

Comparing Los Angeles and New York

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Abstract

From the fact that the Los Angeles urban area is more dense than the New York area to New York having more miles of freeways than Los Angeles, comparisons can sometimes be surprising. This paper compares these 2 largest urban areas in the United States, looking at aspects of density, travel and transportation, and race and ethnicity. Results are sometimes as expected but not always.

Introduction

Los Angeles and New York are the 2 largest urban areas in the United States. Everyone would agree that they are very different in many ways. However, some of the differences are unexpected. Most are surprised to learn that the Los Angeles Urbanized Area (the continuously built-up territory) actually has a higher population density than New York. Los Angeles has a density of virtually 7,000 persons per square mile while New York has only 5,300. Indeed, Los Angeles is the Urbanized Area with the highest density in the country while New York is fourth. This has caused consternation among some who favor higher urban densities, see New York as the epitome of what they like, and consider Los Angeles to be the antithesis.

This paper contrasts Los Angeles and New York, comparing various measures relating to density, to travel and transportation, and to race and ethnicity. Many of the comparisons will use values developed in my urban patterns research, for urban areas defined specifically for that research. The next section of the paper describes the urban patterns data and the urban areas. This is followed by the sections presenting the comparisons.

Urbanized Area Density 2010

	Los Angeles	New York
Population density	6,999	5,319

The urban areas

The urban patterns research examines patterns from 1950 to 2010 in large urban areas in the United States. The urban areas have been defined to reflect their extent in each of the census years. They have been delineated within the 59 largest Combined Statistical Areas (CSAs) having populations in 2010 of over one million (U.S. Bureau of the Census 2013). CSAs were used rather than the more common Metropolitan Statistical Areas (MSAs) as the latter fail to include areas that I believe are more properly considered to be parts of the urban areas.¹ The New York MSA does not include areas in Connecticut that have long been considered suburbs of New York. The large Riverside-San Bernardino-Ontario MSA is separate from Los Angeles despite the continuous urban development and high volumes of commuting. For some of the urban areas multiple urban centers around which urban development occurred were identified when an Urbanized Area (either in 2010 or the last year it was separate) had a population exceeding 28 percent of the largest area.

The primary source of data for the research was the Neighborhood Change Database with census tract data for the censuses from 1970 to 2000, normalized to the 2000 tract boundaries (Urban Institute and Geolytics 2003). Population and housing unit data from the 2010 census were added by aggregating the block data (U.S. Bureau of the Census 2012).

Housing unit densities were used for delineating the urban areas rather than population densities for 2 reasons. As housing units are more fixed than population, they better characterize the urban pattern, an argument also made by others (e.g., Galster, *et al.* 2001 and Paulsen 2014). The 1970 data on housing units by year built also allowed the estimation of the numbers of units in tracts in 1950 and 1960, a method employed by others (Radeloff, *et al.* 2001; Theobald 2001; Hammer, *et al.* 2004; Radeloff, Hammer, and Stewart 2005).

Urban areas have been defined for the broader urban patterns research for each census year from 1950 to 2010 consisting of those tracts contiguous to each urban center meeting a minimum housing unit density threshold. (This is comparable to the way in which the census defines Urbanized Areas using blocks and larger units and Paulsen (2012) defined urban areas using block groups.) The Census used a minimum density of 500 persons per square mile in 2000 and 2010 (U.S. Bureau of the Census 2002, 2011). Using the population per housing unit for the nation, a density of 1 housing unit per 3 acres or 213.33 units per square mile is almost exactly equivalent and was used as the cutoff for including tracts in an urban area. The urban areas delineated for Los Angeles and New York are somewhat larger in both population and land area than the

¹ For those areas not included in a CSA, the MSA was used instead.

Urbanized Areas, as shown in the table, because areas have been included that were not within the Urbanized Areas or MSAs.

In examining urban patterns, it is useful to contrast the characteristics of the older, inner portions of the areas with the newer parts developed in more recent decades. This has generally taken the form of comparing central cities of MSAs with the remainder, generally referred to as the suburbs. This is problematic as the central cities can encompass widely varying proportions of urban areas. The alternative approach used in the urban patterns

research is to define the urban core as the extent of the 1950 urban area, with the remainder of the urban areas in subsequent years denoted as the suburban periphery. Thus the core is the area of pre-1950 urban development and the periphery is the area of the newer development since that year.

Urban Area and Urbanized Area size

	Los Angeles	New York
Urban Area population	14,906,140	19,877,933
Urbanized Area population	12,150,996	19,351,295
Urban Area land area	2,652	4,312
Urbanized Area land area	1,736	3,450

Density

Various aspects of the density of the Los Angeles and New York urban areas in 2010 are compared in this section. This includes different measures of population density and the distribution of density within the urban areas. Given data availability, housing unit densities were used to examine changes in density since 1950. Closely related to density is the amount of multifamily housing within these areas.

The conventional density, total population divided by total land area, for the urban areas shows the same pattern as the densities of the Urbanized Areas. Los Angeles has a higher density than New York, 5,600 versus 4,600 persons per square mile. Again, Los Angeles is the urban area with the highest density; New York is third.

Population density type

	Los Angeles	New York
Conventional	5,619	4,609
Population-weighted	11,058	30,847

An alternative measure is population-weighted density, which gives a very different picture. This density for New York jumps to over 30,000, with Los Angeles at 11,000. Population-weighted density here is the weighted average of census tract densities. The tract densities were multiplied by their population, these values were summed, and that total was divided by the total population of the urban area. Population-weighted densities are often described as the density experienced by the average person in the urban area. Population-weighted

density depends on the subareas used. Census tracts were chosen as they were considered to be the approximation of the neighborhoods within which persons would experience density.

The great difference between the population-weighted densities of the 2 areas is not the result of Los Angeles having a low density. It is because New York’s density is extremely high, far above any other urban area in the United States. This results from the extremely high population densities within most of New York City, with large numbers of people living in areas having very high densities. The Los Angeles population-weighted density of 11,000 was actually third highest of all of the urban areas, just slightly below the density for San Francisco-Oakland-San Jose. The mean weighted density for all of the large urban areas was slightly less than 5,000. These values and the following information on population density come from Ottensmann (2021) and the research underlying that paper.

Population density by area

	Los Angeles	New York
Urban core	10,310	12,220
Suburban periphery	4,048	1,883

Next comes the distribution of the population within the areas. First is the comparison of the (conventional) densities in the urban core and suburban periphery. As expected, New York had a higher density in the core, about 12,000 persons per square

mile versus 10,000 in the Los Angeles core. It might be seen as surprising that the density in the New York core was not higher. The urban core is the extent of the 1950 urban area, the built-up portion in that year. This included not only the extremely dense areas in most of New York city but surrounding areas also developed earlier: areas north of the city extending into Connecticut, areas to the east on Long Island, and very large areas in New Jersey. These areas generally had lower densities, some extremely low, bringing down the density for the New York core.

The big difference between the areas is in the density of the suburban peripheries, the newer areas largely developed and added to the urban areas since 1950. The density of 4,000 for the Los Angeles periphery is over twice that of New York. It is this big disparity in the densities in the suburban peripheries that has led to the overall population density of the Los Angeles urban area significantly exceeding that of the New York area.

It has frequently been observed that the population densities of urban areas decline with distance from the center, the central business district (CBD). This pattern of decline can be described as an exponential function of distance, shown to the right. The density of census tracts D , depends on the distance from the CBD s . Density at the CBD, the central density D_0 and the rate of density decline, the density gradient β are values to be estimated from the data, and e is the base of the natural logarithms. The values for the parameters presented here have been estimated using nonlinear regression. (Performing a log transform of the equation and using linear regression is the more common approach used for estimation.)

The patterns of density decline for Los Angeles and New York were dramatically different. The central density for the New York area was over 90,000 persons per square mile, compared with less than 23,000 for Los Angeles. This is where the extremely high densities in New York City, especially Manhattan, were reflected in the pattern of density decline. But the density gradients, the rates at which

densities declined with distance from the center, were likewise very different. The gradient of 0.042 for Los Angeles was less than half the gradient of over 0.10 for New York. Los Angeles started with far lower densities near the CBD but those densities declined more slowly moving away from the center. New York started very high but densities fell much more rapidly with distance. This is consistent with the observations for densities in the urban core and suburban periphery. Los Angeles had a lower density than New York in the core but the density was far higher in the periphery.

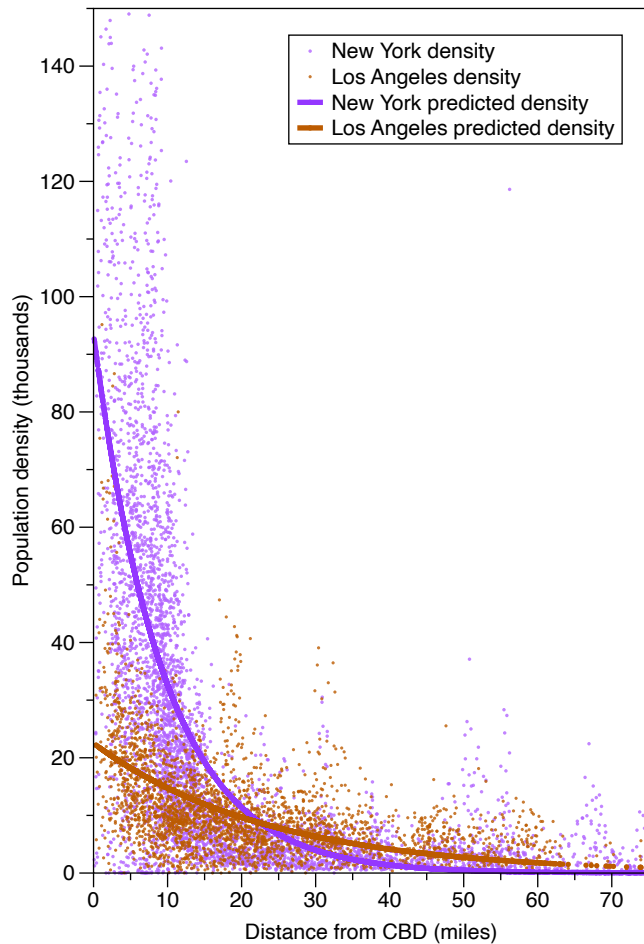
Density decline with distance

	Los Angeles	New York
Central density	22,505	93,443
Density gradient	0.042	0.105
R-squared	0.694	0.679

The patterns can be seen more clearly by plotting the densities of the census tracts and the densities predicted using the exponential model. The densities of census tracts in the New York area are shown as purple dots. They extend in a band upward within about 15 miles from the center. (The maximum tract density was slightly over 200,000, but the range was cut off at 150,000 to better display the patterns.) But moving outward, the mass of the purple dots falls to very low levels.

Los Angeles tracts are represented with maroon dots. In contrast to New York, Los Angeles lacked the large numbers of tracts with very high densities. The highest were less than 100,000 and most of the tracts closer to the CBD had far lower densities. But with increasing distance from the center, the mass of the maroon dots declined much more slowly, becoming higher than the mass of the purple dots for New York.

The lines on the plot are the densities predicted using the negative exponential model and the parameters estimated for each of the areas. New York was very high at the CBD with the central density over 90,000, while Los Angeles started out at just over 20,000. As indicated by the density gradients, predicted density in the New York area dropped rapidly with distance while the decline was much less for Los Angeles. At less than 23 miles from the CBD, the predicted density for tracts in the Los Angeles area exceeded that for the New York tracts. And of course this was the case all the way to the edge of the urban areas.



To look at the changes in density for the urban areas for the longest period of time, since 1950, it is necessary to shift to housing unit density, as estimates of housing units are available in the urban patterns dataset for that year but not population (Ottensmann 2015). Housing unit densities are naturally much lower than population densities but they are extremely highly correlated and show the same trends.

Densities in the Los Angeles and New York areas could not have followed more divergent trajectories. New York started out in 1950 with a far higher urban area density of nearly 3,000 housing units per square mile, nearly twice the density for Los Angeles at about 1,600. But as the urban areas grew over the next 60 years to 2010, the densities moved in opposite directions. The density in the Los Angeles area went up by over 300 to about 1,900, an increase of just over 20 percent. Densities in New York fell by over 1,100 units per square mile to about 1,800, a drop of nearly 40 percent. This was the consequence of the very low densities in the suburban periphery of the New York area compared to that of Los Angeles.

Another way to look at density is to look at the percentage of housing units in multifamily housing, defined here as units in a structure with 2 or more units (Ottensmann 2020a). It is not surprising that this was higher for the New York area than for Los Angeles, 57 to 38 percent. The high overall percentage of New York was the result of housing in the urban core, with 70 percent multifamily units. While significantly lower at 50 percent, multifamily housing constituted half of the housing in the Los Angeles core. The impression of the Los Angeles area being dominated by single-family housing was clearly not true for the pre-1950 urban area, which included almost half of the housing units in the entire 2010 urban area.

Change in housing unit density

	Los Angeles	New York
Density 1950	1,596	2,975
Density 2010	1,928	1,822
Density change	332	-1,153
Percent change	20.8	-38.8

Percent housing units multifamily

	Los Angeles	New York
Entire area	38.2	56.9
Urban core	50.3	70.2
Suburban periphery	26.8	24.9

Travel and transportation

Transportation in Los Angeles is seen as automobiles being driven on the freeways. New York would be characterized by the use of public transit. This section addresses this, looking at the extent and use of their freeway systems and travel to work.

Is the Los Angeles area the land of the freeways, as opposed to the New York area? According to data on the number of miles of freeways in the Urbanized Areas in 2014, New York had over twice as many miles of freeways as Los Angeles, over 1,200 miles versus just under 600 (U.S. Federal Highway Administration 2015). Of course New York is the larger area, which should be taken into account in making the comparison. Looking at the miles of freeways per million persons in the 2 areas, New York was still much higher, with about 70 miles per person versus 50 for Los Angeles. Because the New York area was less dense than the Los Angeles area, its land area was relatively larger with respect to Los Angeles than its population. In terms of miles in relation to land area, the 2 areas were almost equal, at 34 miles of freeway per 100 square miles. But from no comparison can it be concluded that Los Angeles had more freeways than New York.

Freeways in Urbanized Area

	Los Angeles	New York
Freeway miles	594	1,258
Miles per million persons	50.4	70.7
Miles per 100 square miles area	33.7	34.4
Freeway daily VMT (vehicle miles of travel) (thousands)	121,029	120,006
Freeway VMT per person	10.3	6.7

The same source provided information on the use of the freeways in the Urbanized Areas, giving the average daily vehicle miles of travel (VMT), a standard measure of road use. Total daily freeway VMT was almost identical in the 2 areas, a huge 121 million miles. Freeway travel relative to the population finally shows the greater dependence on the freeways in the Los Angeles area with over 10 VMT per person versus under 7 for the New York area. But it is important to emphasize that this does not mean the Los Angeles is freeway dependent while New York is not. Residents of New York still travel a great deal on their extensive system of freeways.

The focus now shifts to the journey-to-work reported by employed persons in the 2019 American Community Survey. These data are for the Metropolitan Statistical Areas, MSAs (U.S. Bureau of the Census 2021). Beginning with the mode of transportation, 84 percent of the work trips in Los Angeles were by car or truck and fewer than 5 percent of workers used public transit. This clearly illustrates the automobile dependence of Los Angeles. In the New York area, over 30 percent commuted to work by public transit, demonstrating the extreme difference. It must also be emphasized that over half of all work trips in the New York area were made using a motor vehicle, far more than the transit trips.

Journey-to-work mode, MSA

	Los Angeles	New York
Percent car, truck	84.0	55.2
Percent transit	4.8	31.6

The time it took for workers to make these trips for the different modes of travel did not vary between the 2 areas, differing by under a minute in each case. Those driving alone took at average of 31 minutes to reach work. Carpooling took a bit longer, not surprisingly, at 33 to 34 minutes. Those using public transit had work trips lasting much longer, an average of 53 minutes. For all workers, the average trip time did vary significantly due to the higher proportions taking public transit, which took longer, in the New York area. The average journey-to-work time for all workers in Los Angeles was 32 minutes versus 37 minutes for New York.

Journey-to-work mean time, MSA

	Los Angeles	New York
All workers	31.7	37.3
Car, truck alone	30.8	31.3
Car, truck carpool	33.2	34.0
Transit	53.4	53.3

Greater automobile use and dependence made access to a motor vehicle more critical in the Los Angeles area. This is dramatically illustrated by the distribution workers by the number of vehicles available. Nearly a quarter of those in New York reported access to no vehicle versus only 3 percent in the Los Angeles area. At the other extreme, fully 40 percent of those in Los Angeles had access to 3 or more vehicles. Just over 20 percent had access to this many vehicles in the New York area.

Percent workers by vehicles available

	Los Angeles	New York
No vehicle	3.2	23.0
1 vehicle	18.8	26.2
2 vehicles	37.9	28.6
3 or more vehicles	40.1	22.2

Race and ethnicity

The final comparisons address the racial and ethnic composition of the populations of the Los Angeles and New York areas in 2010. This focuses on the populations of the four largest groups, non-Hispanic whites, African-Americans, Latinos, and Asian and Pacific Islanders (together). American Indians and those listing some other race or 2 or more races have been excluded. The percentages are of the numbers in these groups, not the total population. The focus returns to the urban areas described earlier. All of the information comes from my papers on diversity in these areas (Ottensmann 2019a,b, 2020b).

Los Angeles and New York were both very racially and ethnically diverse areas. A majority of the populations were other than non-Hispanic whites, though not by much for New York. The share of whites in Los Angeles was under a third. The mix among the other groups varied. New York had far more African-Americans while nearly half the population in the Los Angeles area was Latino. Asians also made up a larger share of Los Angeles residents, perhaps not surprisingly given the location making this a more accessible point of entry for immigrants from Asia.

The overall racial and ethnic composition of the populations is summarized by an index of diversity. The measure ranges from 100, complete diversity with equal proportions of the population in each group, down to 0 when the entire population is in a single group. Looking at the entire area, Los Angeles was somewhat more diverse than New York, 87 to 79, but both were very diverse areas. For the 59 large urban areas studied, the index ranged from 36 to 91. Los Angeles and New York were third and sixth most diverse among all areas. Considering diversity in the urban core and suburban periphery shows some differences. The New York core was slightly more diverse than Los Angeles, 94 to 84, but both remained near the top of the list for all areas. Divergence occurred in the diversity in the suburban peripheries. The diversity index for the suburbs for the 59 areas ranged from 18 to 92 (some suburban areas are extremely not diverse!). The

Percent in racial and ethnic groups

	Los Angeles	New York
Non-Hispanic White	32.0	49.7
African-American	6.9	16.9
Latino	47.0	23.6
Asian and Pacific Islanders	14.2	9.9

Racial and ethnic diversity index

	Los Angeles	New York
Entire area	87.0	78.9
Urban core	85.3	93.8
Suburban periphery	86.6	62.0
Neighborhood diversity	62.2	56.9

suburban periphery of the New York area had a level of diversity of 62, right in the middle, literally the median value. Diversity in the Los Angeles periphery on the other hand was third highest, about the same as in the core at 87.

Another aspect of racial and ethnic diversity relates to the composition of the populations at the neighborhood level. The neighborhood diversity index is an average of the values of the diversity index within each of the census tracts. In general and in the Los Angeles and New York areas, neighborhood diversity was lower than diversity across the larger areas. Segregation persists. Neighborhood diversity ranged from 26 to 75 across the 59 large urban areas, with a median value of 52. New York, at 57, was above average. Neighborhood diversity for the Los Angeles area was somewhat higher at 62, putting it in the top quarter among all areas.

The Los Angeles and New York areas could be compared across an infinite number of dimensions. The comparisons presented here were sometimes surprising and at other times expected. Some showed ways in which the 2 areas were very different while others highlighted similarities, including those reflecting the fact that these are the 2 largest urban areas in the country that are very dense and diverse.

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