cool" may be subjective, the point is clear: these metros are unique in their wealth of modern amenities.

Metropolitan areas with one substantial variety of amenity are able to attract and retain residents. But metros with significant concentrations of a vast assortment of amenities are in the highest demand. With a large portion of the national population priced out of the best access to these amenities, high-income households can and do pay the required premiums to enjoy them. The result is a large and growing concentration of wealth in New York, Boston, Los Angeles, and San Francisco.

D. Supply of High-Inequality Locations

Perhaps the most impacting and obvious geographic trait shared by the coastal metros and playing a role in income inequality is their very locales on the coasts. While the other factors in the unequal coastal city model are primarily demand-side characteristics, this commonality across the coastal metros impacts supply. Land constraints limit the number of housing units available in these places and serve as a barrier to additional housing. The “supply” of land-constrained metros themselves is, therefore, limited.

More importantly, the urban cores of these cities are in close proximity to the bodies of water, limiting housing supply in the vicinity of those urban cores. While coastal metropolitan areas could theoretically grow a great deal away from the present bodies of water, there is an intuitive threshold distance from the urban core, beyond which demand begins to drop off. This is generally linked to preferences for commute times.

If the demand for living in an area is significant enough to exceed the supply, the costs associated with living there rises. In the coastal metros, where demand is high and supply is relatively limited, living costs rise, especially structurally high housing prices. This relatively inelastic supply of land, in combination with the skewness of U.S. incomes at the top, creates areas where

housing is affordable only to high-income households. This is in contrast to metros that are far less supply-constrained, such as Phoenix and Dallas, and are able to add to their housing stock to meet demand, limiting price growth. As a result, certain areas of the country that are in high demand are more accessible to high-income households than to the rest of the population. To be certain, expensive housing does not, in and of itself, draw additional wealthy residents. Rather, the attraction of the location must be great enough to entice a premium housing payment. This is the case in the coastal metros. The attributes present in New York, Boston, Los Angeles, and San Francisco make them among the most desirable places to live, but this demand in conjunction with limited supply somewhat restricts access to these metros to higher-income individuals.

In recent decades, there has been a widening gap in real house price appreciation rates between the wealthy coastal metros and the rest. Gyourko, Mayer, and Siani (2006) find that from 1950-2000, top-ranked San Francisco had annual real home value appreciation of 3.5 percent, compared to the national average of 1.5 percent. In fact, the gap between the San Francisco metro's average home value and the U.S. average doubled in the period 1970-2000. The widening of this gap has accelerated in the last few decades as the supply-constrained metros have "filled up" somewhat. Gyourko et al also find there to be significant skewness at the upper end of the metro home value growth

distribution. Top-ranked San Francisco saw cumulative real growth of 584 percent during the latter half of the 20th century, while seventh-ranked Boston has cumulative growth of 212 percent during the same timeframe. These percentages far exceed the average of the 50 largest metropolitan areas: 132 percent. Only a small, wealthy portion of the country's population can afford to live in middle- and high-priced housing within the moneyed coastal metros. Given the desirable attributes of these places, high-income households reside in them with increasing tendency, skewing the income distributions toward the high end.

Given that high-income households primarily drive inequality measures, limited supply in the model location, and particularly in the coastal metros, generally places income requirements on consuming the coastal metro location "good," these metros are even more conducive to greater income inequality. Approaching city living as a "good," supply that is limited relative to demand results in rising prices. In this context, rising prices translate into the high cost of living characteristic of all the coastal metros.

E. Low-Income Households

Despite the fact that high inequality in U.S. metropolitan areas is now primarily a function of the presence of high-incomes, the presence of low-income

residents is required in addition to that of high-income residents to have a wide income distribution. Even as wealthy households flock to the prominent coastal metros and their doing so places the primary upward pressure on local inequality metrics, low-income households remain within these areas. David Cutler (2007) dexterously sums this phenomenon:

There's a world of prosperous places, mostly on the coasts, that are driven primarily by the production of new ideas...Then there are vast areas of America where people are lower-middle income. They're driving everywhere; they're buying cheap houses and things at Wal-Mart; they're living a relatively decent life...And then there's the third group – the truly disadvantaged in America's inner cities...

Glaeser et al (2008) continue this thought from an educational perspective, pointing out that middle class urban dwellers tend to escape urban environments, often motivated by better schooling prospects for children. Left behind in the urban areas are the high-income families, who tend to send their children to private schools, and low-income households, which are unable to move out and are left to attend generally subpar inner-city schools.

But it would seem that as wealthy households move into urban areas, especially the four land-constrained coastal metros, poor households would be forced out of the metro or flee to more affordable confines. In actuality, these families and individuals often are bound to these urban areas, either by choice or

necessity, and in the common event that they are priced out of their homes, they tend to relocate within the same metropolitan area.

A relative lack of geographic mobility often binds low-income households to a particular place. Individuals with relatively little education and limited skills have fewer employment options, making them far less likely to move from a job in one city to a job in another city and highly unlikely to vacate a held position to seek career prospects in another place. Moreover, many unskilled workers are employed in various service industries, which offer far more employment opportunities in urban areas, especially large cities. Additionally, low-income households, which frequently are forced to operate paycheck to paycheck, have difficulty meeting the sheer costs associated with moving a significant distance.

Public transportation plays a significant role in the location preferences of urban poor. In fact, Glaeser, Kahn, and Rappaport (2008) allege that it is the most important factor attracting and retaining low-income households in many large cities. The high cost of automobile transportation prevents impoverished families from purchasing cars, and the lack of an automobile also reduces their ability to move outside the metro. Where it is an option, public transportation is a far cheaper, though often more time-intensive, means of travel within a metro. Economic theory suggests that lower-income individuals value marginal time less than higher-income individuals, commensurate with opportunity cost. All else

equal, lower-income individuals are more inclined to utilize public transit. Glaeser et al (2008) establish a city model in which adding a transit system increases the likelihood of poor households settling there. Perhaps more telling is that their model, which accounts for value placed on time relative to hourly wages, finds that an individual earning ten dollars per hour would choose the less expensive, more time-consuming mass transit for commuting needs, while an individual earning twenty dollars per hour would choose to drive.

This line of thinking does raise one common objection: transit is often structured to serve the poor communities that predate it. While this is true in some cases, it has not been the case recently. Glaeser et al (2008) report that the New York subway system has not added new stops in the outer boroughs, where proportionately more low-income households are located, since 1942. They also point out that, of sixteen U.S. cities that have built or expanded rail systems in the past thirty years, all were primarily catered to connecting wealthier suburban areas to urban cores.

Perhaps the most telling discovery of the aforementioned report is found in a comparison of the income-CBD distance relationship in older metros with extensive rail systems and that of newer metros without extensive rail systems. In older cities, those of large size prior to 1900, the wealthiest residents in the metro live in the closest proximity to the central business district, with the metro's

poorest residents living a bit further from the CBD, but closer than most. From the poorest locations moving away from the urban core, median incomes steadily rise. For example, in New York, Philadelphia, and Chicago, the wealthiest residents of each metro live within one mile of the urban core. Median incomes drop between two and six miles from the core and steadily rise after the six-mile trough. In newer cities with limited or no rail, the poorest residents in the metro live nearest to the urban core, and the relationship between median income and distance to CBD is largely monotonic increasing until reaching the outskirts of the metro. While part of the explanation here is that the older cities are monocentric and the newer cities are polycentric, the role public transportation plays is significant. New York and Boston fall easily into the first category, with their well-defined urban cores and two of the best subway systems in the country. While San Francisco's transit system is not as useful as those in the east coast metros, it does fit the urban core wealth model. Los Angeles lies in a different category, with its inadequate rail systems, but it is certainly a unique case as perhaps the least monocentric large metro in the country.

Of course, gentrifying neighborhoods within these metros become pricier as wealthy households move in and eventually force many poor households out. Even as low-income households are forced from some neighborhoods, they tend

to relocate within the same metro or even within the same city limits in order to keep the same job and utilize urban benefits, such as public transportation.

As more wealthy residents enter the pricy and gentrifying neighborhoods of certain cities, pushing low-income families elsewhere in the metro, inter-metropolitan residential income segregation increases. Low-income families and individuals increasingly reside in some areas of the metro, while wealthy households locate in others (Watson, 2009). In fact, rising levels of income segregation is directly associated with increased income inequality, and the economic boom of the 1990s exacerbated this trend (Cytron, 2011). Watson finds that one standard deviation increase in log of income inequality raises segregation measures by four tenths of a standard deviation. She also affirms that income segregation, which increased in the period 1970-2000, would have actually decreased in that timeframe had inequality remained constant. Massey (2009) brings more evidence to light, finding an increase in income segregation in the same time period at the census tract level across the U.S. In 1970 the average impoverished family lived in a census tract that was 14% impoverished. By 1990 that statistic had grown to 28%. The same pattern took place within wealthy neighborhoods. The average affluent family was living in a 31% affluent neighborhood in 1970, and that number grew to 36% by 1990. This trend of income segregation has created concentrated wealth into certain neighborhoods in

metros across the country, while further concentrating low-income households in other neighborhoods. As a result, there is an increasing difference between the quality and price of the housing good consumed by residents in poor neighborhoods, and that consumed by residents in wealthy neighborhoods.

Still, a significant minority of the poor households in gentrifying neighborhoods remains, despite price increases. Freeman (2006) finds that poor urban families in gentrifying neighborhoods move out at a rate no greater than movements of average families, as they strive to stay as long as they can afford it to reap the benefits of cleaner streets, lower crime rates, and better schools. A less quantifiable emotional attachment to the neighborhood also keeps them in place longer than might be economically rational. Ortalo-Magne and Rady (2006) point out that a small, though not insignificant, number of such households owned their home prior to large price increases and are able to stay, even though wages would not typically support living in a particular neighborhood. More commonly, low-income households are able to stay in their neighborhoods due to the presence of subsidized housing. Another factor that allows some families to stay put is rent control legislation. Particularly prominent in New York, rent-controlled housing units can keep families' largest budget item within their ability to pay, even as high-income households move into the neighborhood. Additionally, substantial older housing, particularly apartment buildings, are

located in urban areas, further explaining the presence of the impoverished in an increasingly wealthy city (Brueckner and Rosenthal, 2006).

New York, Boston, Los Angeles, and San Francisco are prime examples of where in the U.S. this phenomenon is taking place. Their vast sizes allow for a diversity of neighborhoods, including refuges for low-income households to take up residence when displaced by rising costs. Their wealth and girth demand considerably sized service industry and other low-skill jobs. Their public transportation systems, particularly those of New York and Boston, provide quality inexpensive alternatives to driving. These factors allow the four coastal metros some of the greatest income disparity among their respective residents in the U.S. today.

F. Immigration

Increased immigration has long been pointed to as a contributing factor in the rise of American Inequality. In 1960, the annual immigration rate was at 0.13% of total U.S. population. By 2002, it had more than tripled to 0.41% (Gordon and Dew-Becker, 2008). In 1970, immigrants represented 5.3% of the American labor force, while in 2005, they comprised 14.7% (Ottaviano and Peri, 2006).

Indeed, this rise in immigration to the U.S. has contributed to increased inequality at the national level, but its national impact has been more limited than previously believed. Card (2009) finds that immigration only accounts for five percent of the increase in U.S. wage inequality during the period 1980-2000. Though surprising, this becomes more intuitive upon further investigation. Immigration has had a minimal impact on the wage distribution of native workers. Orrenius and Zavodny (2006) conclude that for every ten percent increase in share of workers in a given industry who are immigrants, native workers in the industry experience a wage loss of one tenth of a percentage point. (Ottaviano and Peri, 2006) assert that this is largely due to that fact that low-skilled immigrants tend toward industries that employ the highest share of immigrant workers, and by doing so, enter into employment competition primarily with other immigrants.

On the other hand, immigrants have greater income inequality as a group than natives, implying that their entrance into the workforce, in and of itself, boosts the overall level of inequality. Card (2009) points out that immigrants are grouped at the extremes of the education spectrum. Many high-skilled, affluent internationals come to the U.S. for any combination of the reasons detailed in the demand section of this chapter. Simultaneously, many less-educated poor households migrate to the U.S. as well. Historically, relatively few middle-income families move to America from abroad. Card brings to light that the

variance in wages among immigrant men is five one hundredths higher than that among native men.

Immigrants do not comprise a large enough portion of the American labor force to move the overall national inequality needle a huge amount. However, certain metro areas in the U.S. have a far greater proportion of immigrants than the nation as a whole. Many immigrants and both ends on the income spectrum end up in large urban areas rather than rural areas. Not surprisingly, this is a driving factor for inequality in the most unequal American metros.

Card narrows his study to examine immigrant presence and earnings in large U.S. cities. He finds that the two largest metros – New York and Los Angeles – have the two local workforces with the highest proportion of immigrants. New York and Los Angeles each have immigrant shares of labor nearly fifty percent greater than that of any other metro, at 44% and 48%, respectively.

Boston and San Francisco have higher than average shares of immigrants as well, though they are considerably smaller than those of New York and Los Angeles. While the national inequality aggregate may not be drastically impacted by a 15% immigrant share of the workforce, inequality levels in these four cities are certainly influenced by immigrant shares roughly three times the national

average. The demand stories for immigrants coming to these places are very similar to the general draws explored in Sections C and E of this chapter. High-income households from outside the United States find these cities appealing because of their amenities and specific career opportunities. Low-income households from abroad tend to make their way to the U.S., drawn by the general advantages provided by the nation as a whole, and choose these cities for similar reasons domestic low-income families reside there.

Low-income immigrants are often able to live in the expensive coastal metros because of a generally lower threshold for living standards. Though little data is available to support this, the assertion is intuitive and fully plausible. Most low-income immigrants move to these places from poorer quality housing in their native countries than what they move into within the U.S. Because the neighborhoods and housing units many live in are inferior and less expensive than the average, the housing good consumed by poor immigrants is far different from that consumed by high-income residents in the coastal metros. Moreover, many immigrant households are accustomed to having more persons per household and tend to be multigenerational, making housing units more affordable to them.

These four cities have their own ethnic agglomeration effects, often initiated by the city's relative proximity to respective immigrant homelands. On the low-income end of the spectrum, immigrants often cluster in a city nearest to

their native country. This is particularly evident in Los Angeles, which is home to a large Mexican immigrant population. To lesser extents, San Francisco initially attracted numerous Asian immigrants, while migrating Europeans took up residence in New York and Boston. Though transportation improvements have made the distance traveled less of a factor in many cases, the attraction of fellow countrymen and families continue to bring a similar mix of immigrants to these cities today, driving inequality levels upward.

Chapter III: The Pseudo-Coastal Metros: Chicago & Houston

Two inland metropolises among the ten most unequal large metros are comparable to the four coastal metros in many ways and should be considered in the same light. Chicago and Houston are huge by American standards, contain prosperous local economies, and draw a disproportionate number of high-income households while retaining their immense low-income populations. As the third- and fourth-largest cities in the country, their income distributions are likely to be broad, but like the four coastal metros, these two places are highly unequal primarily because of their appeal to high-income households.

The obvious differentiator setting Chicago and Houston apart from the coastal metros is location. However, Chicago's position on Lake Michigan creates significant land constraints, similar to those of New York, Boston, Los Angeles, and San Francisco. A key result, for the purpose of this study, is structurally high housing prices. As in the other metros demand for housing exceeds and grows faster than supply, and land constraints provide a barrier to new construction and limit the market supply, placing additional upward pressure on prices. This inelastic supply of land, in combination with rising number of

high-income households across the country, creates areas where a considerable amount of housing is only available to the wealthy. Houston, on the other hand, experiences less of this effect. While its central business district is 20 miles from Galveston Bay and 40 miles from the Gulf of Mexico, far further than the coastal cities are from bodies of water, the metro is impacted by this proximity. Its housing supply is more elastic thanks to room to grow in nearly all directions and minimal red tape preventing development. However, residential areas within a convenient distance to the urban core remain limited due to density and sprawl.

Chicago and Houston also draw high-income households thanks to geographic industrial organization and associated agglomeration effects. This is especially true for Houston's economy, which benefits from some of the most business-friendly legislation in the country. Local and state policy encourages economic growth, attracting entrepreneurs and established businesses alike. Likewise, Chicago has put forth much effort in recent years to attract major corporate headquarters. These two metros are home to the second- and third-most Fortune 500 company headquarters among U.S. metros (Chicago: 29, Houston: 25) (Fortune, 2012). Houston is also perhaps the energy capital of the western hemisphere, if not the world, and serves as a major international hub connecting the States to Latin America. The combination of these factors has high-income households flocking to the metro.

Chicago's historical status as a trade and transportation hub attracted a variety of industries, and the city has been able to stay more than relevant with its large retail and telecommunications industries. Also, the Chicago Mercantile Exchanges draws a significant, though not overwhelming, number of financial professionals. Perhaps most importantly, Chicago's prominent legal sector brings the some of the best and brightest law professionals to the area, boosting an already existing wealth of high-income households.

Like the coastal cities, Chicago and Houston have a wealth of amenities, allowing them to draw from the same base of mobile, high-income households seeking to reap the benefits of urban areas. The natural amenities, as described by Brueckner, Thisse, and Zenou (1999), are largely limited to water features. The economies of both have some of their roots in their moderately sized ports. Their relative proximities to Lake Michigan and the Gulf of Mexico provide extensive marine recreational activities. Chicago boasts historical and modern amenities on par with those of the coastal metros – a useful public transportation system, vast expanses of parkland, and a vast array of museums, theatres, and restaurants. Houston has historically lacked cultural offerings, but the wave of income wealth over recent decades has planners and prospectors making up for lost time in this department. Both cities ranked among the top fifteen in the aforementioned Forbes effort to quantify the amenity appeal of U.S. metros.

Inequality measures are high in these two places, as low-income households are also attracted to and remain within them. In Chicago, a history of immigration and low-skill employment is perpetuated today, while in Houston, a growing flow of new immigrants primarily drives the expanding poor segment of the population. In fact, these two cities have the third and fourth largest proportions of immigrants of all large American metros in the country (Card, 2009). Like the east coast cities, Chicago became the home of many European immigrants in the late nineteenth and early twentieth centuries. Agglomeration followed and continues today, as families and fellow nationals of the descendants of the first wave of immigrants have frequently moved there. Its number of manufacturing jobs and quality public transportation system bring in and retain foreign and native low-income individuals as well.

Houston does attract and retain poor households in ways typical of most big cities, but the growing base of low-income individuals comes disproportionately from Latin American immigration. As was discussed in Chapter II, a greater proportion of immigrants in an American metro directly implies greater income inequality, all else equal, because immigrants as a group have a higher level of income disparity (Card, 2009). Houston's poor population also grows and is retained by lower costs, a characteristic unique to Houston among Chicago and the coastal metros.

Although it is beyond the scope of this paper, Houston is strikingly different from the other coastal metros in terms of tax structure and public policy in general. While New York, Boston, Los Angeles, San Francisco, and Chicago all have relatively high state and local taxes and an abundance of public services, Houston bucks this trend. Nonetheless, Houston ranks among the others in terms of inequality, and the factors allowing this despite their policy differences, are worth further investigation beyond this paper.

Despite being mere “pseudo-coastal” metros, Chicago and Houston are home to high inequality for the same foundational reasons as the four coastal metros. They house and attract a multitude of high-income households with their vast arrays of amenities and high-wage job prospects, even as poor families remain.

Chapter IV: A Different High-Inequality Model

While the unequal coastal and coastal-esque metros fit nicely into one category, three high-inequality inland metros share a set of commonalities opposite those of the coastal metros. Further examination of the ten high-inequality metros shown in Table 1 reveals a group of relatively poor, small, Southern metros with limited economic prowess – Birmingham, Memphis, and New Orleans. As previously mentioned, Glaeser et al (2008) find that, prior to the 1990s, inequality in American metros was more closely linked to the presence of poverty than wealth and that this has generally reversed in recent years. These three metros represent that previously common situation which has now become a secondary local inequality phenomenon. Birmingham, Memphis, and New Orleans have sluggish economies and less individual wealth, whereas New York, Boston, Los Angeles, and San Francisco have generally robust economies and high levels of aggregate wealth. While this paper primarily focuses on wealth's impact on inequality in American metros, this secondary inequality-related circumstance is important to examine.

One of the initial differences in these two sets of cities is size. While all four coastal metros range from populations of four million to 19 million and rank among the top 11 U.S. metros, the three Southern metros are all rank below 40 and fall between 1.1 and 1.4 million. Local economy size by gross metropolitan product (GMP) correlates. The coastal metros represent four of the top nine GMPs in the U.S., ranging from \$313 billion in Boston to \$1.28 trillion in New York. The economies of the Southern metros are fractions of the coastal economies, ranging from \$54 billion in Birmingham to \$71 billion in New Orleans and ranking between 40 and 50. Even recent economic growth has been weaker in the Southern metros. (U.S. Census Bureau, American Community Survey, 2010)

The industrial makeup of the Southern metros generally lacks the presence of large national or global firms that build wealth in the coastal metros. All three local economies are driven largely by often-struggling manufacturing sectors and more stable but never-surging transportation, trade, and utilities industries. The three large headquarters that drive the economy in Memphis, FedEx, International Paper, and AutoZone, produce high incomes for a few but largely employ unskilled, low-income workers. Birmingham is home to one significant financial firm, Regions Bank, which attracts and produces a few high-income households among the population. New Orleans is virtually without any major national firms

and depends largely upon its tourism and leisure sector to produce high-income households.

The relative economic weakness in these places is partly responsible for low average incomes and high poverty rates. Examining median household income of the 51 large U.S. metros (population of at least one million), the three Southern metros are all found in the bottom seven, while San Francisco, Boston, New York, and Los Angeles rank second, third, seventh, and seventeenth, respectively. Perhaps more telling, the income poverty rate is highest in Memphis (19.1%), second-highest in New Orleans (17.4%), and fifth-highest in Birmingham (17.0%), among large U.S. metros. As mentioned, these cities are found atop the inequality rankings because of the large presence of low-income households more so than because of the presence of many high-income households. However, the small number of high-paying jobs does exist, resulting in a wide and disproportionate income distribution in these places. . (U.S. Census Bureau, American Community Survey, 2010)

Another factor playing into the high levels of income inequality in the three Southern metros is a large percentage of African-American households. As a group, African-American households have lower average income than the nation as a whole. Memphis (45.7%), New Orleans (34.0%), and Birmingham (28.2%) have the first-, second-, and seventh-highest African-American

populations by percentage among large U.S. metros. The impact here is two-fold: African-Americans as a group lower median household income and lower income inequality. (Schneider, 2012). A greater number of low-income households among a small handful of wealthy households increases the measurements of inequality.

Miami, the second-most unequal large metro is a blend of this type of low-income area and the primary coastal model. Though it does not fit perfectly into one of the two models, it does have some of the key elements of each. Like the three Southern metros described in this section, Miami's inequality is significantly driven by the presence of low-income households. Its median household income of \$45,400 is the fifth-lowest among large metros, and its poverty rate of 17.1% is the third-highest among the same group. On the other hand, Miami is a large metro (eighth-largest population) with some thriving industries and pockets of extreme wealth. The local port is the tenth-busiest in the nation, helping the metro serve as the American commercial gateway to Latin America (American Association of Port Authorities, 2012). Five Fortune 500 Companies call the metro home, housing numerous high-paying jobs, and geographic location limits housing supply, driving prices higher than they would otherwise be.

It is important to reiterate that the three Southern metros represent a secondary trend in urban income inequality across U.S. metros. The secondary trend is inequality predominately as a function of the large presence of poverty, as opposed to inequality primarily a function of growing and various levels of wealth in a place. The latter is the case in the coastal and coastal-esque metros, which comprise a far larger portion of urban areas and overall population in America.

Chapter V: Conclusion

This thesis has set forth a model for a location in the United States that has particularly high income inequality. The model applies to several of the most unequal metropolitan areas in the country, especially the “coastal” metros – New York, Boston, Los Angeles, San Francisco, Chicago, and Houston. These places share a distinct set of circumstances which function together, making them especially unequal in terms of income. While this set of circumstances – a large and dense population, a strong concentration of high-income residents attracted and retained by agglomeration and amenities, supply constraints, the retention of low-income residents, and a significant immigrant population – is the most prominent recipe for a high-inequality urban area, it is not the only one. The smaller, relatively poor, Southern metros – Birmingham, Memphis, and New Orleans – have an entirely different set of circumstances, but are among the most unequal U.S. metros nonetheless.

While a robust literature on U.S. inequality exists, this discourse begins to fill a void concerning inequality within specific U.S. locations. An initial finding is that some geographically small (relative to the country as a whole) yet

prominent locations have inequality levels greater than that of the nation as a whole. Some of the national level inequality can arguably be excused by the size and diversity of the United States. An income distribution including both Wall Street executives and rural farmhands is bound to be wide within a capitalist system. But the fact that an area of a few thousand square miles that is far more geographically homogenous would have higher income inequality than the nation as a whole is worthy of further investigation.

Though outside the scope of this study, redistributive public policy and its effects on inequality at the local and regional levels are worth further investigation in light of this paper's findings. The existence and extent of redistributive measures in one metro may yield far different results in another, with regard to migration of households and businesses. As a result, local redistribution would have different impacts in different locations.

Perhaps most worthy of further investigation is the link between prosperity and inequality in U.S. cities. While many of the same forces that create this link at the national level do so at the local level as well, more detailed factors come into play regarding local inequality. Can a local economy grow and its income inequality fall simultaneously, all else equal? Will the most overall prosperous metros continue to be home to the highest levels of inequality? What fundamental changes would be required for local economies to grow incomes

more evenly? These are central questions to the study of inequality within locations.

The power of agglomeration is made evident in this report. The ways agglomeration dictates the spatial aspects of huge swaths of the national economy as well as the residential preferences of many households is astounding. While it is clear that agglomeration brings more benefit to the higher income brackets, further research on the benefits, or lack thereof, for lower income brackets would prove useful.

References

- Bee, Adam. *Household Income Inequality Within U.S. Counties: 2006-2010*. U.S. Census Bureau American Community Survey Reports ACSBR/10-16 (2012).
- Berry, Christopher R. and Glaeser, Edward L. 2005. *The Divergence of Human Capital Levels Across Cities*. NBER Working Paper 11617.
- Borjas, G. J. "Immigration and Welfare Magnets." *Journal of Labor Economics* 17(4) (1999): 607-37.
- Brennan, Morgan. 2012. "Houston Tops Our List Of America's Coolest Cities." Forbes. July 26. <http://www.forbes.com/sites/morganbrennan/2012/07/26/houston-tops-our-list-of-americas-coolest-cities-to-live/>.
- Brueckner, Jan K., Thisse, Jacques-Francois, and Zenou, Yves. *Why is Central Paris Rich and Downtown Detroit Poor? An Amenity-based Theory*. *European Economic Review* 43 (1999). pp. 91-107.
- Brueckner, Jan K. and Rosenthal, Stuart. 2006. *Gentrification and Neighborhood Housing Cycles: Will America's Future Downtowns Be Rich?* University of California-Irvine, Department of Economics Working Paper 050611.
- Card, David. 2009. *Immigration and Inequality*. NBER Working Paper 14683.
- Chinitz, B.J., "Contrasts in Agglomeration: New York and Pittsburgh," *American Economic Review* 51 (1961), 279-89.
- Costa, Dora L. and Kahn, Matthew E. "Power Couples: Changes in the Locational Choice of the College Educated." *The Quarterly Journal of Economics*, Vol. 115, No. 4. (2000).
- Cutler, David M. 2007. "Is the United States Coming Apart as a Society?" *The Yard*, Fall-Winter, pp. 4-9.
- Cytron, Naomi. "Ties That Bind: Income Inequality and Income Segregation." *Community Investments*, Volume 23, Issue 2. 2011.
- Freeman, Lance. *There Goes the Hood: Views of Gentrification from Ground Up*. New York: Temple University Press, 2006.

- Glaeser, Edward L, compiler, "Agglomeration Economics." Chicago: The University of Chicago Press. 2007.
- Edward L. Glaeser & Joseph Gyourko & Raven E. Saks. "Why Have Housing Prices Gone Up?," *American Economic Review*, American Economic Association, vol. 95(2) (2005), 329-333.
- Glaeser, Edward L., Kahn, Matthew E., and Rappaport, Jordan. "Why Do the Poor Live in Cities? The Role of Public Transportation." *Journal of Urban Economics* 63, no. 1:1-24 (2008).
- Glaeser, Edward L., Resseger, Matt, and Tobio, Kristina. 2008. "*Urban Inequality*." NBER Working Paper 14419.
- Gordon, R., and Dew-Becker, Ian. 2008. "Controversies About The Rise Of American Inequality: A Survey," NBER Working Paper 13982.
- Gyourko, Joseph, Mayer, Christopher, and Sinai, Todd. 2006. "Superstar Cities," NBER Working Paper 12355.
- Massey, Douglas; Rothwell, Jonathan; and Domina, Thurston (2009). "The Changing Bases of Segregation in the United States." *The Annals of the American Academy of Political and Social Science*, 626:74.
- Moretti, Enrico. 2003. Human capital externalities in cities. NEBR Working Paper 9641.
- Ortalo-Magne, Francois and Sven Rady (2008). "Heterogeneity Within Communities: A Stochastic Model With Tenure Choice." *Journal of Urban Economics*, 64(1). 1-17
- Piketty, Thomas and Saez, Emmanuel. "Income Inequality in the United States, 1913-1998," *Quarterly Journal of Economics*, 118(1), 2003, 1-39.
- Puga, Diego. 2009. "The Magnitude and Causes of Agglomeration Economies." Paper presented at the *Journal of Regional Science's 50th Anniversary Symposium*.
- Rosenthal, Stuart and William Strange. 2003. "Geography, Industrial Organization, and Agglomeration," *Review of Economics and Statistics*, 85(2): 377-393.

- Saxenian, AnnaLee. *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge: Harvard University Press. 1996.
- Saez, Emmanuel. 2012. *Striking It Richer: The Evolution of Top Incomes in the United States*. <http://elsa.berkeley.edu/~saez/saez-UStopincomes-2010.pdf>.
- Schneider, Markus P.A., Race & Gender Differences in the Experience of Earnings Inequality, 1995 to 2010. University of Denver. 2012.
- Watson, Tara. 2009. "Inequality and the Measurement of Residential Segregation by Income in American Neighborhoods." *Review of Income and Wealth Series* 55, No. 3. 820–44.
- Weinberg, Daniel H. 2011. *U.S. Neighborhood Income Inequality in the 2005–2009 Period*. U.S. Census Bureau American Community Survey Reports ACS-16, October.
- Wheeler, Christopher H. 2004. "Cities, Skills, and Inequality." Federal Reserve Bank of St. Louis Research Division. Working Paper 2004-020A.
- Wheeler, Christopher H. 2008. "Urban Decentralization and Income Inequality: Is Sprawl Associated with Rising Income Segregation Across Neighborhoods?" Federal Reserve Bank of St. Louis *Regional Economic Development* Vol. 4, No. 1, 41–57.
- Wheeler, Christopher H. and La Jeunesse, Elizabeth A. "Trends in the Distribution of Income and Human Capital Within Metropolitan Areas: 1980-2000." Federal Reserve Bank of St. Louis Research Division. Working Paper 2006-055A. October 2006.
- Zucker, Lynne G., and Darby, Michael R. 2007. "Star Scientists, Innovation, and Regional and National Immigration. NBER Working Paper 13547.

Appendix

Table 1: Top 10 Highest Gini Coefficients of MSAs With Population > 1 Million

Rank	MSA	Gini
1	New York	0.502
2	Miami	0.493
3	Los Angeles	0.484
4	Memphis	0.478
5	Houston	0.478
6	New Orleans	0.476
7	San Francisco	0.473
8	Birmingham	0.472
9	Chicago	0.466
10	Boston	0.465

Source: U.S. Census Bureau, American Community Survey, 2005-2009

Table 2: Largest MSAs By Population

Rank	MSA	Population
1	New York	18,919,649
2	Los Angeles	12,844,371
3	Chicago	9,472,584
4	Dallas	6,400,511
5	Houston	5,976,470
6	Philadelphia	5,971,589
7	Washington, D.C.	5,609,150
8	Miami	5,578,080
9	Atlanta	5,286,296
10	Boston	4,559,372
11	San Francisco	4,343,381*

Source: U.S. Census Bureau, 2010

*The Bay Area, which also includes the San Jose MSA, has a population of 6,185,163.

Table 3: Top 25 MSAs > 1 Million By Median Household Income

Rank	MSA	Median Household Income
1	Washington, D.C.	\$84,500
2	San Francisco	\$73,000
3	Boston	\$68,000
4	San Jose	\$67,000
5	Hartford	\$63,100
6	Minneapolis	\$62,400
7	New York	\$61,900
8	San Diego	\$59,900
9	Denver	\$58,700
10	Philadelphia	\$58,100
11	Baltimore	\$58,000
12	Raleigh	\$57,800
13	Salt Lake City	\$57,400
14	Virginia Beach-Norfolk-Newport News	\$57,300
15	Chicago	\$57,100
16	Los Angeles	\$56,700
17	Riverside-San Bernardino-Ontario	\$56,700
18	Sacramento	\$56,200
19	Austin	\$55,700
20	Richmond	\$55,300
21	Dallas	\$54,400
22	Houston	\$53,900
23	Kansas City	\$53,900
24	Atlanta	\$53,200
25	Portland	\$53,100

Source: U.S. Census Bureau, 2010

Table 4: Top 13 MSAs By Number of Fortune 500 Company Headquarters

Rank	Metropolitan Area (MSA)	Number of Fortune 500 Headquarters
1	New York	67
2	Chicago	29
3	Houston	25
4	Los Angeles	20
5	Dallas	18
6	Minneapolis-St. Paul	18
7	Washington, D.C.	18
8	San Francisco*	16
9	San Jose	14
10	Atlanta	13
11	Detroit	13
12	Philadelphia	12
13	Boston	10

Source: Fortune, 2012

*The Bay Area, which also includes the San Jose MSA, is home to 30 Fortune 500 headquarters.

Table 5: Top 20 MSAs > 1 Million By GMP Per Capita

Rank	MSA	GMP Per Capita
1	San Jose	\$91,497
2	Washington, D.C.	\$75,799
3	San Francisco	\$75,040
4	Hartford	\$72,547
5	Boston	\$68,801
6	New York	\$67,682
7	Seattle	\$67,062
8	Charlotte	\$64,382
9	Houston	\$64,353
10	Denver	\$61,680
11	New Orleans	\$60,905
12	Minneapolis	\$60,743
13	Indianapolis	\$59,724
14	Salt Lake City	\$58,901
15	Dallas	\$58,445
16	Philadelphia	\$58,097
17	Los Angeles	\$57,281
18	Chicago	\$56,197
19	Portland	\$55,839
20	San Diego	\$55,235

Source: U.S. Census Bureau, 2012

Figure 1: Gini Coefficient and Log of Population at the State Level

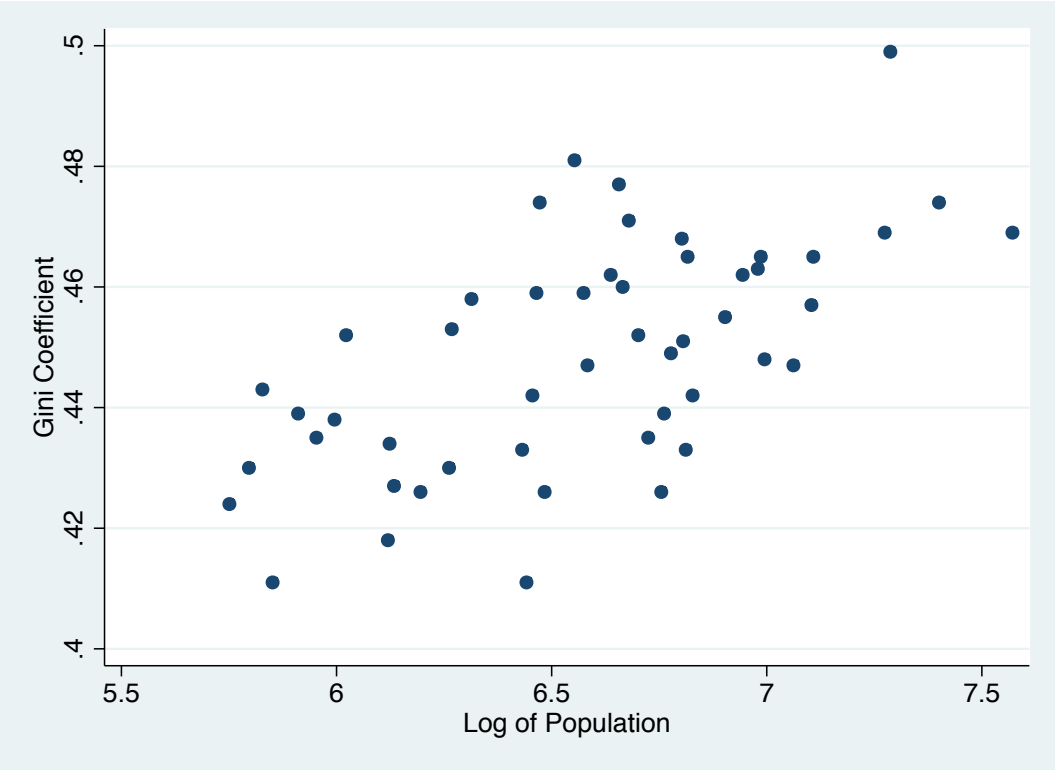


Figure 2: Gini Coefficient and Population Density at the State Level

