The Latino/a Population in Los Angeles County: An Exploratory Demographic Analysis

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This report demonstrates that migration of the Latino/a population explains a significant proportion of the population structure of Los Angeles County. I first explore the age-sex distribution of Latinos/as and find that it attenuates what would otherwise be declining birthrates following the baby boom generation, perpetuating the population growth seen in the post-war period. There is evidence of high fertility rates for Latinos/as, though the data make this result inconclusive. This paper also confirms the existence of the "Latino/a mortality paradox" in Los Angeles County, characterized by unusually high life expectancy estimates despite low socio economic statuses for Latinos/as. The Latino/a mortality paradox is, I suggest, due to the "salmon bias" in which Latinos/as out-migrate before dying. The migration pattern of Latinos/as is generally characterized by young parents who either come into Los Angeles County with their children, or have children once in Los Angeles County. Peaks of immigration occur for those aged between 20-30 and 0-10. Otherwise, Latinos/as generally leave the country.

Introduction

Studying the Latino/a population in Los Angeles County is especially important in understanding the dynamics of Los Angeles County's population, particularly considering the sheer size of the Latino/a population (representing 45.5% of the residents of Los Angeles County in 2000, United States Census Bureau 2000). The Latino/a demographic is easily the most represented in Los Angeles County, contributing to its distinct economy, culture, and political climate. As such, a firm understanding of this population can assist policy-makers in maintaining the smooth and healthy functioning of the County.

This report will focus on the age-sex structure of the Latino/a population, their mortality estimates (and interesting issues therein), and immigration patterns. Following a brief data and methods section, we will compare the age-sex population distributions of Latino/a and non-Latino/a populations and make initial observations. This will be followed by life expectancy and migration estimates, as well as assumptions made about the motivations behind migration patterns.

Data and Methods

Data were gathered from the following sources:

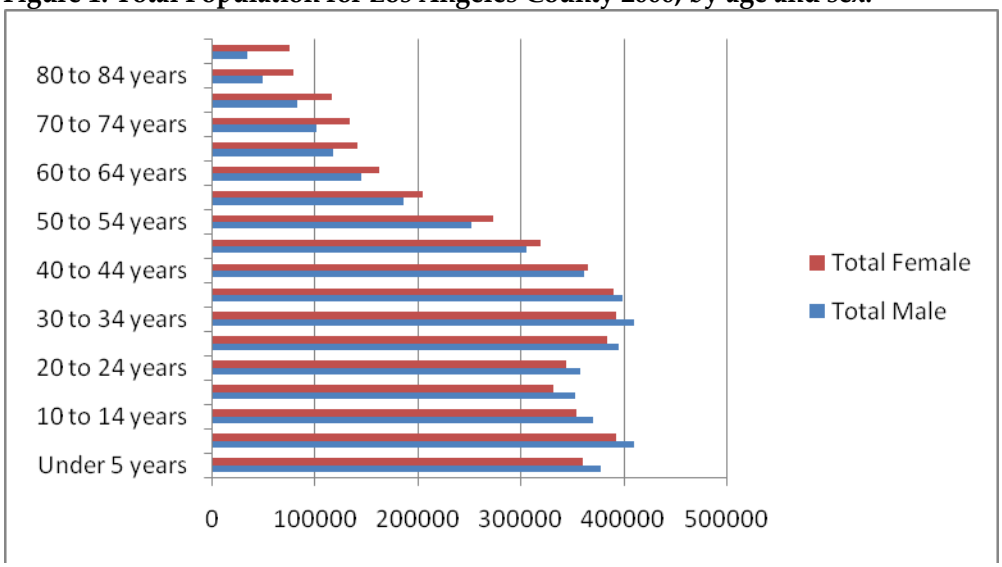
Population data: The United States Census Bureau

Mortality Data: County of Los Angeles Department of Public Health

These data were used to create life tables in which to estimate migration flows. The formulae used can be found in the Appendix under each respective table.

Comparing Distributions – Initial Observations

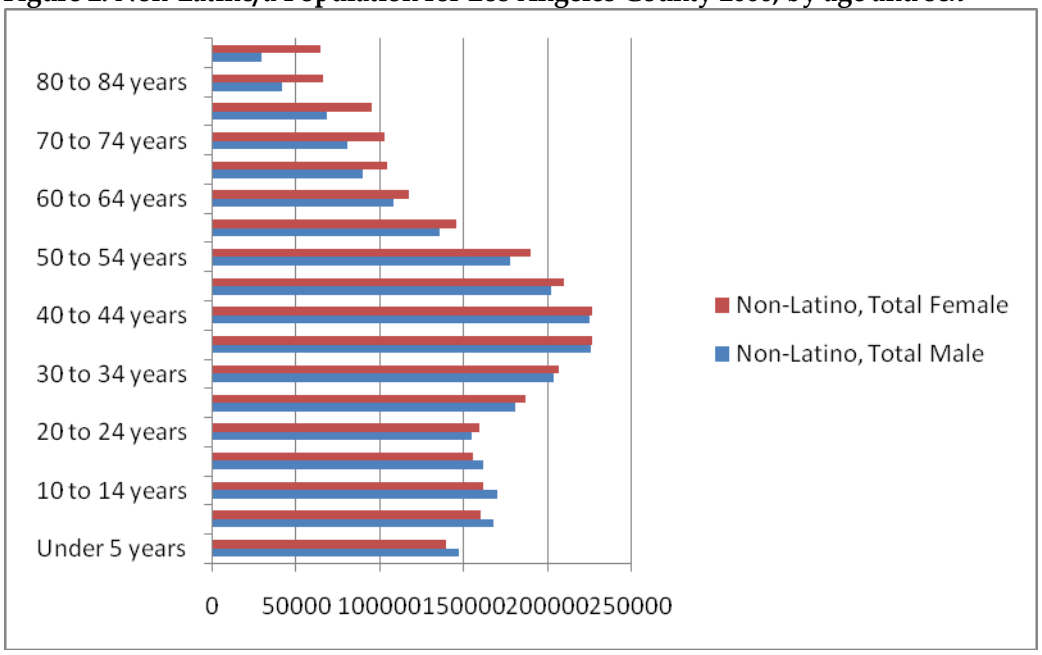
Figure 1: Total Population for Los Angeles County 2000, by age and sex.



The total population of Los Angeles County in 2000 is around 9.5 million people, growing nearly 7% from its 1990 figure of 8.9 million (United States Census Bureau). Viewing the entire population distribution of Los Angeles County in 2000 by age reveals a bimodal distribution, in which the two peaks of the population distribution are around 5-9 and 25-39. There is an elegantly curved population increase from 25 to 39 years of age, after which the population begins to taper off. A partial explanation of this bulge could be the baby-boom generation, which is most evident among the white population (see Appendix Figure 1.A). Following the baby boom generation is a fertility recession and a later rebound, resulting in the aforementioned bimodality. It is also worth noting that the population "explosion" found in the few decades following WWII is not restricted to the post-war period alone, as the population growth for young persons has continued to remain sizeable through the most recent census. The age-structure for the entire United States prominently displays a baby boom and recession, though the rebound is hardly as protruding as found in Los Angeles County (see Appendix Figure 2.A). However, for neither Los Angeles County nor the United States as a whole is there a dramatic decrease

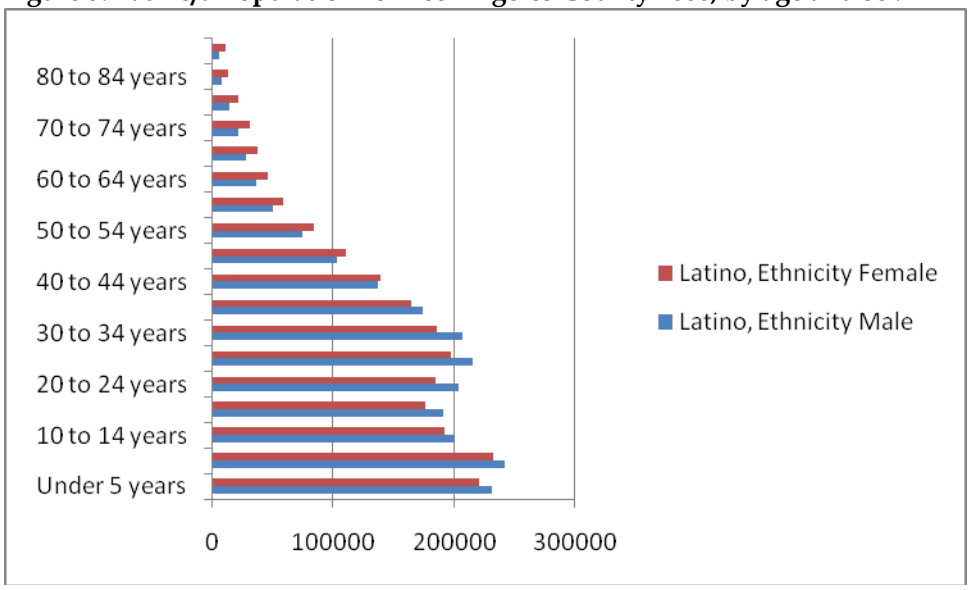
in fertility as seen for the white population of Los Angeles County, as the baby boom generation is followed by continuing high proportions of younger individuals.

Figure 2: Non-Latino/a Population for Los Angeles County 2000, by age and sex



Comparing the Latino/a and non-Latino/a populations reveal very different age structures. As Figure 2 demonstrates, the non-Latino/a population displays a noticeable population bulge for the post-war generation (as found among whites exclusively). After this generation we find a proportional decline in population which may be due to the demographic transition, as birthrates are generally found to decrease in industrialized areas. The Latino population alone (Figure 3), however, reveals a distribution that is largest for those under 10 years of age, tapering off only before rising again (particularly for males) around the ages between 25 and 34. Such a structure suggests that Latinos/as continue to have high birthrates, though have not had a boom of individuals born in the twenty years after World War II. The Latino/a population clearly attenuates the baby-boom bulge after being included in the total population of Los Angeles County. In other words, the Latino/a population changes the distribution from what would otherwise resemble a diamond shape into one that is closer to a chocolate chip.

Figure 3: Latino/a Population for Los Angeles County 2000, by age and sex



The sex-ratio of Latinos/as also reveals interesting patterns. Males consistently outnumber females for individuals under 40 years of age. This difference is particularly noticeable between the ages of 15 and 39 – prime working ages for blue-collar workers. It is after 40 that females begin to outnumber males. Particularly for males, the population begins to decrease at an earlier age than seen for the rest of the population. The asymptotic decrease in the population is seen after 34 years of age, whereas for the rest of Los Angeles it occurs ten years later and at a much slower rate than found for Latinos/as.

Considering these above issues, we can posit the following hypotheses for the Latino/a population in Los Angeles County:

1. Latinos/as contribute to the large youth population through high birth rates.
2. Latinos/as in-migrate into Los Angeles County at high rates during working and/or child-bearing ages, particularly for males.
3. Latinos/as are more likely to out-migrate at older ages.

The remainder of this paper will address these three issues. We will analyze fertility, mortality, and migration patterns.

Fertility and Mortality

Addressing the first hypothesis on high birthrates for Latinos/as resulted in questionable findings. Appendix Table 1.A compares estimated survival rates of the 1990 population to 2000 with actual Census counts for 2000. Estimates for those aged between 0-10 were originally conducted using the number of births by Latinos during 1990 according to the County of Los Angeles Department of Public Health's *Vitality Statistics 1990*. Using this data, however, led to what seemed to be an astronomically high estimation of individuals aged 0-10 for 2000, far exceeding the figures provided by the Census in 2000. Taking this count for granted would result in an estimated out-migration of over 200,000 for Latinos/as aged 0-10 over the 1990-2000 period, an improbable assumption considering the quality of health and social facilities (e.g. schools and hospitals) available in the United States. It is assumed that this finding is an artifact of inconsistent data-collection procedures between the United States Census Bureau and the County of Los Angeles Department of Public Health. Because of this we are unable to conclusively determine whether Latinos/as in Los Angeles County have high fertility rates (though this does appear to be the case), though this question should be reserved for future research. To remedy this lack of data, the number of native-born Latinos/as was estimated using child/woman ratios for 1990 (see footnotes under Appendix Table 2.A), as shall be explored under the "Migration" section of this paper.

Figure 4 illustrates the life expectancy for Latinos/as, based on the 1990 life table (Appendix Table 3.A). These life expectancy values are abnormally high, with many measures projecting survival into individuals' 90s. To further visualize this oddity, Figure 5 displays the q_x figures for this life table. The probability of dying remains low throughout the individuals' lifetime then shoots up only based on the assumption that all over 75 die in the United States. This assumption, however, is what we question in the remaining findings.

Figure 4: Latino/a Life Expectancy, 1990

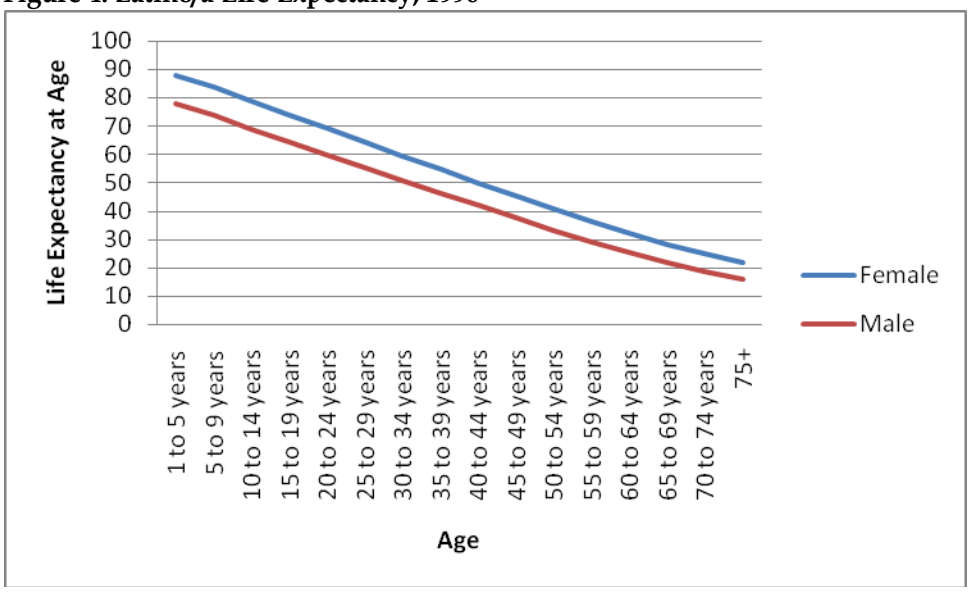
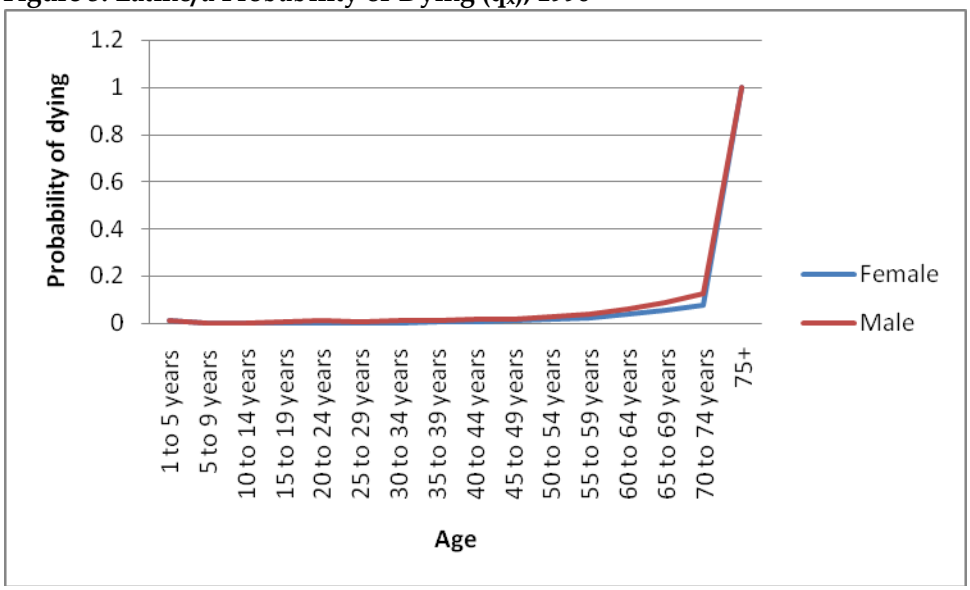


Figure 5: Latino/a Probability of Dying (q_x), 1990



Using life table estimates, females' life expectancy at birth approaches 90 years, and males' approaches 80 years for both 1990 and 2000. This is an interesting finding, particularly considering their relatively low levels of education, income, and health insurance (Hummer et al. 2007). Latinos/as also tend to average lower socio-economic statuses (SES), which is normally related to lower life-expectancy due to health disparities that are related to SES stratification (Swanson 2009; Hummer et al. 2005; Link and Phelan 1995). Furthermore, the SES normally characteristic of Latinos/as is similar to those of non-

Latino blacks, although death rates for Latinos/as are much lower. The low death rates for Latinos/as despite their low SES have been termed the "Latino mortality paradox" (Hummer et al. 2007).

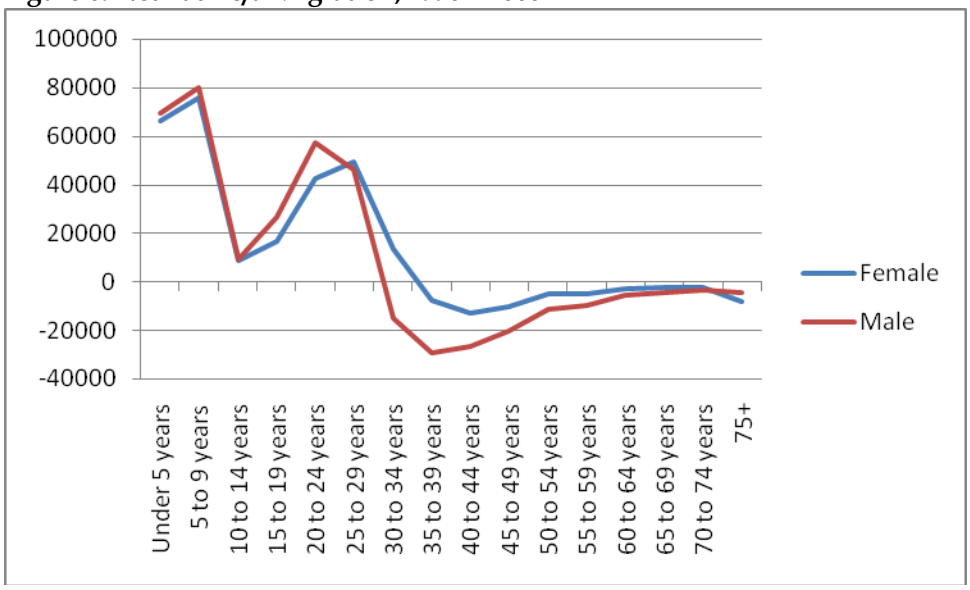
Comparing the life expectancy of Latinos/as using life-table methods lie in stark contrast to life expectancy using the regression method (Swanson and Palmore 1976).[i] Using the regression method, the life expectancy ranges from 61 to 64 years of age for males, and 68 to 71 years of age for females using 1990 data, a difference of over 15 years compared to the life expectancies that the life tables produced. This discrepancy suggests that other factors must be considered before trusting the life expectancies derived from the life table figures, as the high life-expectancy is not confirmed using the regression methods. It has been suggested that the low death rates for Latinos/as is due to immigration; Latinos/as return to their country of origin to die, a phenomenon referred to as the "salmon bias" (Abraido-Lanza et al. 1999).[ii]

Migration

Figure 6 illustrates the net migration estimates of the Latino/a population in Los Angeles County, based on the data found in Appendix Table 2.A. The ages 0-10 on this life table were estimated using the child/woman ratios for 1990 (see footnotes under Appendix Table 2.A), producing very different results than when using the *Vital Statistics* (see Appendix Table 1.A).

Based on these migration estimates, it appears that the explanation for the mortality paradox may be due to migration patterns. Specifically, the abnormally high life expectancy for older Latino/a adults may be due to out-migration, as Latinos/as in-migrate into the United States to look for work and out-migrate later in their lives, dying in their country of origin (and thus not appearing in the mortality data, supporting the "salmon bias" hypothesis Abraido-Lanza et al. 1999).

Figure 6: Net Latino/a Migration, 1990 – 2000



Net in-migration is predominantly found between the ages of 20 and 30, as well as for children younger than 10. Outside of this time frame there tends to be either considerably less net in-migration or, more often, net out-migration. Using this estimate, the data suggest that the vast majority of Latino/a in-migration is found among young Latino/a parents who bring their children with them. This trend is most noticeable for the male population, suggesting that migration for work is also a driving factor behind in-migration among Latinos/as to the United States.

Estimating the age structure of those aged 0-10 on the basis of child-woman ratios makes us run into problems of interpretation. Taking the numbers at face value, one interpretation suggests that young parents in-migrate with their children. Another interpretation would be that women of child-bearing ages enter the United States and give birth there, which has the same effect on the migration estimates. Disentangling these two processes will be important for future research.

Discussion and Conclusion

This paper basically served to explore some patterns found in the Latino/a population in Los Angeles County. Our three hypotheses were not necessarily confirmed as they were presented. We

were unable to determine what Latino/a birthrates are, making us unable to contribute to literature on an ethnicity-differentiated demographic transition within Los Angeles County. However, it is reasonable to assume that Latinos/as have a higher birthrate than the rest of the population. We did demonstrate that net in-migration is higher for working/child-bearing ages, and we were also able to demonstrate net out-migration in older ages. However, the numbers display an very strong pattern, suggesting that the *only* net in-migration is during youthful child-bearing/working ages, which includes the children of these immigrants. The other modified interpretation is that the only net in-migration occurs for young people of working/child-bearing ages, who give birth after arriving into the country. Clearly, both are likely to be the case. We were also able to show that the in-migration (and/or high birthrates) of the Latino/a population contributed to the continuation of the population growth following the baby-boomer period. This produced a population pyramid that resembles a chocolate chip (as opposed to a diamond), attenuating the affect of the declining birthrates over time.

This paper presents evidence that the pressure to migrate into the United States is most strongly felt among young, newly minted parents. Concerns about one's future, and perhaps one's child's future, seem to be the tipping point that contributes to immigration into the United States from Latin America. The converse interpretation would be that successful in-migration into the United States is followed by the bearing of children within U.S. borders. In any event, in-migration of young adults likely tied to the resources afforded to one's children. There is also evidence that much in-migration into the United States is a temporary affair, as many workers return to Latin America after peak labor-ages have ended.

References

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Swanson, David and James Palmore. 1976. "Two-Parameter Regression Estimates of Current Life Expectancy at Birth: Part 1. *Asian and Pacific Census Newsletter* 3(2): 5-10.

Appendix

Figure 1.A: White Population in Los Angeles County 2000

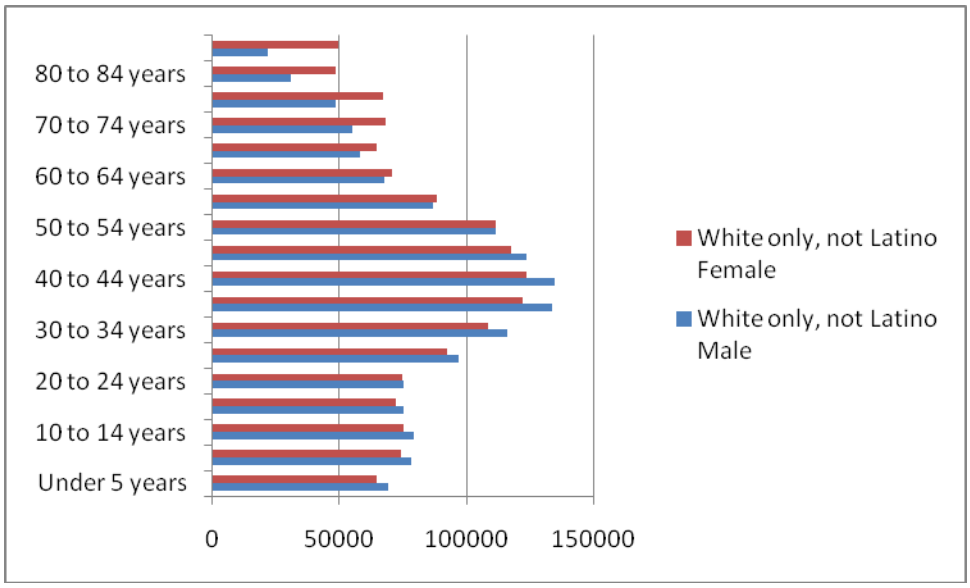

Figure 2.A: Total Population in USA 2000

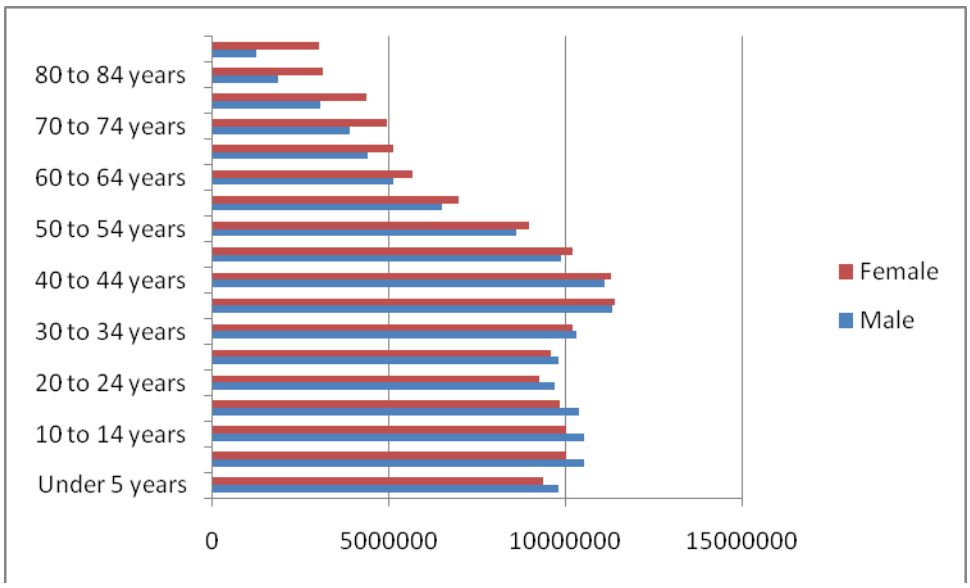

Table 1.A: Migration Estimates for Latinos/as, Ages 0-10 based on Vital Statistics Data

	Census, 1990 Population		Census, 2000 Population		1990 Population Survived to 2000		Net Immigration: Survived – Census 2000	
	Female	Male	Female	Male	Female	Male	Female	Male
1 to 4 years	185073	193153	220986	230863	154703.2[1]	161457.3[2]	-69168.3	-47912.7
5 to 9 years	159472	165433	232290	242058	156470.1[3]	162318.9	-56103.7	-34618.5
10 to 14 years	142449	148607	192355	200596	183784.7[4]	191419.7	8570.296	9176.267
15 to 19 years	148240	171959	175830	190797	159110.8	164332	16719.15	26464.96
20 to 24 years	173432	226619	184736	203734	141994.4	146466.4	42741.62	57267.6
25 to 29 years	173069	208453	197179	214759	147647.1	168751.1	49531.87	46007.87
30 to 34 years	153302	168786	185842	206940	172580.2	222113.6	13261.78	-15173.6
35 to 39 years	122065	127619	164182	174123	171998.2	203620.1	-7816.2	-29497.1
40 to 44 years	90281	89291	138974	137161	151965.4	164121.5	-12991.4	-26960.5
45 to 49 years	65884	63681	110024	103047	120405.3	123472.9	-10381.3	-20425.9
50 to 54 years	50352	45794	83509	73937	88410.71	85614.4	-4901.71	-11677.4
55 to 59 years	42048	36379	58816	50305	63856.23	60039.49	-5040.23	-9734.49
60 to 64 years	37384	30139	45255	36468	47945.22	41982.65	-2690.22	-5514.65
65 to 69 years	28937	22151	36632	27421	38875.98	31961.4	-2243.98	-4540.4
70 to 74 years	19620	12902	30908	21221	33205.66	24952.52	-2297.66	-3731.52
75+	31174	17494	45096	26169	53125.36[4]	30683.9	-8029.36	-4514.9

[1]Calculated as $Births_{Total,1990}$ * 2.45

[2]Calculated as $Births_{Total,1990}$ * 2.55

[3] Calculated as $P_{0-4,2000SurvivedEstimate} * \frac{L_{5-9,1990}}{L_{0-4,1990}}$, based on 1990 life table in Appendix Table 3

[4]Calculated as $P_{0-4,1990} * \frac{L_{10-14,1990}}{L_{0-4,1990}}$

[5]Calculated as $P_{65+,1990} * \frac{T_{75+,1990}}{T_{65-69,1990}}$

Table 2.A: Migration Estimates for Latinos/as, Ages 0-10 Based on Imputed Birth Estimates

	Census, 1990 Population		Census, 2000 Population		1990 Population Survived to 2000		Net Immigration: Survived – Census 2000	
	Female	Male	Female	Male	Female	Male	Female	Male
1 to 4 years	185073	193153	220986	230863	154703.2[1]	161457.3	66282.78	69405.67
5 to 9 years	159472	165433	232290	242058	156470.1[2]	162318.9	75819.92	79739.13
10 to 14 years	142449	148607	192355	200596	183784.7[3]	191419.7	8570.296	9176.267
15 to 19 years	148240	171959	175830	190797	159110.8	164332	16719.15	26464.96
20 to 24 years	173432	226619	184736	203734	141994.4	146466.4	42741.62	57267.6
25 to 29 years	173069	208453	197179	214759	147647.1	168751.1	49531.87	46007.87
30 to 34 years	153302	168786	185842	206940	172580.2	222113.6	13261.78	-15173.6
35 to 39 years	122065	127619	164182	174123	171998.2	203620.1	-7816.2	-29497.1
40 to 44 years	90281	89291	138974	137161	151965.4	164121.5	-12991.4	-26960.5
45 to 49 years	65884	63681	110024	103047	120405.3	123472.9	-10381.3	-20425.9
50 to 54 years	50352	45794	83509	73937	88410.71	85614.4	-4901.71	-11677.4
55 to 59 years	42048	36379	58816	50305	63856.23	60039.49	-5040.23	-9734.49
60 to 64 years	37384	30139	45255	36468	47945.22	41982.65	-2690.22	-5514.65
65 to 69 years	28937	22151	36632	27421	38875.98	31961.4	-2243.98	-4540.4
70 to 74 years	19620	12902	30908	21221	33205.66	24952.52	-2297.66	-3731.52
75+	31174	17494	45096	26169	53125.36[4]	30683.9	-8029.36	-4514.9

[1]Calculated as $P_{0\text{–}4,1990} * \frac{P_{5\text{–}9,1990}}{P_{10\text{–}14,1990}}$

[2]Calculated as $P_{5\text{–}9,1990} * \frac{P_{10\text{–}14,1990}}{P_{15\text{–}19,1990}}$

[3]Calculated as $P_{0\text{–}4,1990} * \frac{L_{10\text{–}14,1990}}{L_{0\text{–}4,1990}}$, all based on the 1990 life table in Appendix Table 3

[4]Calculated as $P_{65+,1990} * \frac{T_{75+,1990}}{T_{65\text{–}69,1990}}$

Table 3.A: Latino/a Life Table for 1990

			Probability of dying in interval[1]		Number living to age x		Number dying in interval		Number of years lived in interval		Total years lived to age x		Life expectancy at age x	
	Population		**$_nq_x$**		**l_x**		**$_nd_x$**		**$_nL_x$**		**T_x**		**e_0**	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
1 to 4 years	185073	193153	0.011283	0.013677	100000	100000	1128.274	1367.707	497174	496572.9	8798190	7787543	87.9819	77.87543
5 to 9 years	159472	165433	0.000815	0.001329	98871.73	98632.29	80.56641	131.0783	494157.2	492833.7	8301016	7290970	83.95743	73.92072
10 to 14 years	142449	148607	0.000982	0.00158	98791.16	98501.21	97.04503	155.642	493713.1	492116.9	7806859	6798137	79.02386	69.01577
15 to 19 years	148240	171959	0.001752	0.008829	98694.11	98345.57	172.9491	868.3112	493038.1	489553.9	7313146	6306020	74.09911	64.12104
20 to 24 years	173432	226619	0.001901	0.009661	98521.17	97477.26	187.2842	941.7233	492137.5	485028.2	6820107	5816466	69.2248	59.66998
25 to 29 years	173069	208453	0.002453	0.009335	98333.88	96535.54	241.1791	901.1371	491066.2	480421.3	6327970	5331438	64.35188	55.22772
30 to 34 years	153302	168786	0.003029	0.011633	98092.7	95634.4	297.0868	1112.516	489720.4	475385.3	5836904	4851017	59.50396	50.7246
35 to 39 years	122065	127619	0.003884	0.014044	97795.62	94521.88	379.8194	1327.476	488027.9	469282.9	5347183	4375631	54.67713	46.29226
40 to 44 years	90281	89291	0.006679	0.015943	97415.8	93194.41	650.6299	1485.761	485450.6	462247.7	4859155	3906348	49.88057	41.91612
45 to 49 years	65884	63681	0.010043	0.019592	96765.17	91708.65	971.7864	1796.725	481392.3	454036.6	4373705	3444101	45.19917	37.55481
50 to 54 years	50352	45794	0.014883	0.028095	95793.38	89911.92	1425.653	2526.073	475393.9	443214.4	3892313	2990064	40.63238	33.25548
55 to 59 years	42048	36379	0.022224	0.040262	94367.73	87385.85	2097.195	3518.345	466576	428073.1	3416919	2546850	36.20855	29.14487
60 to 64 years	37384	30139	0.037401	0.061407	92270.53	83867.51	3450.97	5150.029	452670.4	406326.5	2950343	2118776	31.97492	25.26338
65 to 69 years	28937	22151	0.05673	0.08757	88819.56	78717.48	5038.735	6893.276	431378.4	376091	2497672	1712450	28.12075	21.75438
70 to 74 years	19620	12902	0.079252	0.12379	83780.83	71824.2	6639.791	8891.153	402076.2	336403.7	2066294	1336359	24.66309	18.60597
75+	31174	17494	1	1	77141.03	62933.05	77141.03	62933.05	1664218	999955.3	1664218	999955.3	21.5737	15.88919

[1]Formula: $1 - e^{(-\frac{a_n}{n})}$.

Table 4.A: Latino/a Life Table for 2000

			Probability of dying in interval[1]		Number living to age x		Number dying in interval		Number of years lived in interval		Total years lived to age x		Life expectancy at age x	
	Population		**$_nq_x$**		**l_x**		**$_nd_x$**		**$_nL_x$**		**T_x**		**e_0**	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Under 5 years	220986	230863	0.005483	0.006261	100000	100000	548.2999	626.1098	498628	498433.1	8773002	7989898	87.73002	79.89898
5 to 9 years	232290	242058	0.000192	0.000377	99451.7	99373.89	19.13049	37.45449	497210.7	496775.8	8274374	7491465	83.19992	75.38665
10 to 14 years	192355	200596	0.000781	0.001364	99432.57	99336.44	77.66952	135.4703	496968.6	496343.4	7777163	6994689	78.21545	70.41413
15 to 19 years	175830	190797	0.001309	0.004965	99354.9	99200.97	130.0557	492.5436	496449.3	494772.4	7280194	6498346	73.27464	65.50688
20 to 24 years	184736	203734	0.00154	0.00585	99224.84	98708.42	152.7927	577.4292	495742.1	492097.1	6783745	6003573	68.3674	60.82129
25 to 29 years	197179	214759	0.001313	0.005162	99072.05	98130.99	130.0798	506.6001	495035	489387.4	6288003	5511476	63.46899	56.16448
30 to 34 years	185842	206940	0.001994	0.005871	98941.97	97624.39	197.2895	573.1117	494216.5	486687.8	5792968	5022089	58.54915	51.44297
35 to 39 years	164182	174123	0.003782	0.008127	98744.68	97051.28	373.4967	788.768	492789.1	483281.8	5298751	4535401	53.66113	46.732
40 to 44 years	138974	137161	0.005653	0.011446	98371.19	96262.51	556.0666	1101.865	490464.4	478552.6	4805962	4052119	48.85539	42.09447
45 to 49 years	110024	103047	0.008088	0.016774	97815.12	95160.65	791.0804	1596.182	487095.2	471801.5	4315498	3573566	44.11892	37.55299
50 to 54 years	83509	73937	0.012631	0.024736	97024.04	93564.47	1225.559	2314.373	482049.8	462012.2	3828403	3101765	39.45829	33.1511
55 to 59 years	58816	50305	0.020519	0.035233	95798.48	91250.09	1965.65	3215.018	474061.3	448164.9	3346353	2639753	34.93117	28.92877
60 to 64 years	45255	36468	0.033363	0.055068	93832.83	88035.07	3130.588	4847.9	461293.4	427941.2	2872292	2191588	30.61073	24.89448
65 to 69 years	36632	27421	0.054651	0.095454	90702.24	83187.17	4956.947	7940.561	441002.8	395752.6	2410998	1763647	26.58146	21.20094
70 to 74 years	30908	21221	0.075497	0.12913	85745.29	75246.61	6473.521	9716.572	412331	351382	1969995	1367894	22.97497	18.17881
75+	45096	26169	1	1	79271.77	65530.04	79271.77	65530.04	1557664	1016512	1557664	1016512	19.64967	15.51215

[1] Mortality was broken into ten year age-brackets. The Karup-King method was used to split the age groupings. However, using this method led to negative mortality rates for those between 5 and 9 years of age due to extreme changes in figures from 0, 1-4, and 5-14 age brackets. As there was no "elegant" solution to deal with these negative rates, we decided to multiply the mortality of 5-14 by .25 to impute the mortality for those aged between 5-9, which results in a rough alignment with the curve that is typically associated with death rates.

[i] The formulae for estimating males' life expectancy are

$[13.30644 + (0.25138m - 0.13719m\log_{10}P65+)^2]^{-1}$ for a "medium" age population, or

$[14.35685 + (0.21339m - 0.13534m\log^{1-}P65+)^2]^{-1}$ for a "young" population

m = crude death rate

The formulae for females are

$[12.75259 + (0.2868m - 0.15775m\log_{10}P65+)^2]^{-1}$ for a "medium" age population, or

$[13.65814 + (0.24187m - 0.1552m\log^{1-}P65+)^2]^{-1}$ for a "young" population

The formulae used were based on Swanson and Palmore (1976) because the Swanson (1989) formula gave less-than-believable figures: 58.6 years old for females and 49.6 years old for males.

[ii] The Hummer et al (2007) piece relates to the Latino/a mortality paradox by paying attention to the low infant mortality rates of Latinos/as, rather than pure life expectancy. The authors suggest that these findings may be due to the healthier habits that immigrants have vis-à-vis the rest of the U.S. population (lower rates of smoking, alcohol, and drug use), acquiring unhealthy behaviors in subsequent generations through acculturation. An alternate explanation may be the sampling bias of *whom* has the ambition/health to immigrate. In other words, immigrants who give birth in the United States may have had particularly healthy genetics, with the implication that the immigrants the United States receives are of a healthy stock.