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How Would Adjusted 1990 Census Data

Have Made A Difference ?

A Case Study of Long Beach, CA

February 15, 2001

Report Series

Report No. 06



**U.S. Census
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The Presidential Members of the U.S. Census Monitoring Board present the research findings of Dr. Chris Williamson, "How Would Adjusted 1990 Census Data Have Made A Difference? A Case Study of Long Beach, CA."

The study examined how using adjusted 1990 Census data would have made differences in policies, funding, and/or services of the City of Long Beach, the Long Beach Transit Company, and the Long Beach Unified School District. Dr. Williamson's research found that funding for public services and programs would have increased, capital improvement funding would have been augmented, and planning and related decision-making would have been enhanced.

Sincerely,

A handwritten signature in cursive script that reads "Gilbert F. Casellas".

Gilbert F. Casellas, Co-Chair

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In November 1997, Congress established the eight-member Census Monitoring Board; four members appointed by Congress, four by the President, charged "to observe and monitor all aspects of the preparation and implementation of the 2000 Decennial Census."

U. S Census Monitoring Board

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HOW WOULD ADJUSTED 1990 CENSUS DATA
HAVE MADE A DIFFERENCE?
CASE STUDY
LONG BEACH, CA

February 15, 2001

Prepared for

U.S. Census Monitoring Board
Presidential Members
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EXECUTIVE SUMMARY

This focused investigation is indicative of many local government services that would likely have been different had 1990 official Census data been adjusted. The City of Long Beach, CA and two adjacent cities have a combined 2000 estimated population of nearly 550,000. The estimated net 1990 Census undercount was 3.4 percent (9.2 percent for Blacks, 5.1 percent for Hispanics, and 5.5 percent for the under age 18 population). Of the estimated 18,350 people missed in the 1990 Census, 7,852 were under age 18 (43 percent).

The study turned to the actual public service providers and asked how having had adjusted 1990 Census data would have made differences in their policies, funding, and/or services. If there is a similar Census 2000 undercount in Long Beach and corrected data are not available and/or in official use, these findings are indicative of lost funding and decision opportunities likely to continue for the next decade for many urban local governments with similar services.

The city estimates that each missed person represented \$56 in federal funding lost per year. Over the ten years that 1990 data (or annual estimates based on the 1990 Census) were used, Long Beach lost nearly \$10,000,000. If adjusted 1990 Census data were used, annual city population estimates would have been higher, as would projections of future population growth, an important component of the city's Strategic Planning process.

Several departments would have benefited annually from adjusted 1990 Census data. For example, the Library would have had an increase in annual AB345 state library per capita funding, enough to purchase 1,240 books in FY00. Additional population-based funding for the health department could have added three public nurses, a homeless case manager, and removed lead-based paint in 13 additional housing units. The police department would have had one half of the necessary funding for an additional officer. Long Beach Transit would have had additional Proposition A and federal transit funding of about \$210,000 per year, enough to purchase an additional bus.

Periodic state and county bonds allocate funds based partly or entirely on population would have generated significant funds. Using adjusted data would have added \$193,000 for local parks from Proposition 12 passed in March, 2000. Census data are indirectly used in determining rates, such as the crime rate, per capita electricity consumption rate, or solid waste generation rate. Environmental impact analyses, capital improvement plans, and quality of life indicators would all be improved with more accurate census data. In no instance was using adjusted 1990 Census data found detrimental.

HOW WOULD ADJUSTED 1990 CENSUS DATA HAVE MADE A DIFFERENCE? A CASE STUDY OF LONG BEACH, CA

by Dr. Christopher Williamson, AICP
Research Associate Professor, University of Southern California

I. Introduction and Purpose

Preliminary estimates of the Census 2000 national undercount range from a low of 0.96 percent to a high of 1.4 percent, about 3 to 4 million people. If the lower estimate is used, the national net undercount is still roughly equal to the population of the state of Iowa. Undercount estimates by race or Hispanic origin are as high as 9.16 percent.¹ While all indications point to a significant reduction in the Census 2000 undercount compared to the 1990 Census, even a small national undercount will vary geographically; vary by race and Hispanic origin; represent large populations in many urban areas; and unfairly impact governments and organizations that use census data for funding and other activities.

This study explores and documents specific funding, policies, and actions that would have been arguably different had official 1990 Census data been corrected for error. This is a case study of the City of Long Beach, CA, a full-service urban municipal government, and its school district and local transit agency, all of which are similar to many others located in the United States. The findings are not intended to be taken as exact predictions, but indicative of many local services and policies in which decennial census data had a direct or indirect role that would likely have been different had 1990 Census data been adjusted.

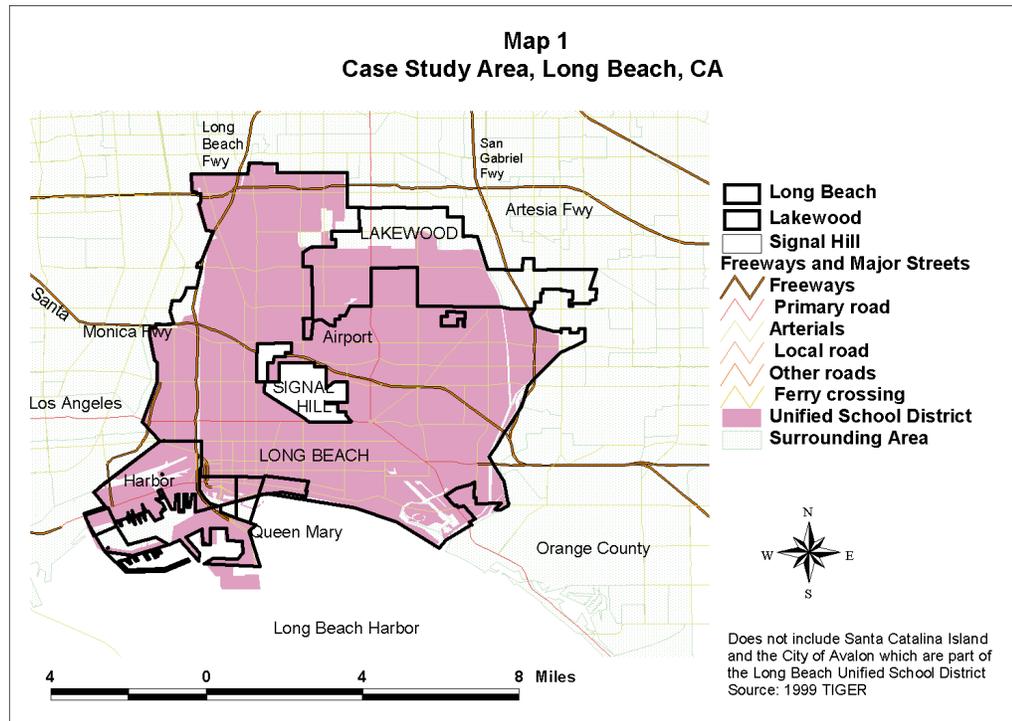
It is assumed that the reader is familiar with Census 2000 and the plans to adjust census data by using the Accuracy and Coverage Evaluation program (A.C.E.). The A.C.E. program was modeled after the Post Enumeration Survey (PES) that followed the 1990 Census. While the official 1990 Census was not adjusted for undercount error, a set of adjusted population counts (P.L.94-171) was created, based on the 1990 PES, and is generally considered to be more accurate for larger geographic areas.² Assuming Census 2000 has a comparable undercount, these findings may be interpreted as funding and decision opportunities that would be lost to many urban governments and related service providers if Census 2000 data are not adjusted.

II. Description of the Long Beach Study Area

The City of Long Beach (CLB) is located in the southeastern corner of Los Angeles County, bordering on the Pacific Ocean and Orange County. The city covers approximately 50 square miles with an estimated 2000 population of 457,000 people. The adjacent cities of Signal Hill (population 9,250) and Lakewood (81,000) are also included in the Long Beach school district and transit service areas, for a combined population of nearly 550,000.³ The Long Beach Transit Company (LBT) is a non-

profit company, owned by CLB, that principally serves Long Beach, Lakewood, and Signal Hill with several connecting lines to adjacent communities. The Long Beach Unified School District (LBUSD) serves the three cities and also includes the island of Santa Catalina's small year-round population of about 4,000.

Map 1 shows the study area with reference geography. The city of Avalon, located on Santa Catalina Island, 20 miles to the south of Long Beach, is not shown and is only included in the LBUSD enrollment data.



Long Beach is California's fifth largest city and one of its more industrialized. The city's harbor is one of the world's busiest commercial container ports. The city is perhaps best recognized as the home of the RMS Queen Mary, brought there in 1967 and the site of McDonnell Douglas's aircraft manufacturing (now part of Boeing). Unlike many cities in California that contract with their county governments for services. Long Beach provides all services including health, water, and gas. This 'full service' aspect makes Long Beach similar to many other cities and urbanized counties. The city has a diverse population, a large four-year university, a two-campus community college, VA and three other hospitals, several shopping centers, a high-rise downtown, commercial airport, a busy harbor, tourism, wide-range of housing, movie studios, two large city-owned marinas, extensive parks and golf courses, diverse employers, and four miles of beaches. It also has the range of problems associated with large cities: gangs, crime, housing quality issues, education, underemployment, fiscal resources limitations, and so on.

The Long Beach Unified School District (LBUSD) covers 128.6 square miles and includes Long Beach, Signal Hill, Santa Catalina Island, and about 60 percent of Lakewood. In October 2000, the K through 12 enrollment was 94,257 students. The student population speaks many languages and come from a wide range of cultural backgrounds. 1997 LBUSD data showed that 36.6 percent of K-12 students were limited-English proficient with 38 languages spoken at home.

The district's 87 regular schools are organized under three area superintendents and, as of April 1999, the district had a full time equivalent of nearly 8,000 regular employees, making it second largest employer in the Long Beach area. The district has a history of innovation, recently mandating school uniforms, reducing class sizes, and creating magnet and charter schools.⁴

LBT is a full-service urban transit agency formed in 1963 and operated by a non-profit company owned by the City of Long Beach. There are 37 regular bus routes plus an 'aqua bus' serving the tourist locations in the harbor, including the Queen Mary. The company is located and operates out of two facilities located in central and northern Long Beach. LBT uses census data in two principal ways: funding and determining routes and stops (service planning).

III. 1990 Census Undercount

The 1990 Census net undercount was estimated at 1.6 percent for the entire nation, 2.7 percent for California, and 3.3 percent for Los Angeles County. The estimated net undercount for the study area is shown in Figure 1.

Figure 1
Estimated 1990 Census Undercount, Study Area

	<u>Adjusted</u>	<u>Official</u>	<u>Difference</u>	<u>Percent</u>
Total	529,173	511,361	17,812	3.4%
White	320,836	315,781	5,055	1.6%
Black	68,758	62,357	6,401	9.3%
AIEA	3,403	3,341	62	1.8%
API	68,818	66,100	2,718	3.9%
Other	67,358	63,782	3,576	5.3%
Hisp	120,229	114,004	6,225	5.2%
NH White	273,445	270,642	2,803	1.0%
NH Black	66,421	60,256	6,165	9.3%
NH Other	69,078	66,459	2,619	3.8%

The highest study area undercount rates were for the Black and Hispanic populations, 9.3 percent and 5.2 percent, respectively. The 'Other' tabulation is composed mostly of Hispanics. This pattern also holds within each city, as shown in the next three tables. Figure 5 illustrates the 1990 population diversity of Long Beach.

Figure 2
Estimated 1990 Census Undercount, Long Beach

	<u>Adjusted</u>	<u>Official</u>	<u>Difference</u>	<u>Percent</u>
Total	445,943	429,433	16,510	3.7%
White	255,182	250,716	4,466	1.8%
Black	64,830	58,761	6,069	9.4%
AIEA	2,835	2,781	54	1.9%
API	60,831	58,266	2,565	4.2%
Other	62,265	58,909	3,356	5.4%
Hisp	107,115	101,419	5,696	5.3%
NH White	215,249	212,755	2,494	1.2%
NH Black	62,657	56,805	5,852	9.3%
NH Other	60,922	58,454	2,468	4.1%

Figure 3
Estimated 1990 Census Undercount, Lakewood

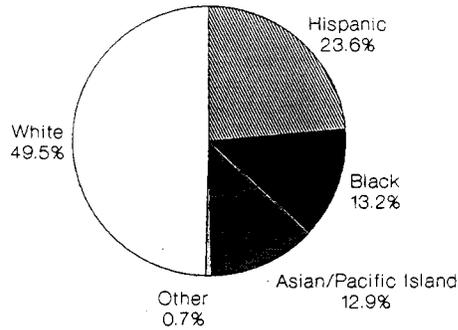
	<u>Adjusted</u>	<u>Official</u>	<u>Difference</u>	<u>Percent</u>
Total	74,565	73,557	1,008	1.4%
White	60,180	59,690	490	0.8%
Black	2,949	2,712	237	8.0%
AIEA	493	487	6	1.2%
API	7,000	6,884	116	1.7%
Other	3,943	3,784	159	4.0%
Hisp	11,192	10,763	429	3.8%
NH White	53,420	53,176	244	0.5%
NH Black	2,807	2,586	221	7.9%
NH Other	7,146	7,032	114	1.6%

Figure 4
Estimated 1990 Census Undercount, Signal Hill

	<u>Adjusted</u>	<u>Official</u>	<u>Difference</u>	<u>Percent</u>
Total	8,665	8,371	294	3.4%
White	5,474	5,375	99	1.8%
Black	979	884	95	9.7%
AIEA	75	73	2	2.7%
API	987	950	37	3.7%
Other	1,150	1,089	61	5.3%
Hisp	1,922	1,822	100	5.2%
NH White	4,776	4,711	65	1.4%
NH Black	957	865	92	9.6%
NH Other	1,010	973	37	3.7%

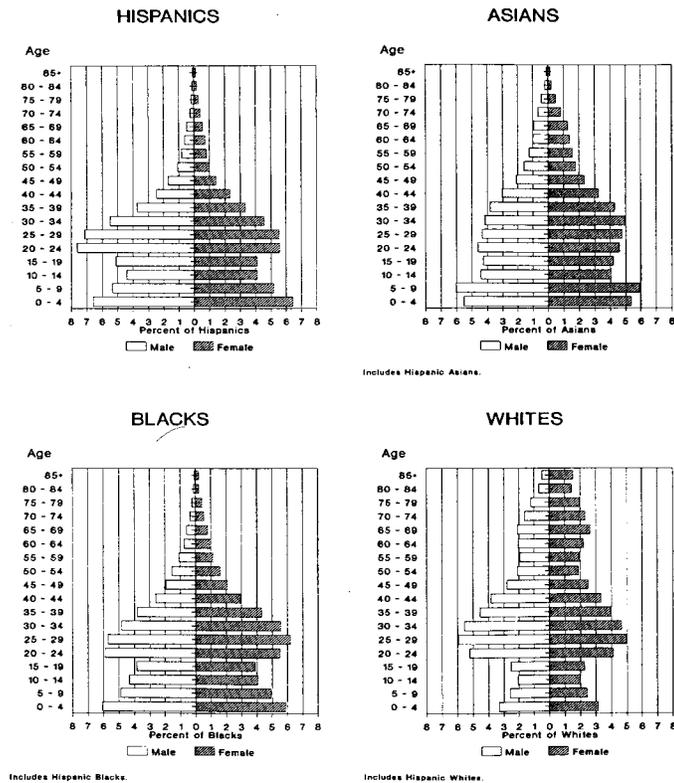
AIEA = American Indian, Eskimo, Aleut; API = Asian and Pacific Islander; NH = Non-Hispanic. Hispanics may be of any race. Columns do not sum to the total (Total = White to Other OR Hisp to NH Other).

Figure 5
ETHNIC DIVERSITY
1990



In general, households of low and moderate income (usually less than 80 percent of a county median or mean household income) will use more local government services than older and higher income households. That pattern holds true in Los Angeles County and in the study area. The study area Black and Hispanic populations tend to be of moderate and low income and use more government services than the more affluent and older White population. The overall 1989 mean household income for Long Beach was \$41,251 while the mean income for Black households was \$29,330 and for Hispanics was \$30,896. These two groups, and to a less extent the Asian and Pacific Islander population, also tend to be younger and more likely to have school age children than the White population, as shown in Figure 6 (illustrates Long Beach city only).⁵

Figure 6



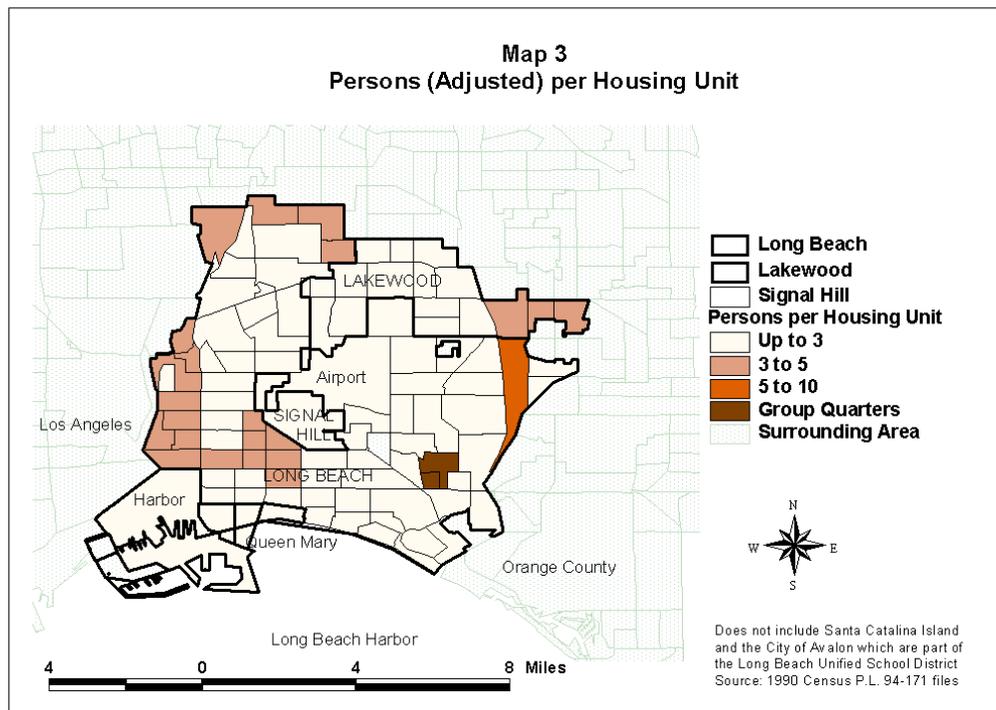
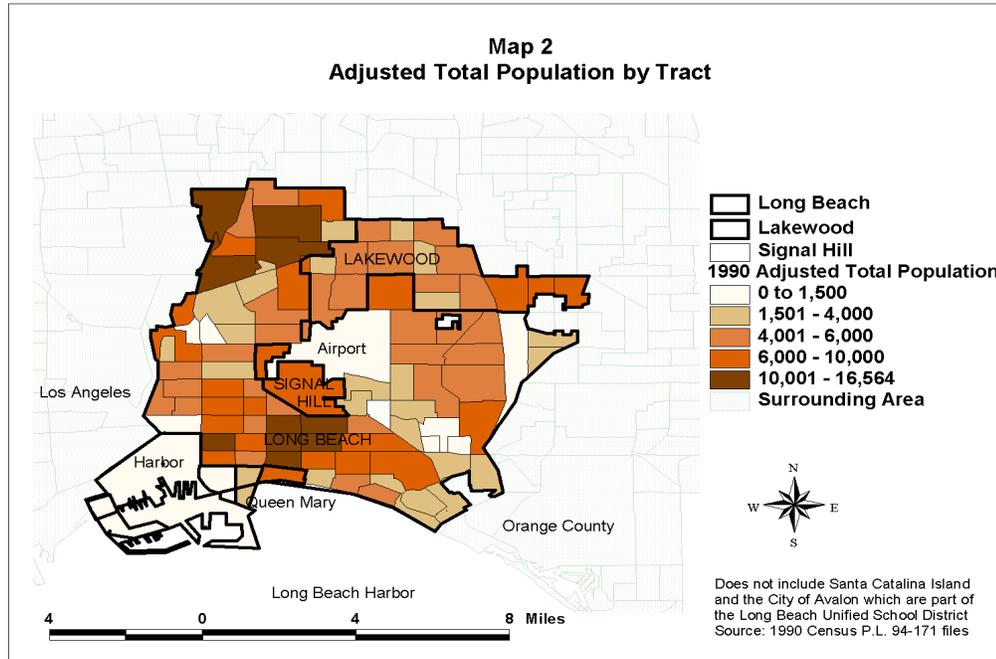
A detailed undercount analysis was prepared using the Adjusted and Official 1990 P.L. 94-171 Redistricting data by census tract, age, and Race and Hispanic origin. The two sets of data were merged and the under age 18 counts derived by subtracting the Over 18 counts from the total population (Age 18 and over counts were required for redistricting, but not the under age 18 count). This analysis was needed to help the local officials better answer the question, "*How would adjusted 1990 Census data have made a difference?*"

In general, the study area is a mix of population and income groups representative of many urban areas. There are older 'central-city' type neighborhoods with mostly renter-occupied housing and gang and relatively high crime rates (in the early 1990's). There is a large public housing project in North Long Beach. Lakewood and portions of East Long Beach have a suburban character with mostly owner-occupied households, many now retired after originally arriving in the 1950's and 1960's from the mid-west. Filipinos and Cambodians have recognized geographic locations and community identities. There is a gay and lesbian population as well as a sizeable college-age population and a 'beach town' feel in the Belmont Shore area.

In the study area, of the estimated 18,350 people missed in the 1990 Census, 7,852 were under age 18 (or 43 percent). The under age 18 population is the population in primary and secondary schools, riding buses, using parks, needing health care (often without adequate insurance), and possibly getting into trouble - five expensive local government services: i.e. schools, transit, parks, health, and police. While the overall estimated net undercount rate was 3.4 percent (9.2 percent for Blacks and 5.1 percent for Hispanics), it was generally higher for the under age 18 population: 5.5 percent for the total population (12.9 percent for Blacks, and 5.7 percent for Hispanics).

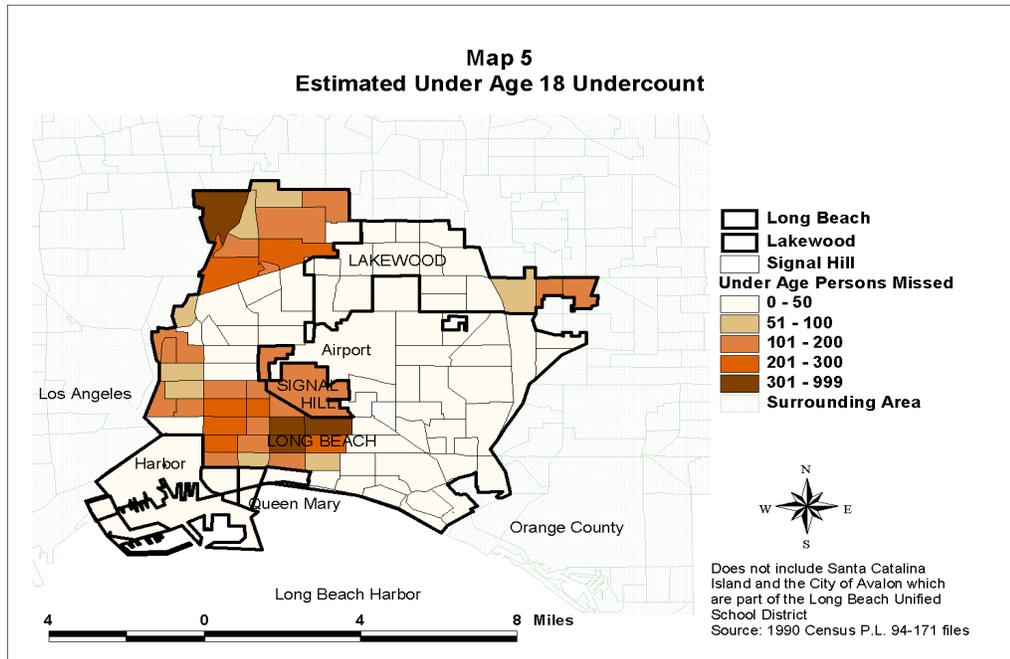
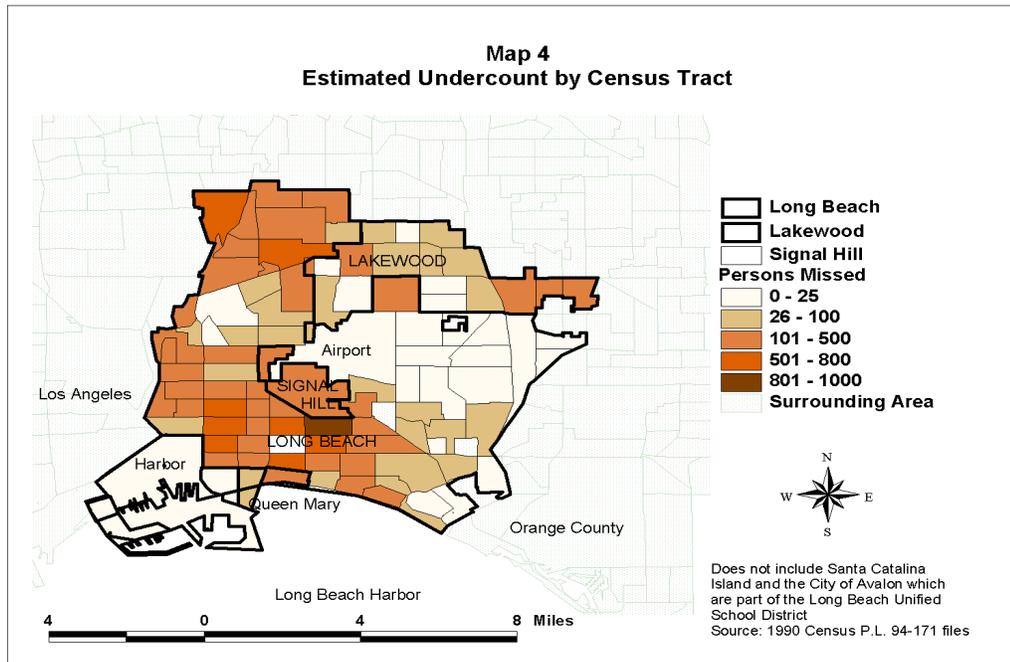
Other urban areas in the United States will not have the same demographic and economic profile as the study area. Many local government uses of census data are not based on race and ethnicity but on total population and/or the age profile regardless of race and ethnicity. Long Beach is a built-out city with little undeveloped land. Urbanizing areas often make additional extensive use of census data to project future growth; anticipate population characteristics; and plan new schools, roads, and utilities in non-urban and/or as yet undeveloped areas.

The following maps illustrate the distribution of the adjusted population by 1990 Census tract.

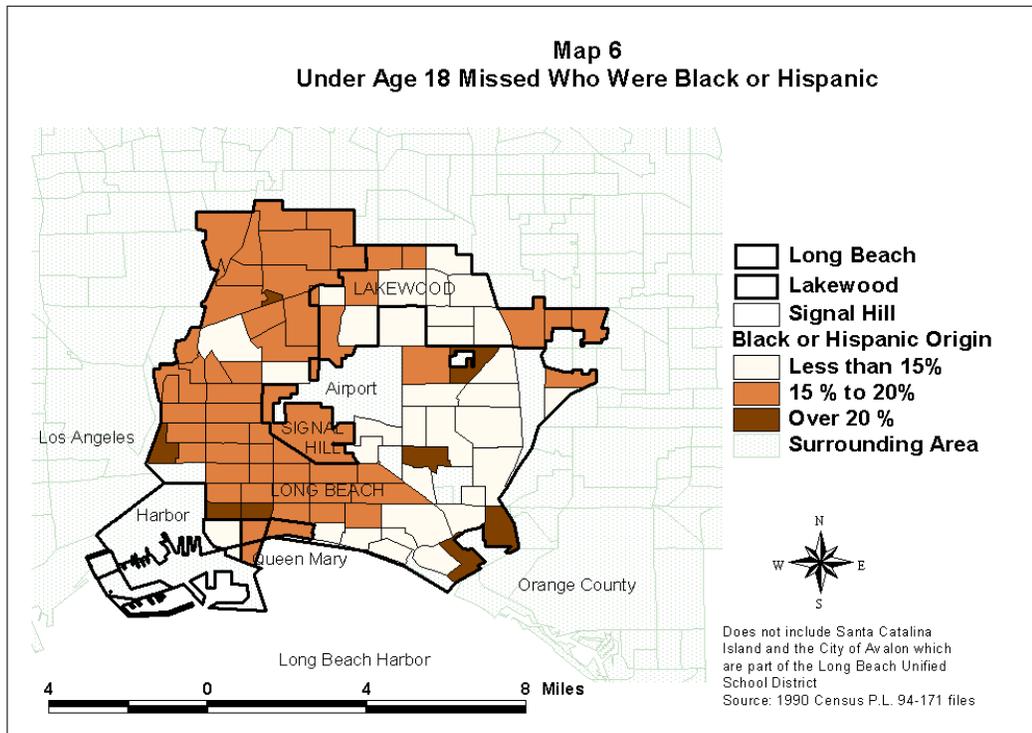


Maps 2 and 3 show that the population is more concentrated in the southwest area, the neighborhoods surrounding downtown Long Beach, and the northwest area, where there is a large public housing project and many apartment buildings. The large

populated tracts in the southeast area include the Veterans Administration Hospital and the California State University - Long Beach campus, both housing a group quarters population.



Maps 4 and 5 show that most of the estimated undercounted population is located in the same two areas of Long Beach with the largest populations, with an additional undercounted population cluster in northeast Long Beach.



Map 6 shows the distribution of the missed under age 18 Blacks and Hispanics is somewhat even throughout Long Beach, although the percentages are based on small estimates in some of the east-side census tracts.

IV. Study Findings

The study asked if having had the additional population as described in the previous section would have made differences in their policies, funding, and/or services. The Honorable Beverly O'Neill (Mayor, City of Long Beach), Dr. Carl Cohn (Superintendent, Long Beach Unified School District), and Lawrence Jackson (General Manager, Long Beach Transit) were contacted and each referred the question to appropriate staff who were directly involved in using census data.

The following three sections summarize discussions with these various staff and review of documents. In funding examples, a multiplier of 10 is used to represent the entire impact over the 10 years during which 1990 or 1990-based population data was a component, if appropriate. These are estimates based on other relevant conditions being unchanged, and may generally be interpreted as "best-case." If there is a similar relative undercount in Census 2000 and corrected data are not available or in official use, these findings are indicative of future lost funding and decision opportunities that are likely to continue for the next decade for similar urban governments, school districts, and public transit providers elsewhere in the United States.

A. City of Long Beach (CLB)

Citywide

In a 1998 affidavit by the Advance Planning Officer, the city estimated that each person missed in the 1990 Census represented \$56 in lost annual federal funding. Based on that figure and the city's 1990 undercount of 16,510, the lost funding equaled \$924,560 which, over the ten years the data (or annual estimates based on the 1990 Census) was used, represented nearly \$10,000,000.⁵ This estimate included many, if not all, of the 22 large Federal grant programs for which the city was already receiving funding detailed in the 1999 General Accounting Office (GAO) report, *Formula Grants: Effects of Adjusted Population Counts on Federal Funding to States*.

The GAO report estimated that California would have received an additional \$223,000,000 in FY98, not including grants based on poverty rates or transit, an increase of 1.62 percent over actual grants.⁶ Since Long Beach's 1990 population was 1.46 percent of the state's, based on adjusted data for both, the city's share of the increased Federal funding in FY98 from these 22 programs would be \$3,255,800, although not all the funds would be passed through to local governments. The city's estimate of \$924,560 per year may actually be on the low side, given the GAO findings.⁷ To gain a sense of what this amount would fund in one year, the FY00 budget for the city's Parking and Business Area Improvement Program was \$1.5 million. This amount is about half the FY01 budget for access improvements required by the Americans with Disability Act. Multiply these programs or capital improvements by 10, and they represent a significant impact to the residents' quality of life.⁸

Library

California public libraries are funded annually through state law AB345, since 1997 based on the population of the library's service area. For FY00 the statewide library fund is \$56,870,000 of which the Long Beach Library system receives \$758,298. Had both the statewide and local amounts been adjusted for the 1990 Census undercount, the FY00 Long Beach Library allocation would be about \$28,000 higher. According to the March 2000 *School Library Journal*, average hardcover books cost \$17.57. Libraries usually pay an additional \$5 processing fee, for a total of \$22.57. Based on this amount, the additional funding represents 1,240 books. If this funding formula were in place for ten years, assuming the additional funding were used only for books, the number of books that were 'lost' due to the use of unadjusted 1990 census data number over 12,000.⁹

Fire Department

The 500-member nationally-recognized Long Beach Fire Department bases its operation's planning on actual calls (42,000 in 1999). An increase of 3.7 percent in the city's 1990 Census population would not have triggered different decisions regarding day-to-day operations. Since Long Beach is a fully developed city, population projections do not play a major role in facilities planning in undeveloped areas.

However, adjusted 1990 Census data would have made a difference in fire safety and emergency preparedness, especially for earthquakes, run by the Community Services Division. The staff would have considered additional events and publications based on higher population counts, especially in the census tracts with the highest undercounts. In some of those same tracts, a higher 1990 population would also indicate a higher number of people per housing unit and/or the presence of illegal housing units, such as converted garages.¹⁰ The new Code Enforcement section of the Fire Prevention Bureau might also have considered additional areas for code enforcement based on the higher population density per tract.

Health And Human Services

Long Beach provides the full range of public health services: collecting vital statistics (births and death data), education, animal control, environmental health, hazardous waste, preventive health, food stamps and family planning, and HIV and sexually transmitted disease testing. Funding comes from a variety of federal and state programs. Two programs in particular use population data in their funding formula: State Core Public Health Functions (\$6,047,632 in FY99) and HUD Continuum of Care for Homeless (\$2,643,879 in FY99). Increasing these grants by 3.7 percent over 10 years would have generated an average of \$220,068 per year (\$163,479 from the state and \$57,201 from HUD). These increases could have funded approximately three Full Time Equivalent (FTE) public health nurses (from the state) and 1.5 FTE homeless case managers (from HUD).

The Long Beach Health Department also received three HUD grants focused on housing: \$8,000,000 total from Lead-Based Paint Hazard Removal (FY95 and FY98) and \$500,000 from Healthy Homes (FY99). Funding is partly based on the population estimated to be at-risk in targeted housing units. Using adjusted 1990 Census data would have increased these two programs by about \$52,000, enough to remove lead-based paint in 13 additional housing units (assuming a cost of \$4,000 per unit). Adjusted 1990 census data would also have influenced the selection and priority of census tracts where abatement programs operate. The Lead-Based Paint Abatement Program's emphasis is on children's exposure to lead, and having better census data on the number of young children would likely improve the program's effectiveness.¹¹

Parks, Recreation, And Marine

California voters passed the Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act (Proposition 12) on March 7, 2000 authorizing \$588,000,000 in discretionary funds for each city and county for their local park and open-space capital projects. The city is receiving \$5,216,640 based on the city's current population estimate (which is based on the 1990 Census). If adjusted 1990 Census data had been used and assuming subsequent population estimates were 3.7 percent higher, the Proposition 12 funds would be \$193,000 higher (assuming the total funding were also adjusted for the undercount). That amount is nearly the same as the FY01 budget for citywide bikepath maintenance and improvements (\$200,000) or the construction of the proposed sports park (\$190,000).¹²

Planning And Building

Long Beach relies on the State Department of Finance Demographics Research Unit (DRU) to estimate its population annually. This number was then widely used, as described in the previous section. DRU benchmarks, or calibrates, its estimates and projections to each national census. The 1990 undercount, then, is permanently incorporated into the state and city's official estimates and projections. Had 1990 Census data been adjusted, subsequent annual DRU estimates and projections throughout California would be correspondingly higher. If the 2000 data are adjusted, the DRU intends to recalculate estimates and projections using 1990 adjusted data.¹³

Long Beach is currently going through a Year 2010 "Strategic Planning" process during which the City Council and community leaders are striving to understand forces reshaping the city and recognize opportunities and challenges. The first topic deals with the growing population and estimates an additional 33,000 residents by 2010. Much of the rest of the Strategic Plan is keyed to the impacts of the additional population.¹⁴ Had the 1990 Census been adjusted, this estimate of future population growth would be higher since the 1980 to 1990 population change would have been 23.4 percent instead of 18.8 percent, nearly a 25 percent increase. Even a small change in a rate, when projected out 10 to 20 years, will result in a large mathematical change. These projections then become key assumptions for long-range planning and capital improvements.

City population estimates and projections play a critical role in the environmental review process required under the California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA). The analyses frequently use population estimates to determine rates, such as the annual usage of water per capita or the production of solid waste per person. These estimates are used by utilities and other service providers to plan long range capital improvements. Per capita rates derived from unadjusted 1990 Census data could lead to less accurate estimates of future service demand.

The number of persons living in each occupied housing unit, known as Persons Per Housing Unit (PPHU), is an indicator of quality of life. More than one person per room is considered 'crowding' and crowding may lead to less privacy and more stress for the occupants, more wear and tear on the unit itself, and higher demand for public services and utilities. If the adjusted 1990 Census data had been used, the additional population would have been allocated to existing housing units (no adjustment is made for housing units), thereby increasing the PPHU and indicating additional census tracts where crowding should be monitored. A higher PPHU could also indicate that housing rents and prices are less affordable and fewer people can afford to establish their own household. Not having used adjusted 1990 Census data, then, has contributed to less accurate information about the residential quality of life of Long Beach residents.

Police Department

Like the Fire Department, the Police Department bases its operations planning on actual calls and an increase of 3.7 percent in the city's 1990 Census population would not have triggered different decisions regarding day-to-day operations. Where the adjusted data would have made a difference is in the calculation of the city's crime rate and the funding of new police officers through the federal Office of Community Oriented Policing Services (COPS).

The city's crime rate is calculated by dividing reported crime incidents by the population. A larger 1990 Census population would have slightly reduced the crime rate, as the number of incidents remained the same. The COPS program is responsible for advancing community policing, including the addition of 100,000 community policing officers, authorized by Congress in 1994. In FY95, the city received \$1,150,000 and in FY99, \$1,460,000 from this program. The funding formula is complex, but had Long Beach's 1990 Census population been 3.7 percent higher the total additional funding for FY95 would have been about \$42,000. When combined with required local matching funds, that amount is about one-half of the annual cost of a full-time police officer.¹⁵

Community Development

The city's funding from HUD's Community Development Block Grant (CDBG) program increased from \$3,946,879 to \$25,403,642 between 1990 and 1997. CDBG funds are used to provide housing and expand economic opportunities for low and moderate income populations. Grants are determined by formulas that use population, poverty, and either overcrowding or housing age as factors. The exact funding impact of using adjusted 1990 Census data could not be determined for this study. However, an estimate of a one percent increase in CDBG funding due to a higher 1990 Census population count would have generated a total of \$720,000 between 1990 and 1997.¹⁶

B. Long Beach Transit (LBT)

Federal And Local Funding

Like most urban transit companies or agencies, considerable funding is provided by annual grants from the federal and other governments. Federal Transit Administration (FTA) Section 5307 grants are allocated to urbanized areas. Of the funds earmarked for population areas greater than 200,000, 66.71 percent are for bus service (as opposed to fixed rail and guideway service) and of those funds, about 62 percent are designated for urbanized areas of over 1,000,000 population. Then, 25 percent is allocated based on population, and 25 percent on population multiplied by population density.¹⁷

Section 5307 funds are allocated to LBT by the county regional transportation planning agency based on a different formula that still include population. LBT generally receives about 5.5 percent of the total Section 5307 regional funds allocated to the county by a population-based formula. In FY98, LBT received \$5,608,000. It was not possible to recalculate the grant, but it is arguable that had the county received FTA funding based on 3.3 percent higher adjusted 1990 Census population (the undercount rate of Los Angeles County), then LBT would have also received about \$185,000. Since the grants are annual, the ten-year amount that could have come to LBT through the use of adjusted 1990 Census data would have been \$1,185,000.

Los Angeles County also has a two half-cent sales taxes designated for mass transit, one of which is called Proposition A. These funds are returned to cities based on their population (annual estimates are based on 1990 data) and the city forwards 70 percent of its Proposition A funds to LBT. In FY95, the amount was \$3,050,000. Since this formula is updated annually, the FY95 figure serves as an approximate mid-decade estimate that can be multiplied by 10 and increased by 3.3 percent, the undercount rate for Los Angeles County. The resulting additional Proposition A funding is estimated at just over \$1,000,000.

Taking Section 5307 and Proposition A together, LBT could have received an additional \$2,185,000 over 10 years, or about \$210,000 a year. That is roughly the amount to operate one additional bus and close to the annual city subsidy that supports the free downtown 'Passport' circulator bus service. It is arguable, then, that the use of adjusted 1990 Census data would have added one bus to the streets of Long Beach or paid for a portion of the cost of the public's free use of the downtown circulator bus service.

Service Planning

Long Beach Transit's other use of census data is in planning bus routes, scheduling bus service, and ensuring equitable distribution of service amenities throughout the system. After the 1990 Census, LBT reviewed the data to identify possible discrepancies compared to their service data (i.e., data based on actual bus ridership) with the goal of finding missed underserved populations. Transit users have a demographic profile that would suggest that the addition of the nearly 18,000 missed

people to the 1990 Census data would not have likely changed day to day operations. In areas of existing low transit use, however, undercount data could indicate an area in gradual transition towards a population more likely to desire transit service. This information would influence long range service and capital planning.¹⁸

C. Long Beach Unified School District (LBUSD)

Comparing LBUSD Enrollment To Census Data

The estimated 1990 Census undercount of the under age 18 population for the study area is 7,852. If the undercount were evenly distributed by age, then about 28 percent would be under five years old, reducing the school age undercount to about 5,650. One would then expect 1990 Census school enrollment data (which is unadjusted) to be 5,000 to 6,000 less than the comparable LBUSD enrollment data.

Primary and secondary school enrollment data are the only other universal population counts that can be compared to census data as a check on census coverage. Figure 7 compares LBUSD enrollment (estimated for April 1990) to 1990 Census sample-based enrollment data for the LBUSD geographic area. The 1990 Census data show a slightly larger enrollment, compared to LBUSD. The 1990 Census private school enrollment was 7,523, about 9 percent of the combined census elementary and secondary public and private enrollment. There was no feasible way to check this census figure against private school enrollment data for the Long Beach study area.

Figure 7
1990 Census to LBUSD Comparison

	Oct-89	Oct-90	April est.
Kindergarten	6,158	6,554	6,257
Elementary	33,493	32,563	33,261
Middle	11,747	14,791	12,508
High	17,708	17,874	17,750
	69,106	71,782	69,775

[25% of 89-90 change is added to Oct. 89 data]

1990 Census STF3-A Table P54		
Elementary/Secondary Enrollment in Public Schools		
Avalon		424
Lakewood (60%)		6,187
Signal Hill		978
Long Beach		63,977
		71,566
Sampling Error		+/- 855
[60% of Lakewood is in LBUSD, assumes 60% of students]		

First, parents with children in kindergarten at the time of the census (April, 1) may have marked 'kindergarten' as a completed level (instead of 'nursery' or 'no school') which then tabulated as 'currently enrolled in elementary.' This incorrectly inflated the census elementary enrollment tabulation. The census listed about 4,500 pre-primary students, which was supposed to include kindergarten students at the time of the census, but LBUSD shows a kindergarten enrollment count of 6,257, not including pre-primary enrollments. This strongly suggests the census elementary enrollment count is overstated by several thousand.

A second explanation is that a higher proportion of the under age 18 undercounted population are under age 5, compared to assuming an even distribution over all ages, and therefore not yet in the LBUSD data. A third possible explanation is that high school drop-outs, who are not in the LBUSD data, were counted as in school in the census. The 1994 drop-out rate, for example, was 11.2 percent (it has since dropped dramatically). Adding in the drop-outs would raise the LBUSD count, compared to the census count, for the under age 18 age group.

Finally, public and parochial school children were exposed to repeated 1990 Census awareness programs with the intent to educate and motivate their parents about the census. This would further support the idea that the under 18 undercounted population is composed more of infants and drop-outs than students enrolled and attending school. The net effect of these explanations is that the relative match between the 1990 Census and LBUSD enrollment data does not rule out an undercount. If additional data were available on the ages of the undercounted and the census pre-primary/elementary enrollment data were corrected, LBUSD enrollment data would probably be larger than the census count.

Attendance Areas, Busing, Grants and Funding

The LBUSD uses its actual enrollment data to determine school attendance areas, to manage busing, and to apply for various state and federal funding. An increase in 1990 Census data of the under age 18 population due to adjustment would not have changed these operations, as the additional under age 18 population was already captured in the actual school enrollment data.

Enrollment Projections

LBUSD estimates its future grade enrollments based largely on a rolling average of the previous five years. Open enrollment within the district, cross-district enrollments, and children coming back into the public system from private schools complicate the process. When enrollments are higher, than expected numerous immediate problems are encountered in providing classrooms, seats, texts, teachers, meals, etc. In 1995, there was an unexpected (and still unexplained) jump in enrollments of over 2,500 students, double the previous year's increase, of which 300 were kindergarten students. Had the 1990 Census been adjusted for the under age 5 population (as is proposed for Census 2000), the LBUSD may have had some early warning that kindergarten enrollment would increase five years later.

Adjusted census data by age, as is proposed for Census 2000, could only help LBUSD to estimate the total number of potential students (pre-school, private, and drop-outs) they may have to accommodate, sometimes without much warning.¹⁹

V. Summary

This study examined a full-service urban government, transit company, and school district in order to illustrate how using adjusted 1990 Census data would have made a difference during the previous decade. The table on the following page lists and summarizes the documented examples.

The Long Beach city government is responsible for the health, safety, and welfare of its residents and visitors. Long Beach Unified School District is responsible for the quality education and safety of its students. Long Beach Transit is responsible for efficient and equitable service. It is evident that having used adjusted 1990 Census data would have added significant amounts of federal, state, and local funds to various programs and services that directly impact their missions. Several of these programs and services directly involve public safety and health, and others are focused on long-range planning and capital investments. In no instance was using adjusted 1990 Census data found to be detrimental to the public, it only helped.

HOW WOULD ADJUSTED 1990 CENSUS DATA HAVE MADE A DIFFERENCE?
A CASE STUDY OF LONG BEACH, CA

Summary Table	Program	Change	Significance
City of Long Beach			
Citywide	Federal Programmatic Funding, 22 programs	\$924,560 per year, about \$10 million during period 1990 data are in use	About 1/2 the FY01 budget for improving access under the Americans with Disabilities Act.
Library	AB345 state Library funds	\$28,000 additional funds, FY00	Purchase of 1,240 books
Fire Department	Community Services	Additional outreach and education events	Improves public's safety awareness and prevention activities
Health and Human Services	AB1288 Core Public Health funding and HUD Homeless Funding	Increase of \$220,068 per year	3 full-time public health nurses and 1.5 full-time homeless case managers
	Lead-Based Paint Removal and Healthy Homes	Increase of \$52,000 Per year	Abate lead-based paint in 13 additional housing units
Parks, Recreation, and Marine	Prop 12 bond funding based on population	Increase of \$193,000	Maintenance and improvements of city bikepaths
Planning and Building	Annual city population estimates	Higher estimates and projections	Better information for Strategic Planning program
	Environmental Review CEQA/NEPA	Better estimates of energy consumption & waste generation	Better information for utility and solid waste capital improvements and policies
	Quality of Life Indicators, PPHU and Density	More accurate crowding and affordability information	Better Quality of Life information for decision and policy-makers
Police Department	COPS program funding	Increase of \$42,000 in FY95	Additional 1/2 police officer
Community Development	CDBG program	\$720,000 increase	Double the FY01 budget for neighborhood traffic mitigation
Long Beach Transit			
Funding	FTA Section 5307 grants	Increase of \$185,000 in FY 98	One additional city bus
	Prop A 1/2 cent sales tax transit funding	Increase of \$1 Million over 10 years	Or Annual city cost of free downtown circulator service
Service Planning	Planning service and routes	Increase in population likely to use transit	Better indications of areas with increasing transit need, better long-range planning
Long Beach Unified School District			
Enrollment Projections	Enrollment by grade by school projections	Higher census count of under age 5 population	Better projections of entering Kindergarten class

NOTES

- 1 Table 1: "Preliminary Estimated Coverage of Census 2000 Based on the Accuracy and Coverage Survey" and Table 2: "Estimated Coverage of the 1990 Census Based on the Post Enumeration Survey" Press Release, February 14th, 2001, Bureau of the Census. < <http://www.census.gov/Press-Release>>
- 2 "Accuracy and Coverage Evaluation: Statement on the Feasibility of Using Statistical Methods to Improve the Accuracy of Census 2000", Kenneth Prewitt, Director, Bureau of the Census, June 2000, p. 24, footnote 37.
- 3 CA Department of Finance, annual city and county estimates, <<http://www.dof.ca.gov>>.
- 4 LBUSD, and from various pages <<http://www.lbusd.k12.ca.us/>>.
- 5 This general background information comes from the 1990 Census and the *Long Beach '90* four volume report prepared for internal city use by John W. Humphrey and Chris Williamson between 1993 and 1995.
- 6 Affidavit of John W. Humphrey, Advance Planning Officer, dated March 25, 1998. City of Long Beach.
- 7 Formula Grants: Effects of Adjusted Population Counts on Federal Funding to States, General Accounting Office, Report 99-69, February 1999.
- 8 All budget information taken from < <http://www.ci.long-beach.ca.us/citymanager>>
- 9 Memorandum from Theresa Graham, Administrative Officer, and conversation with Richard Steinhaus, Library Department, Feb. 6, 2001.
- 10 Conversation with Dan Gooch, Director Administration Bureau, Long Beach Fire Department, 1/19/01.
- 11 Meeting with David Honey, Health and Human Services, Feb. 2, 2001.
- 12 Conversation with Gail Wasil, Superintendent of Contract Operations, Feb 1, 2001 and < <http://www.pcl.org/bonds/12funding.html>>
- 13 Conversation and e-mail with Linda Gage, Director, CA Department of Finance Demographic Research Unit. Jan. 22, 2001.
- 14 Long Beach Strategic Plan - 2010 < <http://www.ci.long-beach.ca.us/citygov/strategicplan/index.htm>>
- 15 Conversation with Ed Hatzenbuhlen, LBPD, Jan. 23, 2001 and <<http://www.communitypolicing.org/about3.html>>
- 16 John W. Humphrey, Advance Planning Officer, "Schedule of Federal Grant Expenditures for the Period January 1, 1990 - September 30, 1997." Table.
- 17 Federal Register, Vol. 63, No. 121, June 24, 1998, Notices, "Apportionment Formula for Sections 5307 and 5311 Formula Grants."
- 18 Brynn Kernaghan, Manager of Government Relations, LBT, telephone conversations - 1/4/01 to 1/30/01.
- 19 Meeting with Vickie Will, Attendance Accounting Specialist, LBUSD, January 30, 2001 and conversation with Lynn Winters, Asst. Superintendent, Feb. 6, 2001.

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Dr. Williamson (Chris) is a Research Associate Professor of Geography at the University of Southern California (USC) who directs and teaches the GIS Graduate Certificate Program. His current research focuses on Census 2000, from the detailed changes in census geography to the combinations of the new Two or More tabulation. He is the author of the forthcoming book **Making Sense of Census 2000: A Guide to the New Geography and Data** (ESRI Press, April 2001). Chris worked for the U.S. Bureau of the Census as a computer analyst, geographer, survey statistician, and Special Assistant to the Director. He has first-hand knowledge and experience with census geography, census data collection procedures, quality control, questionnaire design, interviewer training, and data products including raw data, metadata, and summary reports. As the Special Assistant to the Director, he wrote speeches and prepared documents for the White House and Congress. Between 1989 and 1992 he worked as a consultant and city planner researching and writing legally adequate environmental documents and planning reports and ordinances that used census data extensively. As the GIS Planner for the City of Long Beach between 1992 and 1995, he wrote a series of demographic and economic atlases about the city based on census, state, and city data and was the city's census expert. He is a Research Associate of the Lusk Center for Real Estate, Population Research Laboratory, and the Trans-disciplinary Tobacco Use Research Center. He is a member of the American Institute of Certified Planners (AICP).