IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

STATE OF TEXAS, Plaintiff, v. UNITED STATES OF AMERICA; ERIC HOLDER in his official capacity as Attorney General of the United States, Defendants, *et al*.	Civil Action No. 1:11-cv-1303 (RMC-TBG-BAH)

SUMMARY OF EXPERT TESTIMONY OF DEAN ROGELIO SAENZ

The Texas Legislative Black Caucus Intervenor, pursuant to this Court's order of January 10, 2012, respectfully submits this summary of the testimony and reports of its expert, Dr. Rogelio Saenz.

Dr. Rogelio Saenz, is Dean of the College of Public Policy and Peter Flawn Professor in the Department of Demography at the University of Texas at San Antonio. Before moving to UTSA he was a Professor in the Department of Sociology at Texas A&M University. He is a sociologist and demographer who has written extensively in the areas of demography, social inequality, sociology of Latina/os, and immigration, and population trends. He is widely published and has received numerous awards and honors. Dean Saenz provided expert analysis of demographic trends and projected population changes in Texas.

Dean Saenz based his report and testimony on data from the Texas Legislative Council generated during the 2000 and 2010 redistricting cycles, the reports of other expert witnesses in this case, literature in the field, and other demographic data produced by agencies of the State of Texas (including population projections for the State of Texas conducted by the Texas State Data Center and birth data of the Texas Health and Human Services Commission) and the U.S. Census Bureau 2011 population estimates for the State of Texas.

The projection of the future population in a specific area is a branch of social science that has numerous applications in business and government. Governments regularly project populations in specific areas so as to plan for future school, road and other infrastructure needs. Private businesses contract for demographic services to identify and quantify future markets for a variety of projects, such as housing and retail developments. Dean Saenz used common and generally accepted methods in this report and testimony. The population projection techniques used here have been found by many to be quite useful and versatile and they have been used to address a wide variety of situations.

REPORT AND ANALYSIS

The dramatic Texas population growth from 2000 to 2010 was due almost exclusively to the non-white segment of the population. Non-whites accounted for approximately 90 percent of the nearly 4.3 million people added to the Texas population between 2000 and 2010. Non-white population increased by more than 3.8 million compared to white growth of only 464,000. Nearly 90 percent of that growth occurred among the minority population.

These demographic patterns have led to a significant shift in the racial and ethnic composition of the state. Between 2000 and 2010, the relative presence of the white population dropped from 52.4 percent in 2000 to 45.3 in 2010, while that of the non-white population rose from 47.6 percent in 2000 to 54.7 percent in 2010.

Basis for Population Growth

The rapid growth of the non-white population (especially the Latino population) and the slow growth of the white population are due to significant differences in the age composition of these groups. Non-whites outnumber whites in the age categories between 0 and 44, while whites outnumber non-whites in the age categories 45 and older. These age differences reflect higher fertility and immigration among non-whites and are responsible for an expanding non-white population and a stable on the one hand and, in the long-run, a declining white population on the other. Since at least 1990, minority infants have constituted an ever-larger majority of births in Texas. The birth rates indicate that the minority share of citizen voting age population has been accelerating since at least 2008.

Implications for Future Population Changes

The population changes in Texas are well known and well publicized. Much of the growth and transition is readily apparent, and persons whose work is directly affected by changes in population naturally are especially alert to demographic changes and projections. Rice University Prof. Steve Murdock (former Texas State Demographer and Director of the U.S. Census Bureau) has received much attention regarding the ongoing and projected population growth in minority (especially) populations. Dr. Murdock stresses the crucial need to invest in education of Latino youth to ensure State productivity in the coming decades, but his work has received more sensational attention in political reporting: “It’s basically over for Anglos”. The trend of a constantly growing minority share of population in Texas also has been highlighted by the 2010 census and by population projections of the Texas State Data Center located at the University of Texas at San Antonio. These clearly indicate the rising momentum of the racial and ethnic shift in the State’s population. Today, nearly two years after the 2010 census, these trends already are having an effect.

Patterns of Population Growth

Minority population growth tends to flow into particular geographic localities within cities and counties, while white population tends to flow in different channels. Racial clustering is exceedingly common across the United States. In particular, the non-white population in Texas tends to be concentrated in central city locations, although they have increasingly moved to adjacent suburban areas where Anglos had been clustered. Thus, the non-white population will become increasingly large in these areas due to its disproportionate projected growth in contrast to the more stable population growth of whites in some areas and the decline of the white population in other areas.

There also are areas, especially in the suburban areas, where whites are concentrated and where they are likely to continue being clustered. Note that the white share of the population increased in district 108 in Dallas County (Highland Park, University Park), while there were sharp increases in minority percentages in districts 101 and 106.

Minority population clusters, including those in urban areas, tend to have distinctive social and economic characteristics, and often are bound together by churches and other social and cultural ties. The same is true of many white concentrations. The racial concentrations are distinctive and differ in numerous characteristics.

The series of maps attached as Attachment 1 to my direct testimony show the population distribution of black and Hispanic population in major urban counties in Texas as reported by the Census Bureau for 2000 and 2010.[1] These maps illustrate how areas with 30 percent or more

[1]. The initial map for each county shows the 2000 census data by VTD as the VTDs existed at the time of the 2004 general election, and the second map for each county shows the 2010 data by VTD as the VTDs existed for the 2010 election. There are very minor changes in the VTDs between maps in these counties, as is apparent from close examination of the maps.

minority population regularly become much more heavily minority, and that minority population spreads to adjacent areas in a predictable pattern.

A closer look at areas of Dallas County illustrates the nature of racial change in urban areas o f Texas. I have compared the 2000 and 2010 maps within the area of current district 106 in Dallas County. Each map is shaded according to the percentage of black plus Hispanic residents beginning at under 30% and moving in four 10 percentage point increments to above 79% (e.g. 30-39.9%, 40-49.9%, etc.) In 2000, the center of district 106 contained eight contiguous VTDs whose total population was over 50 percent black + Hispanic, and two northeastern precincts in which Black and Hispanic (B+H) persons comprised 50 percent or more of the population. By 2010, the central area had expanded to become united with the northeastern precincts in an area of 29 contiguous VTDs with 50 percent black and Hispanic.

Both the uniformity and the rate of increase are striking. Among 20 VTDs, most (55%) increased two levels, as from 30% to 50%; five (25%) increased by three levels (e.g., 30-60%); one increased 5 levels (under 30% to over 70%); and three precincts increased by one level. There were no areas of white percentage increase. Other urban areas followed a similar pattern, including the area of district 101 in Dallas County and district144 in southeastern Harris County. Indeed, each of the areas examined here is continuing to increase in minority percentage and will do so in the future; and that generally urban areas where there already are significant minority concentration will experience such increases. White population growth is likely to take place in heavily white or undeveloped areas away from urban centers.

Because of the spread of minority population concentrations into new areas in which they have not been located in significant numbers in the past, given current demographic trends it is likely that they will account for a significant portion of the anticipated growth in these settings (e.g., counties, cities, neighborhoods, and electoral districts). The magnitude of growth will, of course, depend on the rate of change and the configuration of these locales including electoral districts. Nonetheless, it is also likely that there will be some areas where minority growth is not likely to occur, e.g., emerging residential developments with high-priced housing as well as in existing exclusive neighborhoods. Given the continuation of residential segregation along racial and ethnic lines, it is possible not only to fragment the existing concentrations recorded by the census but also to identify and fragment emerging minority concentrations through the drawing of geographic boundaries in the construction of electoral districts.

The districts in plan H283 are consistent with fragmentation of minority concentrations in districts 101 and 106, and consistent with the fragmentation to eliminate naturally-occurring minority districts. The districts set forth in plan H202, for example, are consistent with the maintenance of naturally-occurring minority districts in the area of districts 101 and 106. Those districts also unite a minority concentration that reflects the county's population growth into district 107.

POPULATION PROJECTIONS FOR SELECTED HOUSE DISTRICTS

This analysis was conducted to examine the projected population change in five House Districts of interest: House Districts 26, 54, 101, 106, and 144.[2] These districts are located across four counties: House District 26 (Fort Bend County), House District 54 (Bell County), House Districts 101 and 106 (Dallas County), and House District 144 (Harris County).

[2] District 54 (Bell, Burnet and Lampasas Counties) is a separate case. District 54 contains part of a smaller concentration in and adjacent to the cities of Killeen (2000 population, 86,911; 2010 population, 127,921) and Harker Heights (2000 population, 17,308; 2010 population, 26,700). This area is distinctive in that it is at the gates of Fort Hood, a major military installation whose personnel, including those residing both off base as well as on base, are counted as residents in the census. The transient nature of military populations and the potential for variation depending on national military-political decisions complicates the projection of the local population. The military population can also distort the citizen and voting age population. I have projected the population for District 54, but I am not confident enough to draw conclusions from those projections.

Population Projection Techniques

Demographers use various population projection techniques to estimate the size and composition of a given population into the future. In his report and testimony Dean Saenz used the linear change model and geometric change model.

Linear Change

The linear change model is the simplest technique. It assumes that a given population will change in the future by the same average annual number as it changed during the base period (e.g., 2000-2010). The formula for the projected population for a given year is:

$$P_t = P_l + (z * \Delta) \qquad \text{[Formula 1]}$$

where P_t signifies the projected population of the target year to which the projection is being made, P_l is the population in the launch year (e.g., 2010), z is the number of years in the projection horizon (period between the launch year, P_l, and the target year, P_t), Δ is the average annual population change.

Geometric Change

A more sophisticated approach is the geometric change technique. It provides a more realistic portrait of population change by assuming that a given population will change in the future at the same rate of change as during the observed base period (e.g., 2000-2010). The average annual geometric rate of population change can be obtained by the following formula:

$$r = [(P_l / P_b)^{(1/y)}] - 1 \qquad \text{[Formula 2]}$$

where r represents the average annual geometric rate of population change during the observed time period (e.g., 2000-2010), P_l signifies the population in the launch year (e.g., 2010), P_b denotes the population in the base year or beginning of the period (e.g., 2000), and y represents the number of years in the base period, i.e., between the base year and the launch year (e.g., 10 years between 2000 and 2010). The average annual geometric rate of population change can then be used to estimate the projected population into the future by the following formula:

$$P_t = P_l * (1 + r)^z \qquad \text{[Formula 3]}$$

where P_t denotes the projected population in the target year, P_l represents the population in the launch year, r signifies the average annual geometric rate of population change during the observed period, and z is the number of years in the projection horizon (period between the launch year, P_l, and the target year, P_t).

Due to the superiority of the geometric change model in accounting for this change compared to the linear change model, Dean Saenz used the geometric technique to produce his primary population projections for the five house districts of interest.

<u>Description of Method to Produce Projections for the Citizen of Voting Age Population</u>

The methodology used to produce total population projections to a given date is the same as that used to project citizen of voting age population (CVAP), with one major point of departure. While total population is available fo r 2010, the State's CVAP figures are based on the 2000 census and the 2005-2009 American Community Survey (ACS). The ACS involves a five-year pooled sample, here for the 2005-2009 period. The five-year period provides sufficient data for greater accuracy in small-unit population estimates. The ACS reports data CVAP as of the 2005-2009 midpoint, 2007. Therefore, 2000-2007 is the base period used to generate the average annual geometric growth rates (r) for CVAP projections.[3]

[3] The American Community Survey (ACS) is a relatively new survey used by the U.S. Census Bureau. The survey is based on the selection of approximately 3 million housing units which are selected annually to be part of the survey. In a given year, there are not enough persons sampled from smaller geographic areas (e.g., census tracts, block groups, electoral districts, etc.) to produce statistically accurate estimates for these locales. As a result, the U.S. Census Bureau collects and pools information for a given five-year period (e.g., 2005-2009) in order to develop statistically accurate estimates for smaller geographic areas. Accordingly, data from the 2005-2009 ACS were used to obtain estimates of the citizen of voting age population in electoral districts.

Because we lack the CVAP for the year of 2010, the first task in this phase of the analysis is to project CVAP in 2010 for each of the five house districts using average annual geometric growth rate from the 2000-2007 period. The average annual geometric growth rate for the 2000-2007period was obtained with the formulas described above.

CVAP projections were also generated for 2012, 2013, 2014, and 2015. Thus, the value of *z* was 5 in the production of the 2012 population projections (obtained as the difference between the target year, 2012, and the launch year, 2007), 6 in the 2013 population projections, 7 in the 2014 population projections, and 8 in the 2015 population projections.

Results of the Analysis

The results of population projections for the total population and citizen of voting age population (CVAP) across the five house districts are described below.

Population Projections for the Total Population of Five Selected House Districts

The enumerated 2000 and 2010 populations for each of the five house districts are used to compute average annual geometric rates of population change which are a component of population projections. The average annual geometric growth rates of the five house districts (HDs) vary somewhat: HD 54, 0.03065; HD 26, 0.02292; HD 144, 0.02241; HD 106, 0.01682; and HD 101, 0.01393. Nonwhite groups consistently experienced faster growth rates than whites: Latinos (HD 101, 0.08427%; HD 144, 0.06585; HD 54, 0.05822; and HD 106, 0.05239), blacks (HD 144, 0.06099; HD 101, 0.06091), and Asian/Other (HD 26, 0.06443). The white population experienced population average annual geometric rate losses in four of the house districts (HD 101, -0.03192; HD 144, -0.03115; HD 106, -0.02993; and HD 26, -0.01249) and growth in one district (HD 54), albeit at a much slower pace (0.01700) than nonwhite groups.

Population projections for 2012 clearly reveal the downward trends in the white population in four of the five house districts (HD 101, -9.2%; HD 144, -8.3%; HD 106, -7.5%; and HD 26, -3.8%). (Whites are projected to experience modest growth (3.1%) in HD 54.

The projections demonstrate significant growth of the nonwhite population across all of the five house districts with the projected percentage change between 2010 and 2012 ranging from 8.0 percent in HD 106 to 10.9 percent in HD 101. High levels of projected growth vary by race/ethnic groups across the five house districts. For example, in HD 26, each of the other, black, and Latino groups is projected to increase by more than 8 percent between 2010 and 2012, while in the other four house districts Latinos and blacks are each

Consistent with the variations in growth rates between white and nonwhite groups on the basis of the total population, similar trends are observed with respect to population change in the CVAP across race/ethnic groups during the 2000-2007 period. Growth in the CVAPs of nonwhite groups outpaced that of the white CVAPs across the five house districts.

Projected CVAP in 2010 and Population Projections for 2012 based on Geometric Change Model for Selected Districts by Race/Ethnic Groups.

	Total		White		Black		Latino		Other	
HD	2010	2012	2010	2012	2010	2012	2010	2012	2010	2012
HD 26	119,055	126,628	58,935	59,260	16,220	18,095	12,346	12,966	31,554	36,307
HD 54	130,477	138,674	76,041	79,761	26,823	28,549	20,591	22,831	7,021	7,534
HD 101	88,735	88,602	49,747	46,487	18,301	19,585	16,694	18,445	3,994	4,084
HD 106	82,982	84,216	38,864	36,555	11,172	11,653	27,358	30,054	5,587	5,954
HD 144	99,307	103,290	44,917	42,520	10,066	11,857	38,409	42,484	5,915	6,429

Nonwhite		Nonwhite Majority	
2010	2012	2010	2012
60,120	67,368	yes	yes
54,435	58,913	no	no
38,989	42,115	no	no
44,118	47,661	yes	yes
54,390	60,770	yes	yes

By 2014, nonwhites are expected to be majority in HD 101: 45,267 nonwhites and 43,203 whites.

Projected Percentage Change between 2010 and 2012 for Selected Districts by Race/Ethnic Groups.

HD	Total	White	Black	Latino	Other	Nonwhite
HD 26	6.4	0.6	11.6	5.0	15.1	12.1
HD 54	6.3	4.9	6.4	10.9	7.3	8.2
HD 101	-0.1	-6.6	7.0	10.5	2.3	8.0
HD 106	1.5	-5.9	4.3	9.9	6.6	8.0
HD 144	4.0	-5.3	17.8	10.6	8.7	11.7

Percentage Distribution of Projected Growth between 2010 and 2012 for Selected Districts by Race/Ethnic Groups.

HD	White	Black	Latino	Other	Nonwhite
HD 26	4.3	24.8	8.2	62.8	95.7
HD 54	45.4	21.1	27.3	6.3	54.6
HD 101	2451.1	-965.4	-1316.5	-67.7	-2350.4
HD 106	-187.1	39.0	218.5	29.7	287.1
HD 144	-60.2	45.0	102.3	12.9	160.2

Percentage Distribution in 2000 and 2012 for Selected Districts by Race/Ethnic Groups.

HD	White		Black		Latino		Other		Nonwhite	
HD	2010	2012	2010	2012	2010	2012	2010	2012	2010	2012
HD 26	49.5	46.8	13.6	14.3	10.4	10.2	26.5	28.7	50.5	53.2
HD 54	58.3	57.5	20.6	20.6	15.8	16.5	5.4	5.4	41.7	42.5
HD 101	56.1	52.5	20.6	22.1	18.8	20.8	4.5	4.6	43.9	47.5
HD 106	46.8	43.4	13.5	13.8	33.0	35.7	6.7	7.1	53.2	56.6
HD 144	45.2	41.2	10.1	11.5	38.7	41.1	6.0	6.2	54.8	58.8

Notes:
1. The white, black, and other categories are non-Hispanic.

2. The geometric change model assumes that a given population will change in the future at the same rate as during the base period (in our case, 2000-2007). This approach is superior to the more simple linear change model, which assumes that the population will change by the same absolute number each year into the future as in the base period despite the population increasing in size from year to year into the future.

Projections for the CVAP clearly demonstrate a general downward trend in the white CVAP and a significant rise in the nonwhite CVAP. In each case, a majority of the CVAP – the individuals eligible to vote – is non-white at the present time or, in the case of district 101, will be in 2015. In contrast, the nonwhite population is projected to experience a significant increase in its CVAP across the five house districts with the percentage change ranging from 8.0 percent in HDs 101 and 106 to 12.1 percent in HD 26. Persons classified as other (largely Asians) account for the greatest share (62.8%) of the projected growth between 2010 and 2012 in HD 26.

The population projections indicate that nonwhites represent the majority CVAP in both 2010 and 2012 in HDs 26, 106, and 144. By 2014, HD 101 will have a larger number of nonwhites (45,267) than whites (43,203) among its CVAP.

Note also that population projections generated with the linear change technique are consistent with the projections based on the geometric change model (see Appendix A). Most importantly, the population projections from the linear change model also indicate that nonwhites represent the majority CVAP in 2010 and 2012 in HDs 26, 106, and 144. In addition, these projections suggest that in HD 101 the nonwhite CVAP will outnumber the white CVAP by 2015, with the CVAP of nonwhites (44,071) and whites (44,396) being relatively similar in 2014.

Summary

This analysis reveals the disparate population change patterns of whites and nonwhites across the five selected house districts. In particular, the population projections point to a declining white prevalence in the total population and in the CVAP of these districts alongside the significant increase in the presence of nonwhites. In sum, the analysis demonstrates that in the short period between the 2010 decennial census and 2012, the populations of the five house districts have become increasingly nonwhite within the boundaries of the plan labeled H100 so that several districts now have minority majorities among voting age citizens.

These changes have significance for the division of geography into separate districts. The natural expansion of minority population tends to change formerly white majority areas into minority-majority areas. This is precisely what has happened and is continuing to happen in the districts discussed above. These patterns, moreover, are predictable, so that it is possible to manipulate geographic boundaries so as to minimize or enhance the natural development of new districts with population and citizen voting age population majorities, as was done in H283.

Dated: February 6, 2012

Respectfully Submitted,

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APPENDIX A

Appendix A. Projected CVAP in 2010 and Population Projections for 2012 based on Linear Change Model for Selected House Districts (HDs) by Race/Ethnic Groups.

	Total		White		Black		Latino		Other	
HD	2010	2012	2010	2012	2010	2012	2010	2012	2010	2012
HD 26	117,566	123,586	59,599	60,621	15,712	17,071	12,344	12,976	29,910	32,918
HD 54	128,881	135,416	75,525	78,719	26,503	27,897	19,940	21,485	6,913	7,315
HD 101	88,734	88,601	50,179	47,288	18,204	19,431	16,306	17,689	4,045	4,192
HD 106	82,916	84,084	39,284	37,337	11,241	11,808	26,821	29,009	5,570	5,929
HD 144	98,778	102,217	45,947	44,498	9,387	10,465	37,592	40,933	5,853	6,322

Nonwhite		Nonwhite Majority	
2010	2012	2010	2012
57,967	62,965	no	yes
53,357	56,697	no	no
38,555	41,313	no	no
43,632	46,746	yes	yes
52,831	57,720	yes	yes

By 2015, nonwhites are expected to be majority in HD 101: 45,450 nonwhites and 42,950 whites. In 2014, nonwhites (44,071) are projected to be fairly comparable to whites (44,396).

Projected Percentage Change between 2010 and 2012 for Selected Districts by Race/Ethnic Groups.

HD	Total	White	Black	Latino	Other	Nonwhite
HD 26	5.1	1.7	8.6	5.1	10.1	8.6
HD 54	5.1	4.2	5.3	7.7	5.8	6.3
HD 101	-0.1	-5.8	6.7	8.5	3.6	7.2
HD 106	1.4	-5.0	5.0	8.2	6.4	7.1
HD 144	3.5	-3.2	11.5	8.9	8.0	9.3

Percentage Distribution of Projected Growth between 2010 and 2012 for Selected Districts by Race/Ethnic Groups.

HD	White	Black	Latino	Other	Nonwhite
HD 26	17.0	22.6	10.5	50.0	83.0
HD 54	48.9	21.3	23.6	6.2	51.1
HD 101	2173.7	-922.6	-1039.8	-110.5	-2073.7
HD 106	-166.7	48.5	187.3	30.7	266.6
HD 144	-42.1	31.3	97.2	13.6	142.2

Appenedix A (continued).

Percentage Distribution in 2000 and 2012 for Selected Districts by Race/Ethnic Groups.

HD	White		Black		Latino		Other		Nonwhite	
HD	2010	2012	2010	2012	2010	2012	2010	2012	2010	2012
HD 26	50.7	49.1	13.4	13.8	10.5	10.5	25.4	26.6	49.3	50.9
HD 54	58.6	58.1	20.6	20.6	15.5	15.9	5.4	5.4	41.4	41.9
HD 101	56.5	53.4	20.5	21.9	18.4	20.0	4.6	4.7	43.5	46.6
HD 106	47.4	44.4	13.6	14.0	32.3	34.5	6.7	7.1	52.6	55.6
HD 144	46.5	43.5	9.5	10.2	38.1	40.0	5.9	6.2	53.5	56.5

Notes:

1. The white, black, and other categories are non-Hispanic.
2. The linear change model assumes that a given population will change in the future by the same average annual absolute number as it changed during the base period (in our case, 2000-2007).

CERTIFICATE OF SERVICE

I hereby certify that on February 6, 2012, I electronically filed the foregoing Summary of Expert Testimony of Dean Rogelio Saenz with the Clerk of the United States District Court for the District of Columbia by using the CM/ECF system. Participants in the case who are registered CM/ECF users will be served by the CM/ECF system.

/s/ John K. Tanner