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Socio-Economic Segregation in Large Cities in France and the United States

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Abstract

This working paper calculates measures of the level of socioeconomic segregation in large metropolitan areas (cities and their surrounding suburbs) in the United States and France. The authors define "large" metropolitan areas as city-suburb combinations with a population of greater than one million. They use tract data from the American Community Survey (2006-2010) and data from the French Census of 2008 and the French Ministry of Finance. The results reveal a significantly higher level of socioeconomic segregation in large American than in French cities. American cities are more segregated than French cities on all three measures considered here: income, employment, and education. This finding holds with measures that account for different distributions of income, unemployment, and education across the two countries. The researchers also find (1) a strong pattern of low-income neighborhoods in central cities, and high-income neighborhoods in suburbs in the United States, but not in France; (2) that high-income persons are the most segregated group in both countries; (3) that the shares of neighborhood income differences that can be explained by neighborhood race-ethnic composition are similar in France and the United States, suggesting that racial segregation cannot account for much of the higher level of U.S. socioeconomic segregation.

Socio-Economic Segregation in Large Cities in France and the United States

INTRODUCTION

In all major cities of the world, there is a tendency for families to live near other families with similar levels of socioeconomic status as themselves. But while some level of segregation on the basis of socioeconomic characteristics is present in all modern societies, the level of segregation varies across cities and countries (Maloutas and Fujita 2012). Beyond the existence of variability, however, there are few solid conclusions about cross-national variations in segregation, largely because of the lack of comparability in the methods and data used by separate teams analyzing national datasets.

In this study, we compare the level of socioeconomic segregation between large metropolitan areas in France and the United States. We define "large" to be metropolitan areas of more than one million population, which includes four metropolitan areas in France and 51 in the United States. We define socioeconomic segregation along three dimensions: income, employment, and education. We also examine the role of central city-suburban differentiation, race/ethnic segregation, and income inequality in the two countries as explanations of national differences in socioeconomic segregation.

International comparisons of the level of socioeconomic segregation are important for several reasons. First, such comparisons place each country in a broader context that increases understanding as to whether the level of socioeconomic variation is unusual. This is especially

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of concern in the United States, where evidence has indicated a sharp increase in socioeconomic segregation over the last 30 years (Reardon and Bischoff 2011a). Second, comparisons of national levels of spatial segregation can inform discussion on how models developed to study one country may be usefully applied to another. In recent years, extensive debate has focused on the issue of similarity between "ghettos" in American inner-cities and poor suburbs (*banlieues*) in France. Third, national comparisons can help illuminate the causes of socioeconomic segregation. National contexts often differ in potentially important dimensions that are homogeneous across cities within a country, such as large-scale housing policy differences.

BACKGROUND

A combination of notable similarities and differences between the U.S. and France make the study of socioeconomic segregation in these two countries an interesting contrast. In both countries, there has been significant concern that poor, predominately non-white neighborhoods are contributing importantly to inequality and social division. In both countries many view these neighborhoods–poor and ethno-racially segregated–as training grounds for crime and delinquency, as places that impede social mobility and school achievement, and as environments that add contextual impoverishment to the problems of their impoverished residents. Both countries have experienced urban disturbances in low-income, mostly non-white neighborhoods that were initially sparked by conflicts with police: notable recent examples include the riots in Los Angeles in 1992, in Cincinnati in 2001, and in the suburbs of

many French cities in 2005. Yet, there are also many significant differences in poor

neighborhoods in the France and the U.S., including lower economic inequality in France than in

the U.S., the immigrant origins of most nonwhites in France in contrast to the native origins of

many in the U.S., the existence of a stronger welfare state in France than the U.S., and the fact

that poor neighborhoods in France are often in suburban areas in contrast to their

disproportionate location in central cities in the U.S.

Correspondingly, a debate has arisen in France about the extent to which the situation

of poor, non-white neighborhoods in the two countries can be usefully described as similar and

can be fruitfully analyzed with concepts developed in the study of U.S. cities. Some social

scientists and journalists have described poor French neighborhoods in the suburbs (*banlieues*)

as following a pattern of development into "ghettos," along the line of large American cities

(e.g., Lapeyronnie 2008; see Wacquant 2006 pp. 6-10 on the application of the term "ghetto" in

the French press). Other analysts, however, have instead argued that the differences between

distressed neighborhoods in the United States and France outpace the similarities; in particular,

the French-American sociologist Loic Wacquant has argued energetically that the situation of

ghettos in the United States and poor suburbs in France are too different to meaningfully apply

the term "ghetto" to the French case.

In the United States, recent attention on urban socioeconomic segregation has focused

on increasing levels of spatial income segregation, especially the increasing spatial segregation

of high-income households (e.g., Jargowsky 1996, Reardon and Bischoff 2011a). This, in part,

reflects growing attention and concern about the increasing share of income accruing to high

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income households in the United States and effects this may have on American society. This persists alongside the longstanding concern, reflected most clearly in the work of W. J. Wilson(1987), with the segregation of the poor. Concern with these issues exists in France as well, although spatial segregation of affluent households has received less attention; we know of no studies that examine residential segregation of income groups in France.[1]

We contribute to these debates through this study of socioeconomic segregation. In addition to socioeconomic segregation overall, we also separately examine the situation of segregation among low and high SES households. We use the available data, however, to consider how racial segregation contributes to the differences in economic segregation between countries.

Socioeconomic segregation is of concern because much evidence suggests it contributes to inequalities among individuals and because it is associated with the social problems of poor neighborhoods. As socioeconomic segregation increases, the rich increasingly receive the benefits of residence in affluent neighborhoods, while the poor increasingly suffer the problems associated with poor neighborhoods. The benefits of affluent neighborhoods are good neighborhood schools (Coleman 1966; Kahlenberg 2001), neighborhoods with low rates of violent crime (Krivo and Petersen 2010), and desirable local amenities like shops and supermarkets. The problems of poor neighborhoods are the opposite of these conditions. Evidence suggests that these conditions contribute to important differences in the quality of life and life chances between members of poor and affluent groups.

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[1] Préteceille (2006) considers segregation of high-status occupations as part of his study of changes in residential segregation of occupational groups in Paris. Pinçon & Pinçon-Charlot (2005) provide some discussion of segregation of the bourgeoisie in France.

Existing Comparisons of Socioeconomic Segregation in France and the United States

Socioeconomic status is individual social position based on income, education, occupational status, and employment status. Socioeconomic segregation is then the extent of spatial separation of persons into different neighborhoods based on these different statuses. Because socioeconomic status measures correlate among individuals to a significant degree, we would expect somewhat similar patterns of residential differentiation using these different indicators, although with some differences across specific indicators (See Pan ké Shon 2009 for nuances).

We know of no comparative studies of the level of socioeconomic segregation between France and the United States. There are, however, studies that examine dimensions of socioeconomic segregation in each country. Notable studies in the United States include Reardon and Bischoff (2011a), Jargowsky (1996), and Massey and Eggers (1993); Jargowsky (1997) on poverty status segregation; Simkus (1978) and Duncan and Duncan (1955) on occupational segregation; and Quillian (2003) and Wagmiller (2007) on segregation on the basis of employment status. Studies in France have relied primarily on occupational categories. Notable studies that tabulate levels of residential segregation of occupational groups in France include Clapier and Tabard (1981), Préteceille (2000, 2006), and Rhein (1998). We know of only one study in France of residential socioeconomic segregation that does not use occupational

categories, a study of segregation between unemployed and employed persons in the city of

Lille (Kruythoff and Baart 1998, reported in Musterd 2005).[2]

While these studies are of high quality, they were not designed to facilitate international

comparisons. Studies of residential segregation by socioeconomic status in France have

focused on occupational segregation. Yet several differences between the U.S. and French

studies of residential segregation of occupational groups undercut their cross-country

comparability. First, the categories of occupations used to compute segregation differ

significantly by country. The number and composition of the occupational categories between

the U.S. and French studies do not match. Second, most of the French studies cover

metropolitan Paris only (including Préteceille [2006] and Rhein [1998]), while the U.S. studies

typically cover all medium and large size metropolitan areas. Third, the studies are from

different time periods; the most recent U.S. study of residential segregation by occupation uses

data from the 1970 census (Simkus 1978), while the French studies of residential segregation by

occupation are mostly from the 1990s and 2000s. The one study of segregation of employed

versus unemployed in France (Kruythoff and Baart 1998) is more comparable in measures to

U.S. studies of employment segregation, but it suffers from its coverage of only the single

French city of Lille. Because of these limitations, direct comparison of socioeconomic

segregation in the United States and France by contrasting existing national studies of

occupational segregation is impossible.

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[2] A handful of other French studies also examine segregation only for specific contexts or subgroups, such as Safi (2006) on immigrants, and Pan Ke Shon (2009) on segregation in officially-designated distressed neighborhoods (*zones urbaines sensibles*).

Differences between the United States and France in Factors Linked to Socioeconomic Segregation

Studies of the causes of socioeconomic segregation suggest several differences between the United States and France that may contribute to differences in levels of socioeconomic segregation. Five factors that differ across countries and are thought to be causally related to socioeconomic segregation are

- Government provision of housing

- Importance of occupational groupings as cultural and social units

- Availability and geographic coverage of public transportation

- Magnitude of household income inequality

- Extent of racial and ethnic segregation.

We discuss each of these briefly.

One process contributing to neighborhood socioeconomic segregation is neighborhood price-income sorting. On the housing side, neighborhoods differ in price because neighborhood attributes like location, proximity to amenities, appearance, crime, and reputation directly influence neighborhood housing prices. In addition, many neighborhoods have fairly uniform housing stock, especially in newly constructed suburban developments, which also contributes to neighborhood price uniformity. On the household side, socioeconomic status determines the ability to afford housing. Income is particularly important, but education and employment status also influence long-run income and access to credit. The result is the sorting of

socioeconomic status groups into neighborhoods with distinct SES levels corresponding to neighborhood housing price differences.

There is reason to believe that neighborhood price-income sorting is weaker in France. France has a much larger state-supplied housing sector than the United States, with more than 30 percent of dwellings owned by the government, including much working and middle-class housing. Rents for these units are set by non-market processes. The much larger size of this sector in France likely weakens the relationship between average income of residents and neighborhood housing price.

France also has some policies to encourage socoioeconomic desegregation. Since 2000, France has had a national policy to require that municipalities have at least 20 percent of their housing stock as public housing. However, the law allows municipalities to pay annual fees to the central government rather than meet the 20 percent social housing requirement, and some wealthier municipalities have paid the fee rather than comply. Furthermore, conservative governments elected since 2000 have only weakly enforced this law (Préteceille 2012).

In the United States, some states have similar laws to promote affordable housing and to provide tax reductions or other incentives in poor neighborhoods, but these policies are fragmented and generally significantly weaker in their requirements than in France. In Illinois, for instance, there is a requirement that municipalities with low stocks of affordable housing develop a plan to increase their share of affordable housing, but no requirement they implement their plan. Overall, such policies should weaken price-income sorting in France relative to the United States.

A second factor contributing to socioeconomic segregation is neighborhood social and cultural sorting. Persons in particular occupational and educational groups tend to have somewhat uniform preferences for neighborhood characteristics, and also some preference to live with other like themselves (homophily); occupational and educational groups are to some extent also cultural and social groups.

In a study of the culture of the French and American middle-classes, Lamont (1992) finds that cultural boundaries are of greater significance as bases of social differentiation in France than in the United States. Because education and occupation are more closely linked to cultural differentiation than income, the greater significance of cultural boundaries suggests stronger education and occupational segregation in France than the United States. Furthermore, couplings of education, occupation, and income in France are weaker than in the United States; in France, highly educated but not very affluent government employees and professionals make up a group that is often viewed as distinct and bourgeois, but not more affluent than many manual workers (Cousin 2011). These factors suggest stronger sorting on the basis of education and occupation in France than in the United States.

A third factor that is likely to influence national differences in income segregation is the availability of public transportation and the levels of automobile ownership. In France public transportation is more often used and provides higher quality service to suburban areas than in the United States (National Geographic Society 2012; World Bank 2013). Poor public transit in many U.S. suburbs tends to limit the residence of carless households, which are disproportionately lower-income, to the inner city and inner suburban areas that have

relatively good public transit (Glaeser, Kahn, and Rappaport 2008). By contrast, the wider availability of public transit in suburbs in France likely opens up some suburban areas to low-income families, many of whom do not own automobiles.

A fourth factor contributing to socioeconomic segregation is the extent of inequality in income. Evidence indicates that greater income inequality produces greater neighborhood segregation between income groups (Mayer 2001; Watson 2009; Reardon and Bischoff 2011b).[3] Reardon and Bischoff (2011b) conclude that increasing household income inequality in the U.S. has resulted in households in the top 10 percent of the income distribution sorting into more exclusive neighborhoods disproportionately populated with other top 10 percent households.

This factor suggests lower income segregation in France than the United States because France has lower income inequality. In 2010, the Gini index of income inequality after taxes and transfers is .303 in France, compared to .380 in the United States (OECD 2013).[4] Furthermore, this suggests the possibility of especially high segregation levels for high-income households in the U.S., because high-income U.S. households receive a large share of national income relative to other OECD countries (Atkinson, Piketty, and Saez 2011).

Finally, segregation in socioeconomic status is also influenced by race and ethnic segregation. Because minority race and ethnic groups tend to have lower income levels than majority groups, segregation between race and ethnic groups will contribute to socio-economic

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[3] This is beyond the mechanical relationship that increased inequality in a characteristic will increase spatial variability in that characteristic. Most segregation measures remove this mechanical association either by using a segregation measure that adjusts for the level of inequality in the socioeconomic characteristic (Jargowsky's [1996] NSI measure) or by using measures of segregation among households defined by their relative position in the income distribution (e.g., Reardon's [2011a] H^R).

[4] For international comparison purposes, we believe that the Gini after taxes and transfers is more useful than before, given substantial differences in taxation and transfers in the two countries.

status segregation.   Studies find lower levels of racial and ethnic segregation in France than in the United States (Préteceille 2011, 2012).[5] To the extent that income segregation results from racial segregation, income segregation should then be lower in France than in the United States.

DATA

We compare France and the United States directly using the best available data and making the measures as comparable as possible. We examine segregation on the basis of income, employment status (employed/unemployed), and education. We do not contrast occupational segregation because of the fundamental non-comparability of occupational categories used in the two countries, a problem with no entirely satisfactory solution.[6]

For France, we use population data from the 2008 Census and income data from the Ministry of Finance. The French census data is from an ongoing rolling sample survey (a five-year survey) rather than a "census" in the typical English use of this term. The data is somewhat similar to the American Community Survey in the United States. The French census survey asks about education and employment status but not income. For income, we use data available from the French Ministry of Finance that is based on tax records and is released at the neighborhood level. The neighborhood unit that we employ is an area of a few blocks called an

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[5] In France, data on race is derived from data on national origins for persons not born in France, while in the United States, the census questionnaire directly asks for race and ethnicity information.
[6] One solution might be to collapse occupations down to a very small number of categories, like white collar vs. blue collar occupations. But the resulting categories are very highly heterogeneous and as a result are less meaningful groupings for comparison.

"IRIS" in French official statistics. On average, IRIS areas have a population of 2,000 persons, and are defined taking boundaries like streets and demographic patterns into account (INSEE 2013a).

For the United States, we use data from the American Communities Survey, 2006-2010. The data is based on an ongoing sample survey averaged from responses from 2006 to 2010. The neighborhood unit used is the census tract, i.e., small areas of about 4,000 persons created by the U.S. Census Bureau.

The smaller size of the French neighborhood units should boost the neighborhood segregation scores of France slightly relative to the United States. Using U.S. data and race-ethnic segregation, Iceland and Steinmetz (2003) find that the index of dissimilarity and Theil's Entropy Index of segregation are about .03 higher using units of an average size of about 1,500 (census block groups) than they are for census tracts. Likewise, Musterd (2005) reports that the use of smaller neighborhood units increases segregation scores.

We study neighborhoods of all metropolitan areas with population greater than one million. By "metropolitan area," we mean a central city and its surrounding suburbs. In both countries, we use the basic metropolitan area unit applied in their national statistical reports. For the United States we use core-based statistical areas as defined by the U.S. Census Bureau in 2010. These are geographic areas with an urban center of at least 10,000 people and adjacent areas that are socioeconomically tied to the urban center by high levels of commuting (U.S. Census Bureau 2013). For France, we use the *unité urbaine*, a grouping of local governments (communes) that form a single unbroken spread of urban development with no

distance between habitations greater than 200 meters, and with a population of at least 2,000. These are defined by the French national statistical agency, INSEE, and are the units that most parallel American core-based statistical areas (See INSEE 2013b).

There are 51 metropolitan areas in the United States with populations of more than one million, and four metropolitan areas in France with population of more than one million (Paris, Lyon, Marseille, and Lille).[7] We use two approaches to make cross-country comparisons. First, we compare the average or the aggregate of the 51 U.S. metropolitan areas to the average or aggregate of the four French metropolitan areas. Second, we compare the four French metropolitan areas to a paired sample of four U.S. metropolitan areas we have chosen for similarities to the French cities. Our pairings of the four French cities to U.S. comparison cities were as follows: Paris with New York; Marseille with New Orleans, Louisiana; Lyon with Denver, Colorado; and Lille with Raleigh, North Carolina. These contrasts were made based on our qualitative knowledge of cities in the two countries and similarities in major industries, metropolitan population, and geography (roughly in that order of importance). Table 1 shows summary statistics of basic characteristics of the four metropolitan areas from each country, as well as averages for the 51 U.S. metropolitan areas with populations greater than one million and the four French metropolitan areas with populations greater than one million.

For some analyses, we also make suburban vs. central city contrasts. We define the "central city" as the central municipality for the four French cities. For the United States, we use the U.S. Census Bureau definition of principal city areas for each metropolitan area. The Census

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[7] We have also done most our basic calculations for Bordeaux, which has a metropolitan population of 753,000 in 2010. The results for Bordeaux are consistent with results for other French cities we report.

Bureau defines the central city as the largest municipality in each CBSA, plus other municipalities in a metropolitan area with a population of more than 50,000 and more persons working in the municipality than living there (indicating it is an employment center for surrounding residential areas).

We also make an additional division into two suburban rings for the large metropolitan areas of New York and Paris. For Paris, the inner suburbs are the first ring *départements*— roughly equivalent to U.S. counties--around central Paris, *départements* 92, 93, 94; the outer suburbs are the second ring, *départements* 95, 78, 77, 91. For New York, we define the central city as New York City (the five boroughs), the inner suburbs as all suburban counties in the metropolitan area that are contiguous to New York City, and the outer suburbs as all suburban counties in the metropolitan area that are not contiguous to New York City.

RESULTS

Our analysis begins with descriptive comparisons of the level of segregation on the basis of income, employment status, and educational attainment. We then consider the role of city-suburban differences, race and ethnic segregation, and levels of household income inequality in accounting for national differences in levels of socioeconomic segregation.

Income Segregation

The first socioeconomic characteristic we consider is income. Table 2 shows the distribution of households in tract or IRIS areas by relative median income categories (following the descriptive approach of Reardon and Bischoff 2011a). We define categories for each metropolitan area based on ratios of tract or IRIS median household income to median household income for the metropolitan area overall. We use six neighborhood income categories:

1. Lowest income (tract median income is 0 to 67% of regional median income).

2. Tract median income is 67% to 80% of regional median income.

3. Tract median income is 80% to 100% of regional median income.

4. Tract median income is 100% to 125% of regional median income.

5. Tract median income is 125% to 150% of regional median income.

6. Highest income (tract income is 151%+ of regional median income).

We then tabulated the share of population in each metropolitan area living in each neighborhood category.[8] The top panel of Table 2 shows results for the four French metropolitan areas with greater than one million population (Paris, Lille, Lyon, Marseille) and the results pooling IRIS from these four cities. The bottom panel shows the four U.S. cities defined as specific comparisons (New York, Raleigh, Denver, New Orleans) and the results pooling tracts from the 51 U.S. metropolitan areas with populations of more than one million.

A consistent result emerges: a greater share of population lives in areas with income far above ("high income") and below ("low income") the metropolitan median income in the

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[8] Tract and IRIS median incomes are directly available in the data for both countries. We draw metropolitan area median income from INSEE statistical reports for France and Census Bureau metropolitan data files for the United States.

United States than in France. By contrast, more neighborhoods are in the middle categories (with neighborhood median income close to the region median) in France than in the United States. The difference is especially large in the high-income category: there are 2.5 times as many tracts in the high-income category in the United States as in France. There is also a higher share of tracts in the low-income category in the United States than in France as well; on average, 1.5 times as many tracts are low income in the United States as in France.

Segregation is most often examined using summary indexes. In Table 2, for each metropolitan area, we compute two indexes of segregation: Jargowsky's Neighborhood Sorting Index (NSI, see Jargowsky 1996) and Reardon's Rank-Order Information Theory Index H^R (Reardon and Bischoff 2011b). The neighborhood sorting index is the standard deviation of neighborhood mean incomes divided by the standard deviation of household income for a metropolitan area. The Rank-Ordered Information Theory Index is a weighted sum of Theil's Entropy Index of Segregation calculated across all percentiles of the income distribution. It is based on estimating Theil's Entropy Index of Segregation (James and Taeuber 1985) for persons below versus above each point of the income distribution, and then taking a weighted average of these estimates. See the measures and methods appendix for more details on these statistics and their computation. These indexes are designed to remove a mechanical dependence with the width of the household income distribution. Both indexes range from 0 (even distribution over space) to 1 (complete segregation).

The results using both indexes demonstrate much higher income segregation in American cities than French cities on average. For metropolitan areas with more than one

million in population, NSI is 40 percent greater for American cities than French ones (.365 vs .261), and H^R is 47.5 percent higher (.116 vs .079). French metropolitan areas with the highest income segregation have levels similar to American metropolitan areas with the lowest segregation scores.

These statistics give average levels of income segregation, but we can also examine segregation at different points of the income distribution. To do so, we use the data on counts of households in income brackets (United States) or percentile points of the income distribution (France). From this data, we can compute segregation measures for households below and above points of the income distribution based on the counts available. Following Reardon and Bischoff (2011b), we use a fourth-order quadratic fit through these estimated percentile-segregation points to estimate income segregation for other percentiles of the income distribution. The resulting curves are shown in Figures 1A (Theil's Entropy Index of Segregation) and 1B (Dissimilarity) for pooled IRIS or tract data for metropolitan areas with populations of more than 1 million (see James and Taeuber 1985 for discussion of these segregation indexes). Figure 2A (Theil's Entropy Index of Segregation) and 2B (Dissimilarity) present segregation curves for each of the four French and U.S. comparison metropolitan areas. The height of the line at each point gives the estimated segregation index for households with income at the indicated percentile of the income distribution or below versus households above that percentile. We show results for the 10th to the 90th percentiles because above and below these percentiles, the results are mostly based on extrapolation. Further details of the data and calculations are discussed in the Appendix.

Figures 1A and 1B show that the highest segregation levels in both countries are for high-income households; the lines are highest at the right of the graph, corresponding to the 90th percentile of the income distribution. The biggest differences between France and the United States in income segregation occurs in the middle portion of the distribution, from about the 20th to the 80th percentiles.

Figures 2A and 2B show income segregation profiles for the four French metropolitan areas and the four contrast U.S. metropolitan areas. U.S. metropolitan areas tend to have higher segregation—their curves are higher at most points--although segregation scores in the high-segregation French cities, Lille and Marseille, are close to the level of the U.S. cities with low segregation levels. Paris shows a unique pattern of high segregation at high income percentiles, but low segregation at other points of the distribution. This probably reflects the fact that higher income households in Paris have higher income levels than the other metropolitan areas in France.

Overall, we find substantially higher income segregation in American cities than in French cities. There are more neighborhoods with incomes far above and below the median income in the United States than in France, especially above. This is not just a mechanical reflection of higher household inequality: accounting for the width of income variability among tracts relative to income variability among households, or by examining position in the relative position in income, U.S. cities have segregation levels that are 40 to 50 percent higher than France. Income segregation in the United States tends to be higher than France at all income percentiles, but the difference is largest in the middle of the income distribution.

Unemployment

We now turn to an analysis of segregation of the employed from the unemployed. The employed are those who have paid jobs, and the unemployed are those without a paid job who are looking for work; the unemployment rate is the ratio of unemployed to persons in the labor force (either looking for work or employed). During the period of our study, the unemployment rate in large French metropolitan areas is substantially higher than in large American metropolitan areas. The unemployment rate of French metropolitan areas is higher than 10%, but it was 6.5 percent on average in American metropolitan areas with populations of more than one million.

Table 3 shows the distributions of population living in neighborhood areas by the neighborhood unemployment rate relative to the rate of the metropolitan area. We use eight unemployment categories based on the neighborhood rate relative to the metropolitan region rate: very low unemployment (50 percent or less of the regional rate), 50 to 67 percent; 67 to 80 percent; 80 to- 100 percent; 100 to 125 percent; 125 to 150 percent; 150 to 200 percent; and very high unemployment (200% or more of regional rate).

Similar to income segregation, Table 3 shows much higher shares of population in areas with very high and very low unemployment in the United States than in French metropolitan areas. The national difference is especially large for low-unemployment neighborhoods. More than 18 percent of U.S. tracts have unemployment rates less than half the metropolitan rate, contrasted to 8 percent of French IRIS areas. The United States also has a higher share of areas

with unemployment rates more than twice the metropolitan rate than France does (7.4 vs. 6 percent).

Table 3 also shows two segregation indexes calculated for the employed versus unemployed,   the Dissimilarity Index (D) and Theil's Entropy Index of Segregation (H). The average index of dissimilarity is 17 percent higher for U.S. than the French metropolitan areas, and the average Theil's Index is 30 percent higher.

Education

Finally, we examine residential segregation on the basis of educational attainment. Significant differences in the educational systems of the two countries--the higher prevalence of vocational degrees in France, different amounts of time to attain a degree, and different distributions of educational attainment—combined with limits of what is reported in tract and IRIS data, limit our ability to create closely comparable categories. We were, however, able to create three relatively comparable categories of education: low (up to 9th grade education in the United States or BEPC or less in France), medium (10 to 12 grades completed in the United States or beyond BEPC to completed the Baccalaureate degree in France), and high (some college or more in the United States or Bac+2 or more in France). From these three categories, we create two segregation contrasts: low vs. medium/high and low/medium vs. high.

Panel A in Table 4 shows indexes of residential segregation calculated for the first of these contrasts, low (up to 9th grade or BEPC) vs. medium or high (more than 9th grade or above

BEPC). Segregation indexes for low education vs. medium or high are much higher for American cities: 1.7 times as high for dissimilarity (.402 vs. .237) and 2.3 times as high for Theil's Entropy Index of Segregation (.137 vs. .056).

Panel B in Table 4 shows indexes of residential segregation for persons in low/medium (12th grade or less, or up to Bac) vs. the high education category (more than 12th grade, beyond Bac). Cross-national differences in segregation are smaller on this measure, but the United States again has higher segregation than France.

Segregation In Central Cities and Suburbs

Table 5 presents shares of households living in high, low, and middle-income areas separately for city and suburban locations. For Paris and New York, results are shown for inner and outer suburbs separately.

In U.S. metropolitan areas, there is a strong pattern that poorer neighborhoods are disproportionately located in inner cities, and more affluent neighborhoods are located in the suburbs. While there are certainly some low-income tracts in suburbs and some highly affluent tracts in cities, on average, suburbs are significantly more affluent. Furthermore, this pattern holds across the large majority of U.S. cities, although it is stronger in some cities than in others.

By contrast, for French metropolitan areas, there is little average difference in affluence between IRIS areas in cities and suburbs. There are somewhat more low-income and high-

income IRIS areas in suburbs than in central cities in large cities in France, but the overall distributions are fairly similar. Viewed in contrast to the American pattern of affluent suburbs and poorer central cities, the French pattern does not invert it, but instead, there is less city-suburban differentiation.

The on-average similarity of neighborhood affluence between French cities and suburbs conceals notable variation in city-suburban patterns across metropolitan areas. For Paris, the inner suburban ring is disproportionately poor, while the outer suburban ring is disproportionately somewhat affluent (especially in the moderately affluent 100 to 125 percent and 125 to 150 percent categories). Lyon follows a pattern similar to Paris, with a smaller share of poor neighborhoods in the city than in the suburbs. For Lille and Marseille, an elevated share of neighborhoods in the suburbs are poor.[9] If Paris and Lyon display a classical continental European pattern of affluent city surrounded (at least in the first ring in Paris) by poorer suburbs, a pattern that is more similar to American cities (disproportionate city poverty and more affluent suburbs) is present in Lille and Marseille.

Table 5 also shows the share of the income segregation index (NSI) that can be accounted for by city-suburban differences. To calculate this number, we regress the difference between mean neighborhood income and regional income (for each neighborhood) on a dummy variable for city-suburban location. The percentage of variance explained by this dummy is equal to the share of variation in neighborhood income differences that can be accounted for by city-suburban location. The square root of this number is the percentage reduction in NSI if we use only within-city/suburb differences (because the numerator in NSI is

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[9] This is also the case in some smaller cities like Bordeaux that are not included in the systematic comparison.

the standard deviation of variability across income means). These results indicate that although there are clear city-suburban differences in American cities and in some French cities, the overall share of income segregation that can be accounted for by city-suburban differences is fairly small, on average 3.5 percent for large American cities and 1.6 percent in France.

Table 6 shows tract and IRIS unemployment rates relative to the unemployment rate of the metropolitan area that the tract or IRIS area is located in. We find patterns similar to what we found for city-suburban differences for income, although the city-suburb contrasts are a bit greater. In two of four large French cities—Paris and Lyon--French suburbs tend to have both a higher share of low and high unemployment neighborhoods. Marseille and Lille follows a more U.S.-type pattern of high-unemployment inner city and low-unemployment suburbs. From the pooled neighborhood distribution for France, the most notable pattern is the high prevalence of both high and low unemployment neighborhoods in the suburbs relative to the city.

For the United States, there is a general pattern of low-unemployment neighborhoods being disproportionately suburban and high-unemployment neighborhoods (especially) being disproportionately located in central cities. There are a few exceptions, like Raleigh, but in general, this pattern holds strongly across large U.S. cities.

We also calculate the share of Theil's Entropy Index of Segregation of employed/unemployed that can be accounted for by differences between cities and suburbs. Theil's Entropy Index can be decomposed into subparts within and between larger units; in this case, the larger units are cities and suburbs (for this decomposition see Reardon, Yun, and Eitle 2000); no similar decomposition is possible for the index of dissimilarity. For U.S. metropolitan

areas, on average 5.7 percent of difference in tract unemployment rate can be accounted for by city-suburban differences, a non-negligible but also not large share. For France, 1.2 percent of IRIS city-suburban differences are between cities and suburbs. For the most part, then, city-suburban differences alone cannot explain most neighborhood differences.

Race and Ethnic Segregation and Income Segregation

Race and ethnicity is a fundamental basis of segregation in both the United States and France. In both countries race and ethnic segregation is higher than socioeconomic status segregation (Fischer, Stockmayer, Stiles and Hout 2004, Préteceille 2011). Because non-whites in both countries have lower socioeconomic status on average than whites, we would expect that race and ethnic segregation would contribute to socioeconomic segregation. Further, neighborhood segregation on the basis of race and ethnicity is higher in the United States than in France (Préteceille 2011), suggesting that race and ethnic segregation likely accounts for some of the difference in socioeconomic segregation between the United States and France.

To consider the role of race and ethnic segregation in socioeconomic segregation in the two countries, we calculate the share of variation in neighborhood average income relative to region average income that can be accounted for by race and ethnic composition. We do this by regressing a measure of the deviation of neighborhood average income from regional average income on measures of neighborhood racial composition. We then subtract the variation in neighborhood average income accounted for by race/ethnic composition to compute neighborhood income variation independent of race/ethnic composition, and then use the

square root of this adjusted variance as the numerator of an NSI statistic that is adjusted to remove race and ethnic segregation. That is, we calculate the NSI segregation statistic with variation accounted for by neighborhood racial composition deleted. The resulting NSI statistic can be interpreted as an upper-bound estimate of the role of race and ethnic segregation in the formation of socioeconomic segregation; it attributes all joint variation to race and ethnic segregation, but likely some variation results from socioeconomic factors causing race and ethnic segregation. With the data available, however, this provides a way to gauge the connection between race and ethnic segregation and socioeconomic segregation.

For the United States, we use percentage black and percentage Hispanic of each tract as race and ethnic composition measures. Race and ethnicity are not asked or evaluated on the French census; the best proxies are reports of place of birth and country of origin. Like past studies (e.g., Préteceille 2011, Pan Ké Shon 2009) we use percentage of African immigrants instead as a proxy measure for race, which includes immigrants from both sub-Saharan and Northern Africa and overseas French citizens.

The results are shown in Table 7. In both the United States and in France, roughly 20 percent of income segregation is accounted for by its association to race and ethnic composition. We had expected the percentage to be greater for the United States than for France, but we find similar shares of socioeconomic segregation accounted for by race-ethnic segregation in the two countries. The major reason for this is because the race-ethnic measure in France is somewhat more strongly predictive of IRIS average income in France than percentage black and Hispanic are predictive of tract average income in the United States

(although in both countries, race-ethnic composition is strongly predictive of area income). Corresponding to higher segregation, U.S. variability of race-ethnic composition over tracts is greater than in France. Overall similar shares of neighborhood income variance are accounted for by their linear relationship to neighborhood race and ethnic composition in the two countries.

If we interpret the results as estimating the total role of race and ethnicity in the production of income segregation, we conclude that race and ethnic segregation plays roughly an equal role in producing income segregation in the two countries. Because income segregation is higher in the United States, race and ethnic segregation's equal contribution to income segregation in both countries suggests a somewhat higher contribution in absolute terms in the United States. Nevertheless, this suggests that little of the U.S.-France difference can be accounted for by differences in race and ethnic segregation between the two countries.

A more cautious interpretation is that these estimates provide only upper bounds on the effect of race-ethnic segregation on income segregation in the two countries, because these measures also capture socioeconomic status segregation effects on race segregation. The estimated U.S. NSI removing the influence of race-ethnic segregation remains significantly above unadjusted NSI for France. For all cities with greater than one million in population, the average NSI for U.S. cities removing race-ethnic composition covariation is .296, which is higher than the unadjusted average for French cities of .261. These numbers indicate that race-ethnic segregation explains *at most* about 70% (100x[.296-.261]/[.370-.261]) of the French-US

difference in income segregation. Our preferred and less cautious interpretation suggests probably it accounts for much less than this.

Income Inequality and Income Segregation

A final explanation is that national differences in the levels of income inequality among households may account for the difference in segregation. Determining the effect of income inequality on national differences in income segregation is a difficult social science problem that is beyond the scope of our paper.[10] Nevertheless, we offer illustrative evidence relevant to understanding the potential role of different levels of income inequality on income segregation.

To consider the possible role of income segregation on income inequality, we use published estimates from Reardon and Bischoff (2011b) of the association of income inequality and income segregation in U.S. metropolitan areas. They find that a one-point increase in the Gini index of income inequality is associated with an increase in the Rank-Order Information Theory Index (H^R) index of income segregation of .467 of a point.

The difference in Gini value for the United States and France is (.380-.303=) .077. This suggests a difference in income segregation of (.077 x .467=) .036. By contrast, the difference in H^R between France and the United State on average for all metropolitan areas of greater than one million population is (.116 - .079) = .037. This quick calculation suggests the possibility that

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[10] We refer to effects beyond the mechanical dependence between income inequality and income segregation that exists using some measures of income segregation.

much or nearly all the difference in income segregation might be explained by differences in household inequality.

We offer this estimate, but emphasize this evidence is only suggestive. These calculations apply a relationship between income inequality and income segregation estimated for U.S. metropolitan areas to French metropolitan areas, but the effect of income inequality on income segregation is likely to differ across countries because of differences in how income levels translate into neighborhood patterns. Unfortunately, we know of no studies estimating the association of income inequality and income segregation in France. In addition, Reardon and Bischoff's estimates vary; using their lowest estimates results in income inequality explaining about half as much of the national differences in income segregation. Nevertheless, we take these estimates as suggesting that a significant portion of the French-U.S. difference in income segregation may result from different levels of household inequality.

CONCLUSION AND DISCUSSION

We find strikingly higher levels of residential segregation on measures of socioeconomic status in the United States than in France. This is true using measures of income, employment status, and educational attainment. There are fewer very low income, high unemployment, low education neighborhood areas in large French metropolitan areas than in large U.S. metropolitan areas; likewise, we find fewer high income, low unemployment, high education neighborhood areas in French cities than in American cities. Furthermore, because the neighborhood units we use are smaller in France than in the United States, and smaller units tend to produce higher segregation numbers, the French-U.S. difference is slightly

underestimated in our results. The evidence consistently points toward substantially greater spatial segregation and differentiation over space on the basis of socioeconomic status in the United States than in France.

In the United States, low-income, high-unemployment areas are disproportionately located in the city and high-income, low-unemployment areas are disproportionately located in the suburbs. In France, by contrast, the distribution of high and low income and unemployment areas is more even between city and suburbs, although patterns vary significantly by metropolitan area. Marseille and Lille follow a more U.S.-style pattern with regard to suburbanization, with a poorer city and wealthier suburbs. The suburbs of Paris and Lyon have a slightly elevated share of both poor and affluent neighborhoods (and low and high unemployment neighborhoods) and fewer neighborhoods toward the middle, contrasted to central cities.

What might account for these large differences in segregation levels between the two countries? We cannot completely answer this question, although we provide relevant evidence. Two plausible explanations that our evidence suggests are not very important are differences in city-suburban patterns and race/ethnic segregation. City-suburban differences in affluence are greater in the United States, but too little of neighborhood income segregation is between cities and suburbs to explain much of the U.S.-French difference. On race-ethnic segregation, we find that the covariation of neighborhood income and neighborhood race-ethnic composition is similar in the two countries, and income segregation remains higher in the

United States than in France even after all covariation is removed from the United States but left in the French measures.

We find more evidence in favor of national differences in levels of income inequality in accounting for differences in income segregation patterns. Applying Reardon and Bischoff's (2011b) estimates of the relation between income inequality and income segregation to U.S.-France differences suggests 50 percent or more of the difference may be accounted for by this factor. If this is correct, an important effect of higher inequality in the United States is higher neighborhood separation among income groups.

There are other national differences that may be important, but we lack the means to directly test them. One factor is the French government's much larger role in providing housing. Roughly a third of housing is somehow government-provided in France. French metropolitan areas also tend to have better public transit than American metropolitan areas, and this may contribute to reduced income segregation. By contrast, in the United States, it is difficult to live in many suburbs without a car, strongly reducing the attractiveness of suburban destinations to carless households; this may account for part of the reason that poor households in the United Statee are significantly more likely to live in central cities.

Finally, our results are relevant for debates about the extent to which American and French cities are sufficiently similar that we might be able to apply concepts developed to understand American cities to the French case, most notably the concept "ghetto." American metropolitan areas have more neighborhoods with rates of income, employment, and educational attainment far below and above the metropolitan average than French

metropolitan areas. Poor neighborhoods in the United States tend to be poorer relative to the metropolitan average. If the term "ghetto" is applied to relatively poor, segregated neighborhoods in France, it should be kept in mind that often these areas have socioeconomic status levels that are less far below the metropolitan median than is the case for U.S. cities.

The fact that American cities have more neighborhoods with income, unemployment, and educational attainment levels far above and below average likely contributes to urban social problems in American cities and contributes to higher inequality in America. The different levels of neighborhood differentiation in the two countries influence the typical experiences of the poor and affluent. In both countries, individual poverty tends to be accompanied by contextual poverty, and individual affluence by contextual affluence, but this occurs more strongly in U.S. metropolitan areas than in French ones.

Appendix: Measures and Methods for Income Segregation Statistics

NSI calculation:

NSI for a metropolitan area is defined as:

$$NSI = \frac{\sigma_N}{\sigma_H} = \frac{\sqrt{\frac{\sum_{n=1}^{N} h_n (\bar{y_n} - \bar{y})^2}{H}}}{\sqrt{\frac{\sum_{i=1}^{H} (y_i - \bar{y})^2}{H}}}$$

Where H is the number of households in the metropolitan area, h_n represents the number of households in the nth neighborhood, y represents income for the ith individual, $\bar{y}_n$ represents the average income for the nth neighborhood, and $\bar{y}$ indicates metropolitan average income. The numerator may be calculated for both France and the United States directly from the French Ministry of Finance IRIS data and the American Community Survey data, respectively. The denominator, the standard deviation of metropolitan household income, may be directly calculated from the IRIS data for France from summing within-IRIS deviation (provided in the data) and between-IRIS deviation (calculated from IRIS means). For the United States, we estimate the denominator from counts of numbers of households in 16 income ranges in each metropolitan area. We do this by assuming a lognormal distribution of income, and then using a maximum likelihood estimation to estimate the variability of tract income for each metropolitan income from the data. In practice, this is done using Stata's "intreg" command, estimating an intercept-only model of metropolitan income from tract income counts in categories, which also generates an estimate of the variability of income.

Theil's Segregation Index, Income Percentile Segregation Calculations (for Figures) and Reardon's Rank-Ordered H

If p denotes income percentile ranks for an income distribution, for any value of p we dichotomize the income distribution at pa nd compute the segregation between those with income ranks less than p and those with income ranks greater than or equal to p. If H(p) is Theil's information theory index of segregation (see James and Taeuber 1985), and E(p) is the entropy statistic for p (used in the calculation of H(p)), then the rank-order information theory index (H^R) is defined as:

$$H^R = 2\ln(2) \int_0^1 E(p)H(p)dp$$

We calculate H(p) and H^R using methods described in Reardon and Bischoff (2011b), pp. 1110-1111 and appendix A. We also apply their method for making income percentile graphs developed with H(p) to the standard index of dissimilarity, which is a straightforward extension. We briefly summarize these methods below.

We initially perform standard computations of Theil's Entropy Index of Segregation(H(p)) and the Index of Dissimilarity (D(p)) for everyone below p and at or above p for each of the income cutpoints available in the two datasets.

In the U.S. data, counts of households are reported in 16 categories. For the French data, we have reports of counts of households in 10 income categories. We also compute the percentile corresponding to each of these cutpoints on the income distribution from the data (p).

We then regress these calculated segregation indexes (H(p)) on the corresponding percentiles (p). Our specification uses a fourth-order quadratic for p to allow for non-linearity (We found very little predictive change from adding a 5th order term.). We use the resulting curve to predict the segregation scores for all percentiles of the income distribution from the 10th to the 90th percentile in the two countries. These are shown on the figures for both entropy and the index of dissimilarity.

To compute the rank-ordered H^R statistic, we applied the integral evaluation formula derived in appendix A of Reardon and Bischoff (2011b) to the fourth-order quadratic coefficients. The formula evaluates the integral and also applies a set of weights, which weight percentiles of the income distribution toward the center of the income distribution more heavily and give little weight to percentiles at the extremes.

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Table 1: Characteristics of French and U.S. Cities in Comparison and Full Samples

A. Specific Comparison Cities

FRANCE   **United States**

	Population	Median Income (Euros)	UE Rate		Population	Median Income (Dollars)	UE Rate
Paris				New York			
Paris - City	2,167,285		11	New York - City	8,077,314		7.3
Paris - Inner Suburbs	4,346,347		12.3	New York - Inner Suburbs	5,609,079		5.8
Paris - Outer Suburbs	3,739,339		9.8	New York - Outer Suburbs	5,010,517		5.7
Paris Region (total)	10,252,971	34,110	11.1	New York Region (total)	18,696,910	63,915	6.4
Marseille				Denver, CO			
Marseille City	807,000		17.5	Denver City	944,719		5.0
Marseille Suburbs	753,000		11.6	Denver Suburbs	1,519,696		6.0
Marseille Region	1,560,000	26,307	14.6	Denver Region	2,464,415	60,137	5.6
Lyon				Raleigh, NC			
Lyon City	472,000		11.1	Raleigh City	518,568		6.4
Lyon Suburbs	1,038,000		10.7	Raleigh Suburbs	551,126		5.1
Lyon Region	1,510,000	27,778	10.8	Raleigh Region	1,069,694	60,026	5.6
Lille (excluding Belgian part)				New Orleans, LA			
Lille City	230,000		17	New Orleans City	498,646		7.9
Lille Suburbs	784,000		14.4	New Orleans Suburbs	606,374		5.6
Lille Region	1,014,000	25,909	15	New Orleans Region	1,105,020	47,647	6.7

B. All Metro Areas with Population Above 1 Million, Means

FRANCE (Metropolitan N=4)   **United States (Metropolitan N=51)**

	Population	Median Income	UE Rate		Population	Median Income	UE Rate
Cities	919,071		12.7	Cities	1,253,682		7.4
Suburbs	2,665,172		11.3	Suburbs	1,964,081		5.9
Region Overall	3,584,243	31,964	11.6	Overall	3,217,763	61,263	6.5

Note: Metropolitan averages are computed weighted by households (income) or persons in the labor force (unemployment).

Table 2: Income Segregation

FRANCE	% Living in High, Middle, and Low Income Neighborhoods				
Ratio, IRIS Median to Region Median	**Paris**	**Lille**	**Lyon**	**Marseille**	Unites Urbaines > 1 million pop., pooled (N=4)
Low Income (Below 67%)	11.5	16.2	9.3	14.1	11.9
67%-80%	15.9	15.9	14.6	16.0	15.7
80%-100%	28.2	22.9	33.8	24.3	27.9
100%-125%	25.8	25.5	26.4	22.8	25.5
125%-150%	12.1	10.9	10.2	15.8	12.2
High Income (Above 150%)	6.6	8.6	5.8	7.1	6.7
Total	100.0	100.0	100.0	100.0	100.0
Number of households	4,034,306	354,750	498,287	554,137	
Segregation Indexes					Mean
Neighborhood Sorting Index (NSI)	0.254	0.324	0.250	0.272	0.261
Rank-Ordered H	0.076	0.102	0.067	0.092	0.079

United States	% Living in High, Middle, and Low Income Neighborhoods				
Ratio, Tract Median to Region Median	**New York**	**Raleigh**	**Denver**	**New Orleans**	CBSA > 1 million pop., pooled (N=51)
Low Income (Below 67%)	23.0	12.5	21.9	14.5	17.8
67%-80%	9.3	16.2	12.7	13.2	11.4
80%-100%	15.0	23.9	18.3	17.7	19.4
100%-125%	16.2	18.6	15.2	24.0	20.9
125%-150%	14.8	13.9	13.1	15.6	14.0
High Income (Above 150%)	21.8	14.9	18.8	15.0	16.5
Total	100.0	100.0	100.0	100.0	100.0
Number of households	6,809,386	407,344	978,799	416,300	
Segregation Indexes					Mean
Neighborhood Sorting Index (NSI)	0.364	0.353	0.380	0.325	0.365
Rank-Ordered H	0.138	0.111	0.140	0.098	0.116

Note: Metropolitan means weighted by number of households.

Table 3: Segregation of Employed vs. Unemployed

FRANCE	% Living in High, Middle, Low UE Neighborhoods				
Ratio, IRIS UE to Region UE	**Paris**	**Lille**	**Lyon**	**Marseille**	**Unites Urbaines > 1 million pop., pooled (N=4)**
Very Low UE (Less than 50%)	7.4	13.9	9.9	9.3	8.3
50-67%	17.1	20.7	16.9	20.5	17.6
67%-80%	15.9	9.7	13.7	14.3	15.1
80%-100%	19.2	18.4	20.0	16.0	18.9
100%-125%	15.2	9.0	14.9	15.9	14.8
125%-150%	9.3	9.0	9.0	5.8	8.9
150-200%	10.8	10.8	8.3	8.8	10.4
Very High UE (More than 200%)	5.1	8.5	7.4	9.3	6.0
Total	100	100	100.1	99.9	100.0
Segregation Measures UE vs. Employed					
Dissimilarity Index (D)	0.197	0.259	0.204	0.240	0.206
Theil Segregation Index (H)	0.034	0.062	0.040	0.056	0.038
Number of Persons in LF	5,171,958	460,440	711,184	668,687	7,012,269

United States	% Living in High, Middle, Low UE Neighborhoods				
Ratio, Tract UE to Region UE	**New York**	**Raleigh**	**Denver**	**New Orleans**	**CBSA > 1 million pop., pooled (N=51)**
Very Low UE (Less than 50%)	12.9	14.9	19.0	25.0	18.0
50-67%	12.3	12.0	12.6	15.2	13.9
67%-80%	8.6	14.7	11.6	8.3	11.0
80%-100%	13.7	14.3	15.7	13.8	15.3
100%-125%	15.7	19.3	12.9	13.3	14.5
125%-150%	11.9	10.2	9.0	7.0	9.9
150-200%	14.0	9.2	12.0	9.0	10.1
Very High UE (More than 200%)	10.9	5.5	7.1	8.4	7.4
Total	100.0	100.0	100.0	100.0	100.0
Segregation Measures UE vs. Employed					
Dissimilarity Index (D)	0.237	0.225	0.240	0.296	0.242
Theil Segregation Index (H)	0.047	0.043	0.045	0.081	0.050
Number of Persons in LF	8,088,243	489,140	1,142,874	458,243	70,550,928

Note: metropolitan means weighted by number of persons in the labor force.

Table 4: Segregation by Educational Attainment

A. 9th Grade (BEPC) or Less vs. More than 9th grade/BEPC

FRANCE	Paris	Lille	Lyon	Marseille	Mean UU > 1 Million Pop., N=4
Dissimilarity Index (D)	0.239	0.259	0.204	0.240	0.237
Theil Segregation Index (H)	0.058	0.062	0.040	0.056	0.056

United States	New York	Raleigh	Denver	New Orleans	Mean CBSA > 1 Million Pop., N=51
Dissimilarity Index (D)	0.410	0.380	0.501	0.301	0.402
Theil Segregation Index (H)	0.138	0.114	0.190	0.079	0.137

B. Degree Beyond High School (Bac+2 or Associates) vs. High School Degree (Bac) or Less

FRANCE	Paris	Lille	Lyon	Marseille	Mean UU > 1 Million Pop., N=4
Dissimilarity Index (D)	0.323	0.293	0.272	0.270	0.309
Theil Segregation Index (H)	0.103	0.094	0.078	0.077	0.097

United States	New York	Raleigh	Denver	New Orleans	Mean CBSA > 1 Million Pop., N=51
Dissimilarity Index (D)	0.333	0.338	0.323	0.317	0.329
Theil Segregation Index (H)	0.125	0.119	0.114	0.112	0.118

Note: Metropolitan means weighted by number of persons for whom education is determined.

Table 5: City and Suburban Proportions of Households Living in High, Middle, and Low Income Neighborhoods

FRANCE — Pooled 4 UUs

Ratio, IRIS to Region	City of Paris	Paris Inner Suburbs	Paris Outer Suburbs	Lille City	Lille Suburbs	Lyon City	Lyon Suburbs	Marseille City	Marseille Suburbs	Central Cities	Suburbs
Low Income (Below 67%)	6.5	16.1	8.6	25.0	12.3	6.5	10.6	20.4	3.9	10.9	12.2
67%-80%	15.9	19.6	10.9	21.7	13.7	11.3	13.7	18.3	12.5	16.3	15.3
80%-100%	35.6	25.8	26.4	30.4	20.9	36.9	33.3	26.6	20.7	33.3	25.8
100%-125%	24.1	24.7	28.5	20.7	27.4	33.4	21.6	18.1	31.2	23.6	26.3
125%-150%	9.4	9.5	17.3	2.2	14.4	9.5	12.1	12.4	20.2	9.7	13.3
High Income (Above 150%)	8.5	4.3	8.3	0.0	11.3	2.4	8.7	4.2	11.5	6.3	6.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
% of NSI Due to City-Suburb Difference		4.0%			3.3%		1.0%		5.2%		1.6%

United States — Pooled 51 CBSAs

Ratio, Tract to Region	New York City	NYC Inner Suburbs	NYC Outer Suburbs	Raleigh City	Raleigh Suburbs	Denver City	Denver Suburbs	NO City	NO Suburbs	Central Cities	Suburbs
Low Income (Below 67%)	38.2	11.1	10.0	13.6	11.4	36.0	12.4	20.9	8.6	30.8	9.1
67%-80%	12.6	7.2	5.9	18.2	14.2	15.5	10.8	18.1	8.8	13.9	9.8
80%-100%	17.1	14.8	11.6	22.3	25.6	21.7	16.0	20.2	15.4	18.9	19.8
100%-125%	12.9	17.1	21.0	15.1	22.1	13.2	16.5	16.3	31.0	16.3	23.9
125%-150%	9.4	18.4	19.9	12.5	15.4	7.5	16.9	14.4	16.7	9.6	17.0
High Income (Above 150%)	9.7	31.5	31.7	18.4	11.3	6.1	27.3	10.1	19.5	10.6	20.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
% of NSI Due to City-Suburb Difference		6.1%			0.2%		3.7%		0.2%		3.5%

Note: City and suburban means weighted by number of households.

Table 6: City and Suburbs Proportion of Persons Living in High, Middle, and Low Unemployment Neighborhoods

										Pooled 4 UUs	
Ratio, IRIS UE to Region UE	**City of Paris**	**Paris Inner Suburbs**	**Paris Outer Suburbs**	**Lille city**	**Lille suburbs**	**Lyon city**	**Lyon suburbs**	**Marseille city**	**Marseille suburbs**	**Central Cities**	**Suburbs**
Very Low UE (Less than 50%)	2.7	5.5	12.7	2.2	17.2	1.2	13.7	7.2	12	3.3	10.0
50-67%	11.1	13.6	24.9	15.2	22.3	7.7	20.9	13.5	29.2	11.4	19.9
67%-80%	18.9	13.7	16.8	13	8.7	14.3	13.4	9.3	20.6	16.1	14.9
80%-100%	29	16.9	15.9	21.7	17.5	30.4	15.5	17.4	14.2	26.5	16.3
100%-125%	19.9	15.8	11.6	14.1	7.5	26.8	9.8	18	13.1	20.1	13.0
125%-150%	9.8	11.3	6.6	8.7	9	9.5	8.8	6	5.6	9.0	8.9
150-200%	6.9	15.3	7.7	13	10.2	6.6	9	12.6	4.1	8.3	11.0
Very High UE (More than 200%)	1.7	7.8	3.8	12	7.5	3.6	9	15.9	1.1	5.3	6.0
Total	100	99.9	100	99.9	99.9	100.1	100.1	99.9	99.9	100.0	100.0
UE Rate	11.0	12.3	9.8	17.0	14.4	11.1	10.7	17.5	11.6	12.7	11.3
% of H Due to City-Suburb Difference		0.0%			1.0%		0.1%		8.5%		1.2%

										Pooled 51 CBSAs	
Ratio, Tract UE to Region UE	**New York City**	**NYC Inner Suburbs**	**NYC Outer Suburbs**	**Raleigh City**	**Raleigh Suburbs**	**Denver City**	**Denver Suburbs**	**NO City**	**NO Suburbs**	**Central Cities**	**Suburbs**
Very Low UE (Less than 50%)	13.0	19.7	21.7	19.7	10.3	15.2	21.3	21.3	28.2	15.1	19.9
50-67%	12.8	15.0	18.1	13.2	10.8	11.8	13.2	12.4	17.7	11.6	15.4
67%-80%	8.9	12.3	12.4	17.7	11.9	8.4	13.6	5.0	11.0	9.4	12.1
80%-100%	13.9	17.2	17.2	12.8	15.7	14.4	16.5	17.5	10.7	13.4	16.5
100%-125%	16.1	16.0	13.0	16.1	22.3	10.6	14.3	12.7	13.9	14.2	14.7
125%-150%	11.8	9.1	7.2	8.7	11.6	10.8	8.0	3.8	9.7	11.0	9.2
150-200%	13.7	7.4	5.8	7.3	11.0	16.6	9.2	11.6	6.7	12.8	8.3
Very High UE (More than 200%)	10.0	3.2	4.5	4.5	6.5	12.3	4.0	15.7	2.1	12.4	4.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
UE Rate	7.3	5.8	5.7	5.0	6.0	6.4	5.1	7.9	5.6	7.4	5.9
% of H Due to City-Suburb Difference		5.9%			2.6%		4.1%		5.6%		5.7%

Table 7: Income Segregation and Race/Ethnic Segregation

FRANCE	NSI	NSI removing Race/Ethnic & Income Covariation	Percentage Change
Paris	0.254	0.204	19.7%
Lille	0.324	0.250	22.8%
Lyon	0.250	0.187	25.2%
Marseille	0.272	0.214	21.3%
Weighted Mean of UU > 1 million population, N=4	0.261	0.207	20.7%

United States	NSI	NSI removing Race/Ethnic & Income Covariation	Percentage Change
New York	0.364	0.291	20.2%
Raleigh	0.353	0.274	22.6%
Denver	0.380	0.306	19.5%
New Orleans	0.325	0.253	22.1%
Weighted Mean of CBSA > 1 million population, N=51	0.370	0.296	19.9%

Figure 1A: Income Percentiles and Theil's Segregation Index, Large Metropolitan Areas Pooled
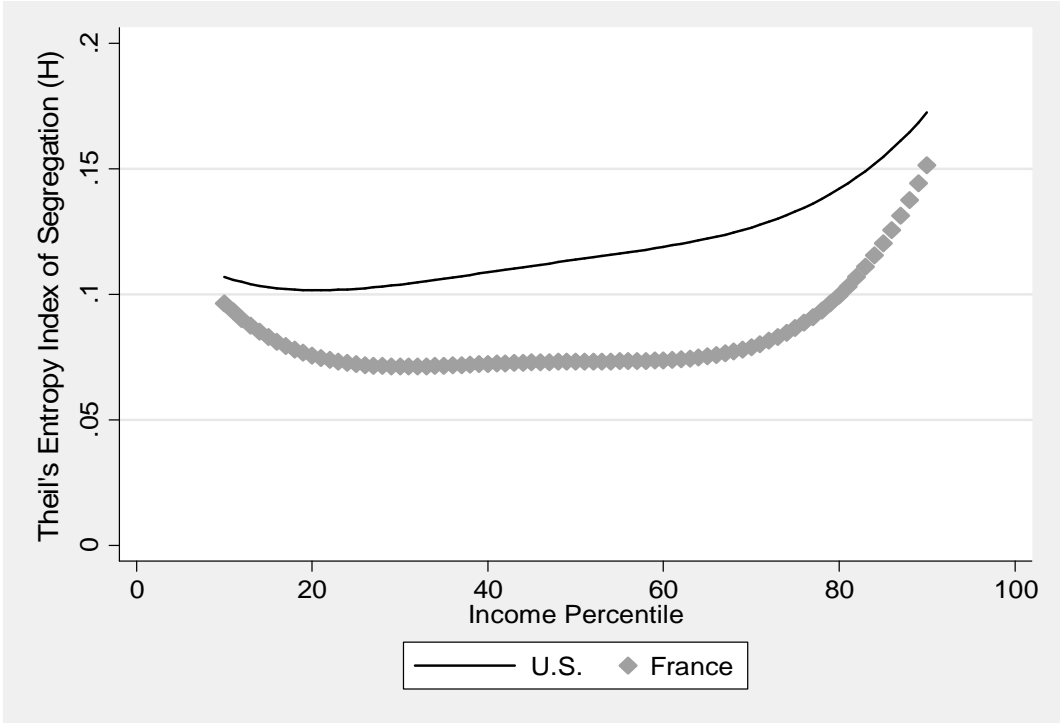

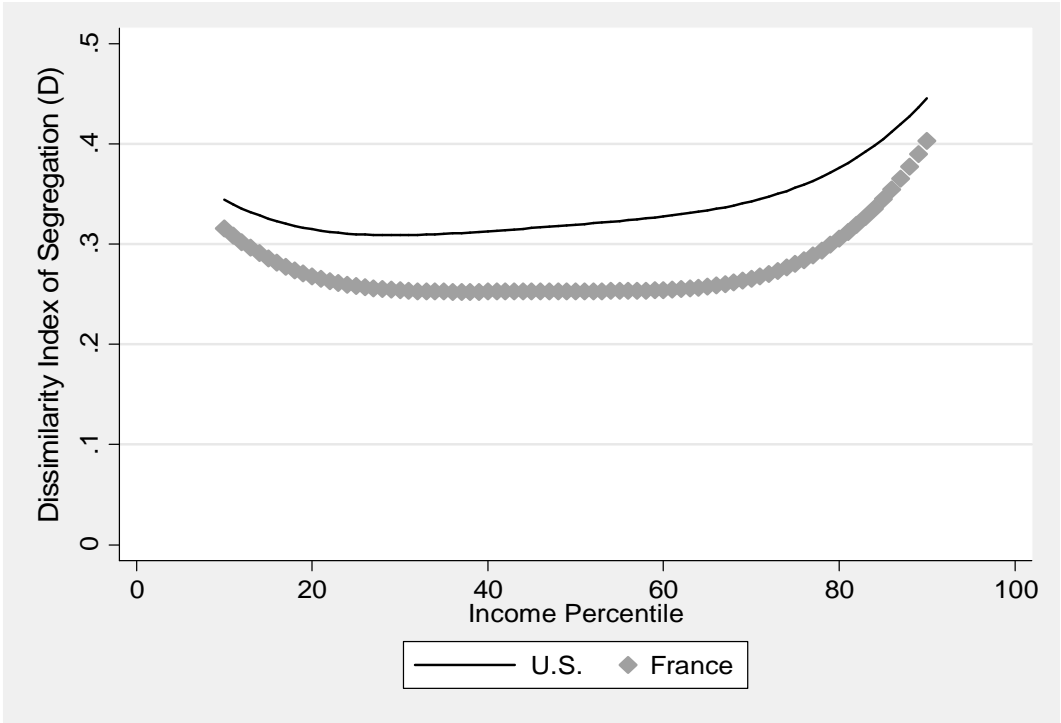**Figure 1B**: Income Percentiles and Dissimilarity Index, Large Metropolitan Areas Pooled

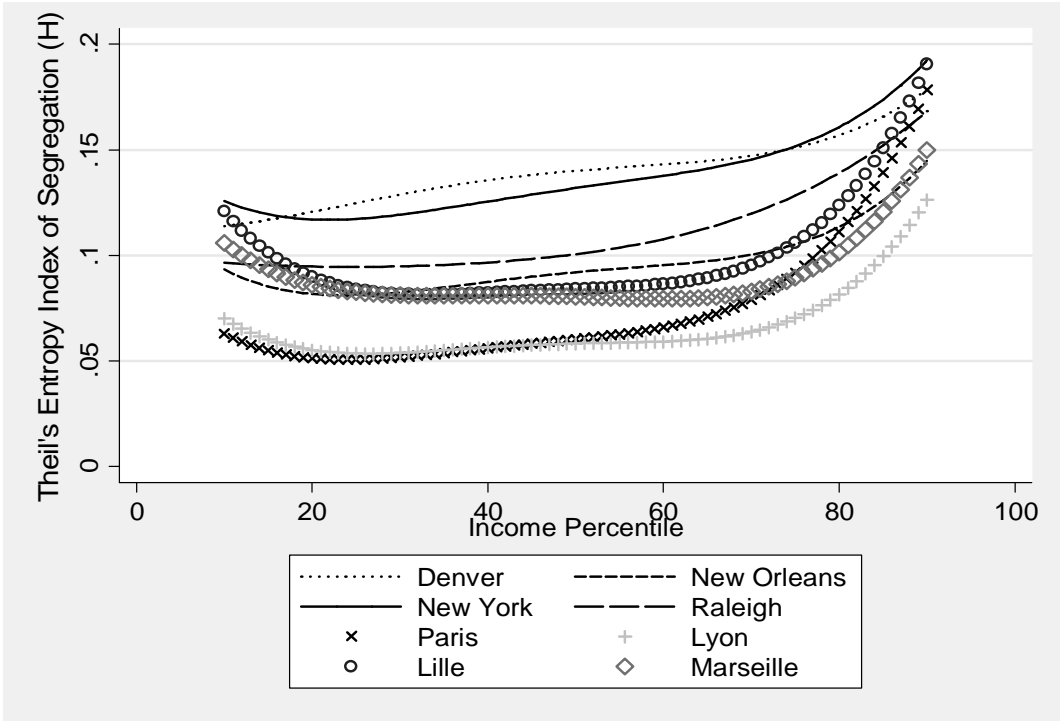**Figure 2A**: Income Percentiles and Theil's Segregation Index, Large Metropolitan Areas

Figure 2B: Income Percentiles and Dissimilarity Index, Large Metropolitan Areas