June 5, 2011

Racial Diversity and Interaction in San Diego

Dear Commissioners,

I am following up on my testimony to the commissioners on May 14th at the Education Cultural Center in San Diego (Speaker #32). Some of you had inquired about my written report on the indicators that I analyzed.

Attached is my published analysis in www.VoiceOfSanDiego.org with the list of indicators, followed by detailed methodology.

I have also uploaded the diversity index to a publicly viewable map of San Diego County at www.healthycity.org.

Thank you for this opportunity and wishing you the best in your public service,

Murtaza H. Baxamusa, Ph.D., AICP

San Diego's Population: Diversity and Interactions

Posted: Thursday, May 12, 2011 3:15 pm

The San Diego region is a tapestry of rich racial and ethnic diversity, which has gradually changed its pattern over the last two decades. The proportional drop in white population has been picked up by the combined proportional increase in Hispanic and Asian population. Tracking each color of thread as it weaves through the geographical terrain of the demographic tapestry reveals interesting trends about the nature of assimilation and adjustment in finer detail.

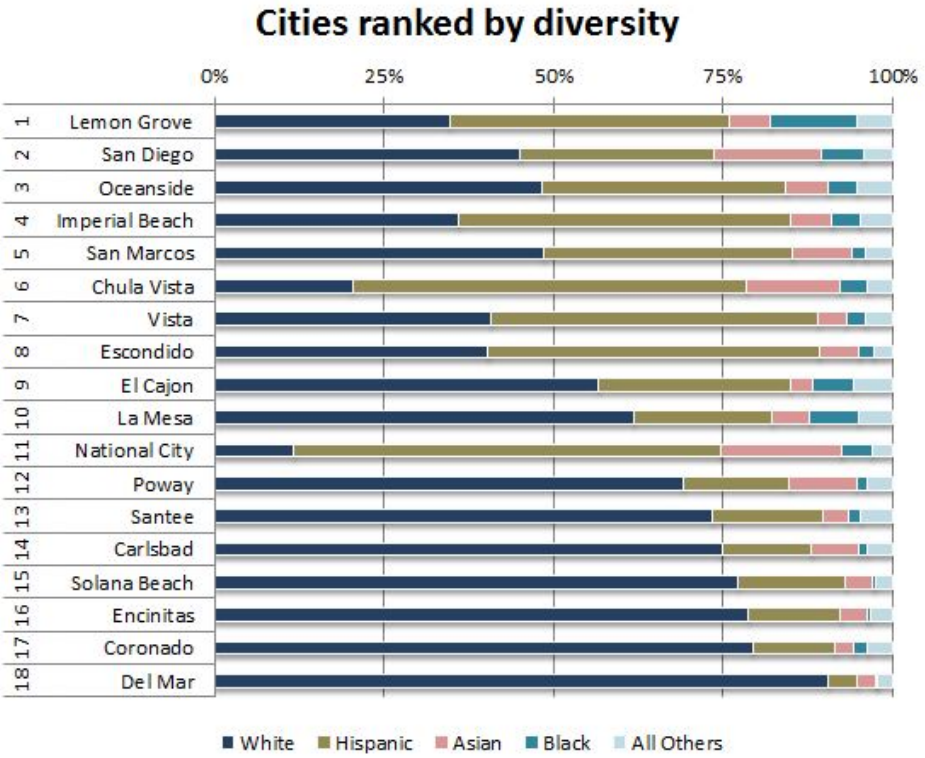
This analysis begins with the 1990 census, when almost two-thirds of the population was white, Hispanics were a fifth of the population, and the number of blacks and Asians were about the same. It ends in 2010, when whites are no longer a majority, Hispanics have grown to a third of the population, and blacks are half as numerous as Asians. Racial information at the census tract levels has been used to capture key indicators of comparative residential diversity and segregation.

Diversity comes in many colors:

How much likely are two people selected at random in a neighborhood of different races? This likelihood is determined by the diversity in racial fabric in an area. Thus, diversity is not just about the concentration of any single race (whether or not they are white or Hispanic), but about the proportional presence of different races in the area.

By this measure, at a city-wide level, the most diverse cities in the region are Lemon Grove and San Diego. These cities are slightly more diverse than California statewide. They surpass cities that have a higher Hispanic population like National City.

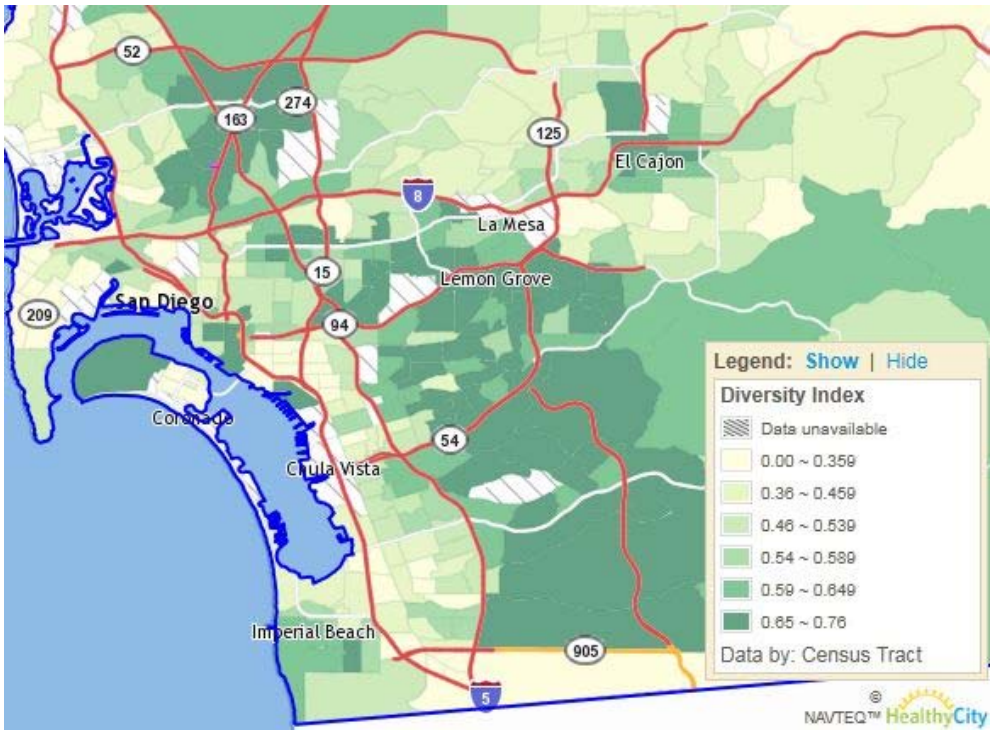
Among the least diverse are the north-county coastal cities of Del Mar, Encinitas and Solana Beach.



At a census tract and block level, there is a corridor of diversity east of Interstate 805, roughly bounded by Interstate 15 in the region north of Interstate 8, and extending around Highway 125 in the region south of I-8.

Then there are pockets of diversity in the north, in San Marcos and Oceanside. There is considerable diversity in some areas

within Chula Vista, Lemon Grove, La Mesa, El Cajon, San Marcos and Oceanside. The most diverse census tract is in Point Loma, on the east of Rosecrans, adjacent to some tracts that are not so diverse. This tract is diverse, since it has an almost equal proportion of whites, Hispanics, blacks and all others. The neighborhoods in southeast San Diego extending eastwards are the most diverse.

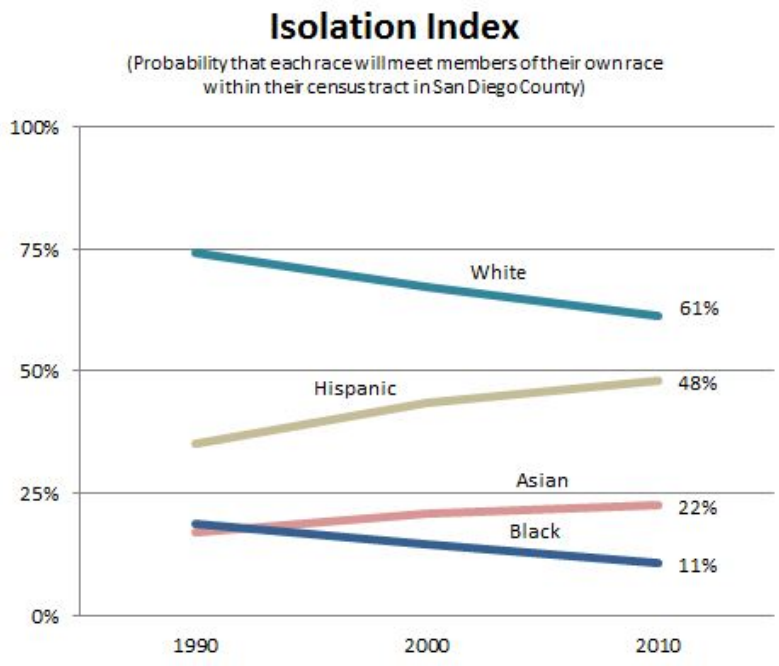


How diverse is your neighborhood? The Diversity Index calculated for this analysis, at a census tract level, can be viewed at HealthyCity.org where you can zoom in to map your neighborhood.

Inter-racial exposure runs in different directions:

How likely are people of a particular race to meet people either of their own race (Isolation Index) or of other races (Interaction Index) within their neighborhood?

This is a function of relative proportion of one's own race and other races in the census tract. The Isolation Index mirrors racial proportions in the region, and shows that whites and blacks are decreasing in their isolation. White interaction with Hispanics and Asians has grown significantly. Black interaction with Hispanics has also grown significantly. However, Hispanic interaction with whites has fallen, as well as Asian interaction with whites. Most of this fall in interaction occurred in the 1990s, and the Interaction Index flattened somewhat during the last decade.

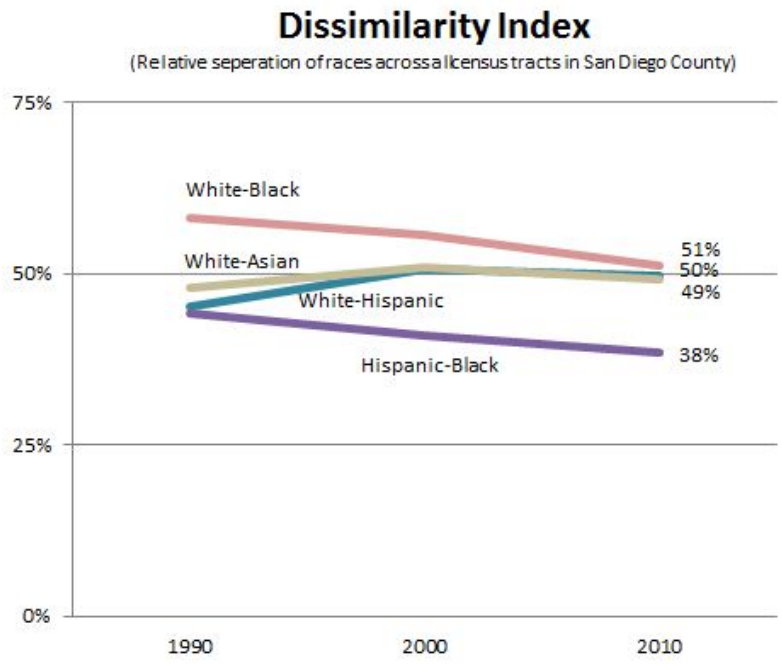


Residential segregation has taken a surprising turn:

The traditional notion of segregation involved red-lining of black neighborhoods from the white ones.

However, for a diverse region as San Diego, with a large share of multiple minorities, segregation is more complex and difficult to generalize. For this analysis, two measures of residential segregation have been used: one that captures the evenness of population distribution between two races (Dissimilarity Index) and another that captures the spatial concentration of one race in comparison with whites (Relative Concentration Index).

The measures show that for Hispanics, there has been little change in segregation pattern through the two decades. This is remarkable given that the region has added almost a quarter million Hispanics every decade. It shows that Hispanic growth has occurred in the same relative concentration and geographical dispersion as the existing Hispanic population. Moreover, Hispanics are more concentrated in certain areas, in comparison to whites. Although the Hispanic-white dissimilarity remains high, the Hispanic-black dissimilarity is gradually diminishing.



Residential segregation of Asians (as measured by the Relative Concentration Index compared to whites) increased significantly during the 1990s, and is double that of Hispanics. This is interesting because the Asian population is twice as unevenly distributed as the Hispanic population, in comparison to whites. A possible explanation for this high segregation value is that Asian concentration is occurring in highly dense urban areas within the region, where as Hispanic concentration is geographically dispersed.

The only exception to the high Dissimilarity Index is for blacks, which have become less segregated, but more concentrated geographically. This anomaly may be due to a shrinking black population in the lesser dense areas of the region, and the relative increase in other races in the census tracts that blacks reside.

This analysis shows that despite the increasing diversity in San Diego region over the past two decades, this has not led to greater residential integration between whites, Hispanics and Asians.

Note:
White refers to non-Hispanic white only
Hispanic includes all Hispanic race/ethnicity that were also white, black, Asian, or any other race.
Black refers to non-Hispanic black or African American only.
Asian refers to non-Hispanic Asians only for 2010 and 2000; this is combined with non-Hispanic Pacific-Islander for 1990.
Neighborhood in this commentary refers to the area within the census tract. It should not be confused with other geographic identifiers.

Murtaza Baxamusa is the Director of Planning and Development for the San Diego Building Trades Family Housing Corporation. He lives in Bird Rock.

San Diego County, 1990-2010

Indicators	1990	2000	2010	Change 1990-2000	Change 2000-2010	Change 1990-2010
RACIAL COMPOSITION						
White	65%	55%	48%	(0.10)	(0.07)	(0.17)
Hispanic or Latino	20%	27%	32%	0.06	0.05	0.12
Asian	7%	9%	11%	0.01	0.02	0.03
Black or African American	6%	5%	5%	(0.01)	(0.01)	(0.01)
Diversity Index	52%	61%	65%	0.09	0.03	0.13
ISOLATION INDEX (Higher value implies more isolation)						
White	74%	67%	61%	(0.07)	(0.06)	(0.13)
Hispanic	35%	44%	48%	0.09	0.04	0.13
Asian	17%	21%	22%	0.04	0.02	0.06
Black	19%	14%	11%	(0.04)	(0.04)	(0.08)
INTERACTION INDEX (Higher value means more interaction)						
White with Hispanic	15%	18%	22%	0.03	0.04	0.07
Hispanic with White	48%	38%	34%	(0.11)	(0.04)	(0.15)
Black with Hispanic	26%	33%	37%	0.06	0.05	0.11
Hispanic with Black	8%	7%	6%	(0.01)	(0.01)	(0.02)
White with Asian	6%	7%	9%	0.01	0.02	0.03
Asian with White	52%	43%	40%	(0.09)	(0.03)	(0.12)
DISSIMILARITY INDEX (Higher value means more unevenness)						
Hispanic & White	45%	51%	50%	0.05	(0.01)	0.04
Asian & White	48%	51%	49%	0.03	(0.02)	0.01
Black & White	58%	56%	51%	(0.03)	(0.04)	(0.07)
Hispanic & Black	44%	41%	38%	(0.03)	(0.03)	(0.06)
RELATIVE CONCENTRATION INDEX (Higher value means more concentration)						
Hispanic compared to White	30%	31%	35%	0.01	0.04	0.05
Asian compared to White	58%	73%	70%	0.14	(0.02)	0.12
Black compared to White	3%	19%	39%	0.15	0.20	0.35

Sources: 1990, 2000 and 2010 Decennial Census, U.S. Census Bureau. Calculations by author, Murtaza H. Baxamusa, PhD, AICP.

Methodology

Diversity Index:

Diversity Index (D) is the probability that any two residents, chosen at random, will be of two different races. A perfectly homogenous distribution with only one race would have a diversity index of 0%, where as a perfectly heterogeneous distribution with equal representation of all races would have a diversity index of 100%. In this analysis, we have considered Hispanic to be a race category, using 8 categories in a derivation of the Simpson' diversity index outlined by the Census Bureau. (U.S. Census Bureau, 2001, Mapping Census 2000: The Geography of U.S. Diversity).

$$D = 1 - \sum_{r=1}^{8} \left(\frac{X_r}{T}\right)^2$$

The 8 race categories (r) in this analysis are Hispanic or Latino, Non-Hispanic White alone, Non-Hispanic Black or African American alone, Non-Hispanic American Indian and Alaska Native alone, Non-Hispanic Asian alone, Non-Hispanic Native Hawaiian and Pacific Islander alone, Non-Hispanic Other Races alone, and Non-Hispanic two or more races.

Isolation Index:

Isolation Index ($I_{x \to x}$) is the probability that a member of a particular race is exposed to members of the same race within the census tract. An index of 100% implies that members of the race are not exposed to any other race within their census tract, and the index approaches 0% if there are fewer members of the same race within the census tract.

$$I_{x \to x} = \sum_{i=1}^{n} \left(\frac{x_i}{X}\right)\left(\frac{x_i}{t_i}\right)$$

Interaction Index:

Interaction Index ($I_{x \to y}$) is the converse of the isolation index that can be tailored to specific pairs of races. It is the probability that a member of a particular race is exposed to members of another race within the census tract. The higher the index, the higher the probability that a person of race '*x*' will meet a person of race '*y*' within the census tract that 'x' resides.

$$I_{x \to y} = \sum_{i=1}^{n} \left(\frac{x_i}{X}\right)\left(\frac{y_i}{t_i}\right)$$

Dissimilarity Index:

Dissimilarity Index (S_{xy}) is the evenness with which two races are distributed across the census tracts in the county. It also measures the proportion of members of one race that would need to be redistributed to match that of the other race. The closer the relative distribution of the two races in the region, smaller the index; and the more disparate the distribution of the two races, the higher the index. The formula is a basic derivation of the Atkinson's index used for measuring inequality.

$$S_{xy} = \frac{1}{2}\sum_{i=1}^{n}\left|\frac{x_i}{X} - \frac{y_i}{Y}\right|$$

Relative Concentration Index:

Relative Concentration Index ($C_{x/y}$) is the distribution of one race in the geographical space of the county, relative to another race. In this analysis, Whites are considered the base race (y) for comparing the relative distribution of other minority races (x). One limitation of other concentration indices (such as the Delta index) is that the spatial distribution for a particular race may be constrained by the geography (e.g. canyons, mountains, forests, water bodies). Since this index takes into consideration the physical space occupied by Whites in San Diego county, it allows us to compare with the ratio if x (minorities) were to be fully segregated, and y (Whites) fully dispersed. The methodology for this index is discussed by U.S. Census Bureau (Measurement of Segregation by the U.S. Bureau of the Census, 1980-2000) and is based on the corrected Massey and Denton's concentration index. (Douglas S. Massey and Nancy A. Denton, 1998, The Elusive Quest for the Perfect Index of Concentration: Reply to Egan, Anderton, and Weber, Social Forces, 76:3)

$$C_{x/y} = \left(\frac{\sum_{i=1}^{n}\frac{x_i a_i}{X}}{\sum_{i=1}^{n}\frac{y_i a_i}{Y}}\right) - 1 \Bigg/ \left(\frac{\sum_{i=1}^{n_1}\frac{t_i a_i}{T_1}}{\sum_{i=n_2}^{n}\frac{t_i a_i}{T_2}}\right) - 1$$

Definition of Terms:

n	Number of census tracts in region	t_i	Total population in census tract i
n_1	Rank of area (sorted ascending in size)where $\sum t_i \geq X$	T_1	Total population in n_1 smallest tracts
n_2	Rank of area (sorted descending in size)where $\sum t_i \geq Y$	T_2	Total population in n_2 largest tracts
x_i	Population of race X in census tract i	T	Total population in region
y_i	Population of race Y in census tract i	a_i	Land area of census tract i
X	Population of race X in region		
Y	Population of race Y in region		