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Population and Economic Dynamics on the U.S.–Mexican Border: Past, Present, and Future

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The U.S.-Mexican border region is fascinating from a demographic perspective for several reasons. First, there are large concentrations of people living in the region who would not be there if the border did not exist. Second, historically, demographic forces have been very pronounced and more extreme along the border than in nonborder areas of both the United States and Mexico. Third, demographic interaction between the countries occurs in the context of extensive cultural, political, social, and economic transborder interdependence. Fourth, demographic change in the region mirrors large–scale forces such as globalization and economic trends not only in the two countries but worldwide. Finally, the consequences of population growth and rising densities in a region troubled by resource constraints create environmental problems uniquely exacerbated by the political boundary between the two countries.

  The focus of this paper is on past and projected population trends and patterns. Selected economic statistics are included to help provide a context for understanding the causes and the consequences of demographic changes. However, a full understanding of border demographics is hardly so limited since the border is a rich and complicated tapestry that appeals to researchers from all of the social sciences. Border scholars, and border research in general, are by their nature multidisciplinary.
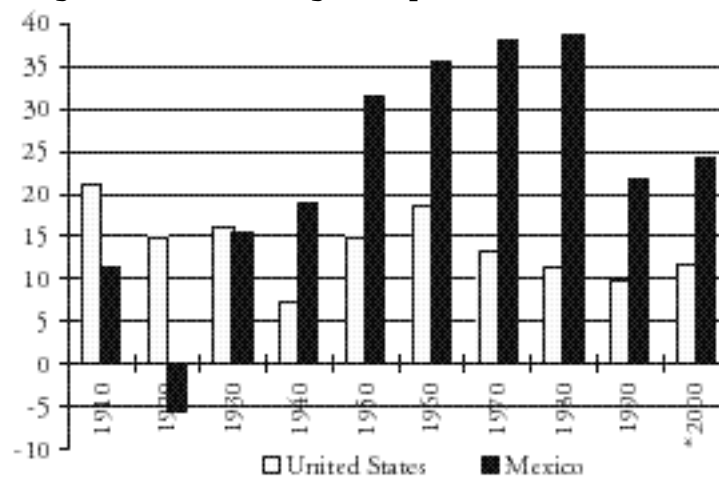
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HISTORICAL TRENDS AND PATTERNS

The National Context

Between 1900 and 1995, the U.S. population grew from about 75 million to about 260 million persons, or by roughly three and a half times. During the same period of time, Mexico s population increased six-fold from about 15 million to 91 million persons. With little inflow of migrants, it is obvious that birth rates have been much higher in Mexico during this century than they have in the United States, and have more than offset migration from Mexico to the United States. While not widely known in the United States, demographers have keenly followed rapid reductions in Mexican birth rates after 1970, and while still higher than U.S. birth rates, the differential has narrowed remarkably.

Figure 1 shows the percent change in population for each decade with the 1990 to 1995 data extrapolated to a 10-year period. Clearly, twentieth-century population growth rates in both countries varied considerably over the years. In the United States, the fastest growth
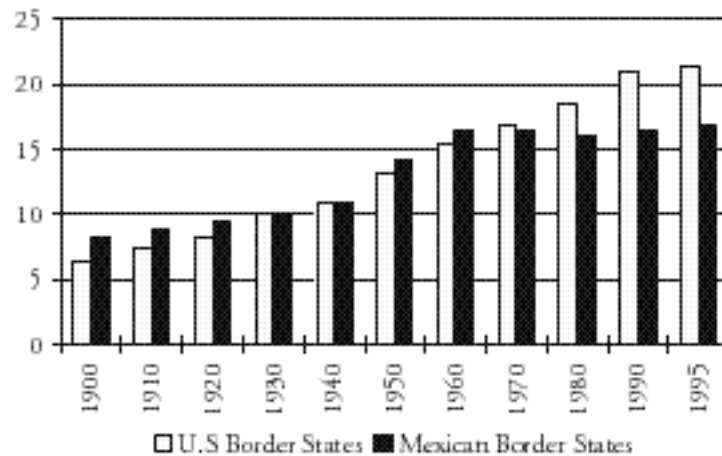
Figure 1: Percent Change in Population: The U.S. and Mexico

in total population is associated with the pre–Depression era and with the baby boom era. In Mexico, growth rates increased each decade from the 1920s to the 1970s, following the staggering loss of population that Mexico experienced during the Revolution decade of 1910 to 1920. The decline in birth rates in Mexico shows up clearly as Mexican population growth rates, while still higher than in the United

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Figure 2: Border State Population as Percent of National Population

States, slowed to nearly half their previous levels during the 1980s
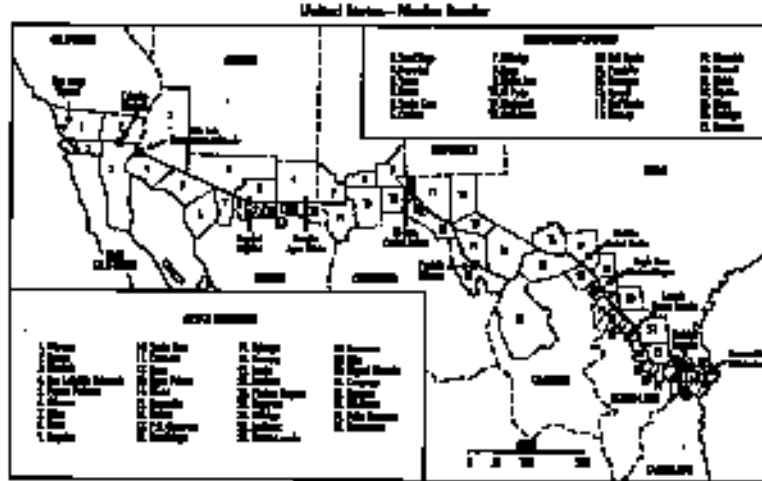and 1990s.

The Border States

The four U.S. border states (California, Arizona, New Mexico, and
Texas) had a combined population in 1995 of 56.2 million persons,
which was nearly four times larger than the 15.2 million persons in
the six Mexican border states (Baja California, Sonora, Chihuahua,
Coahuila, Nuevo Le n, and Tamaulipas). Border state population
growth rates for both the U.S. and Mexican sides of the border have
varied considerably from state to state and from decade to decade,
but have generally been higher than national growth rates, especial-
ly since World War II.

Figure 2 shows the border state population as a percent of the
national population for the period 1900 to 1995. The data document
a rather remarkable transformation, particularly in the United States.
In 1900, only one U.S. resident in 18 lived in a border state. By 1995,
about one in five U.S. residents lived in border states. As measured
by gross state product (GSP), a similar proportion of the nation s out-
put is produced in the four border states. The figures are similar,
though somewhat less dramatic for Mexico, with one Mexican in 10
living in a border state in 1900 and one in six by 1995. The presence
of the border has influenced these population changes more in Mex-
ico than in the United States. In the United States, a lot of the growth
in border states in the past few decades has been associated with
 Sunbelt growth, both in terms of population and employment. A sig-

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nificant portion of the U.S. border state population lives in cities well away from the border. In Mexico, however, the border has been the

Figure 3: U.S.-Mexico Border Region

reason for much of the growth as Mexican policies have encouraged, for various reasons over the years, development of population and employment along the northern frontier.

Table 1: Population Adjacent to the Border, 1980 to 1995

Area	1980	1990	1995
Border Total	6,976,694	9,103,319	10,585,265
U.S. Subtotal	4,009,151	5,213,774	5,827,439
California	1,953,956	2,607,319	2,767,796
Arizona	728,142	914,919	1,038,156
New Mexico	117,974	159,578	188,841
Texas	1,209,079	1,531,958	1,832,646
Mexico Subtotal	2,967,543	3,889,545	4,757,826
Baja California	1,002,459	1,400,873	1,750,172
Sonora	312,079	394,712	469,804
Chihuahua	635,490	869,951	1,086,559
Coahuila	151,623	191,135	238,288
Nuevo León	16,475	17,312	18,276
Tamaulipas	849,417	1,015,562	1,194,727

Border Counties and Municipios

There is no consensus on a definition of the geographic area called
 the border region, and, indeed, there is no scientific way to arrive at
a definition. Figure 3 shows the study region, which concentrates on
the 25 U.S. counties and 38 Mexican municipios (roughly county
equivalents) that are geographically adjacent to the U.S.–Mexican
border.

Table 1 provides the population of border counties and municipios
summed to state and national totals. The full details of 1980 to 1995

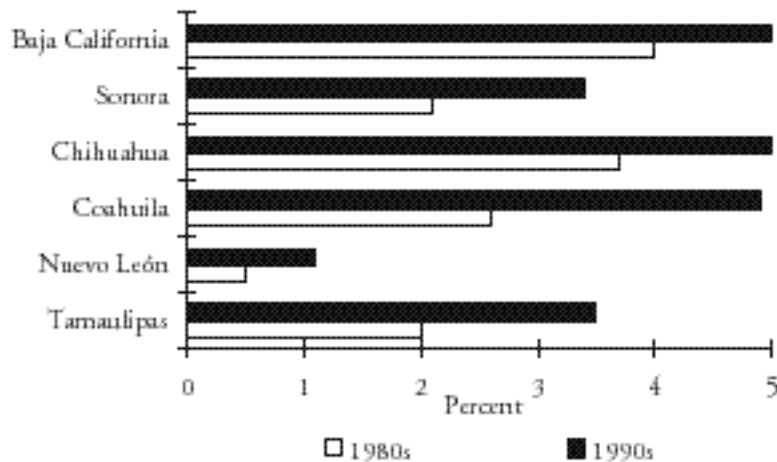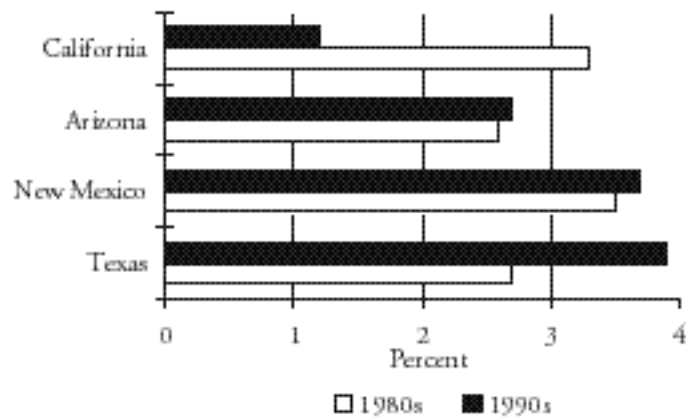Figure 4: Mexico Border Region Average Annual Growth Rates

Figure 5: U.S. Border Region Average Annual Growth Rates

population figures for each county and municipio are provided in Appendix B, Table B1.1, and Table B1.2.

By 1995, almost 10.6 million persons lived adjacent to the U.S.-Mexican border, with about 5.8 million on the U.S. side and slightly less than 4.8 million on the Mexican side. In 1980, there were about seven million persons adjacent to the border and four million of these were on the U.S. side. San Diego County dominates the population total for the U.S. side of the border with 2.6 million persons and combined with Imperial County, California, contains almost half of the U.S. border population. Cuidad Juárez, adjacent to El Paso, Texas, continues to be the most populous Mexican municipio along the border; although by 1995, Tijuana (with just less than a million persons) was only barely smaller than Cuidad Juárez (with slightly over a million persons), according to the Mexican mid-decade census (see appendix tables for detailed figures).

Figures 4 and 5 show the average annual growth rates for border counties and municipios summed to state levels for the 1980s and 1990s. The full details of these rates are provided in Appendix B, Table B2.1, and Table B2.2. On the Mexican side, there has been a pronounced acceleration in population growth since the 1980s. Border municipios overall went from 3.1 percent average annual growth in the 1980s to 4.5 percent average annual growth in the 1990s, with an acceleration occurring in every Mexican state. However, examination of the appendices reveals considerable variation across municipios. On the U.S. side of the border (Figure 5), a somewhat different picture emerges. Population growth slowed overall from 3 percent average annual to about 2.4 percent in the 1990s. But the variability of growth rates along the border, which is detailed in the appendices, is rather remarkable. In California, for example, San Diego County accounts for nearly half of the U.S. border population. Difficult economic times in San Diego in the early 1990s produced a dramatic slowdown of migration to the area. Conversely, Imperial County, adjacent to San Diego, showed dramatic acceleration in population growth. Arizona and New Mexico growth rates were relatively stable, while population growth in Texas border counties accelerated during this time.

ECONOMIC TRENDS

The border region population trends just described occur within an unusual, if not unique, economic context. The current discussion will be limited to border region income levels and labor market conditions. Three themes will be apparent: (1) the heterogeneity of border region

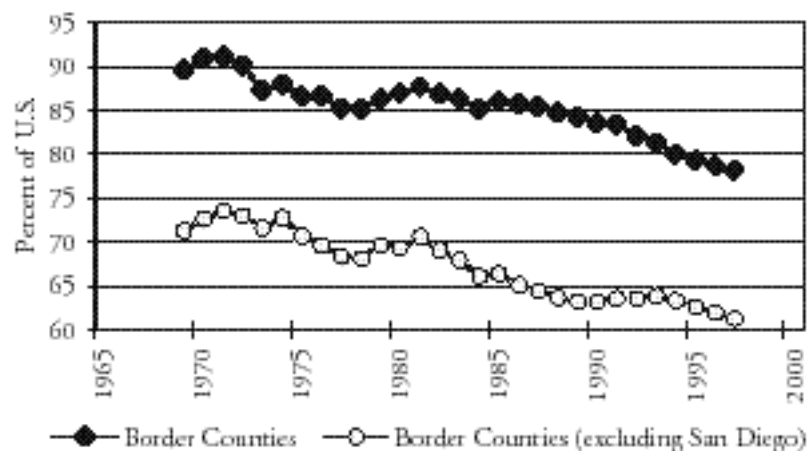Population and Economic Dynamics on the U.S.-Mexican Border

economic conditions; (2) the sensitivity of the border economy to national economic events in both the United States and Mexico; and (3) the interaction of border region economic and demographic variables.

Income

The border region is where two nations of vastly different income levels and economic structures meet. Depending on the peso-dollar exchange rate, U.S. per capita GDP is eight or nine times Mexico s per capita GDP. There is little evidence to suggest that U.S.-Mexican income differentials will decrease substantially by the year 2020. In most parts of the border region, the binational income differentials are visibly obvious to even the most casual observers.

Per capita income levels on the U.S. side of the border are below the national average, except in San Diego. Indeed, of the nation s 318 Metropolitan Statistical Areas (MSAs), the six poorest in terms of

Figure 6: Border Region Per Capita Income as Percent of
U.S. Per Capita Income

per capita income are adjacent to the Mexican border, and many of the Texas border counties are among the poorest in the nation. In 1995, none of the border counties had a per capita income higher than its respective state.

Per capita income in the U.S. border counties in 1995 was 79.2 percent of the national average, and if San Diego is removed from the list, that figure drops to 61.9 percent. Despite considerable change in the economic structure of the border region in recent years, conver-

gence of border region and national per capita income levels is not yet occurring. Indeed, Figure 6 indicates that per capita income levels in the border region have been declining relative to the nation for most of the last three decades.

There are numerous explanations for the relatively low per capita income on the U.S. side of the border. For example, unemployment rates are generally higher than the national average and employment is concentrated in relatively low wage industries. Demographic variables are also important to an understanding of low border region incomes. First, border region population growth rates are high and population is, of course, the denominator in the calculation of per capita income. Second, the U.S. portion of the border region has a lower median age than the nation and a relatively large number of young persons means a smaller portion of the population is of working age. As young people enter the labor force, they do so initially at relatively low wages compared to workers with many years of labor market experience. Education differentials are also striking and could explain a large part of the income and unemployment gaps.

The Border Region Labor Force: Employment and Unemployment

In 1995, there were 132 million persons in the U.S. labor force and 28 million of those were in border state labor markets. Mexico s labor force contained 36 million persons and 7.2 million in its six northern border states. The labor force in the U.S. border counties was 2.6 million, only slightly more than the 2.6 million persons in the border municipios labor force.

Figure 7: Maquiladora Employment Total and Border States

The size of the labor force is determined by two factors: labor force participation rates (LFPR) and the age–sex distribution of the population. LFPRs in both the United States and Mexico are relatively low for teenagers, reach a peak for those aged 25 35, and then gradually decline for those approaching retirement. Men have higher LFPRs than women in both nations in all age groups. LFPRs for men in the United States have been declining, while those for women have been increasing. LFPRs for women in Mexico also have been increasing over the last two or three decades, but the decline in male LFPRs in Mexico is not nearly as sharp as in the United States. Border municipio LFPRs are generally higher among all age groups than those for Mexico as a whole, while LFPRs in the U.S. border counties are generally lower than elsewhere in the nation.

One of the most important developments in border region labor markets has been the growth of the maquiladora industry. The maquiladora (in-bond) industry began in the late 1960s after the Johnson administration abolished the Bracero Program, which allowed temporary Mexican workers into the United States. The maquiladora industry was designed to take advantage of certain provisions of the U.S. tariff code that permitted U.S. firms to export unassembled products for assembly abroad. The assembled product is then imported into the United States, but duties are paid only on the value added abroad during the assembly process. Maquiladora employment growth accelerated during the 1990s and, as shown in Figure 7, this has been especially so since 1994. In early 1998, more

Figure 8: Unemployment Rates U.S., Texas, and El Paso

El Paso ———— Texas ▬▬▬U.S.

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than two thousand maquila plants employed slightly more than one
million workers in Mexico. The largest share of maquiladora employ-
ment is located in Mexico s six northern border states, but this share
has fallen from 95 percent in 1980 to 81 percent in 1998. Approxi-
mately 20 percent of total employment in the Mexican border states

Figure 9: Percent Change in Employment

is in the maquila plants, and this figure is much higher in some of the
border cities.

The maquiladora industry played an important role in mitigating the
effects of Mexico s most recent economic crisis in the border region.
After the crisis began with a sharp and generally unexpected devalu-
ation of the peso in late December 1994, nearly every sector and
region of the Mexican economy suffered large employment declines.
Maquiladora industry employment, however, continued to increase.
In December 1995, maquiladora employment was 13.5 percent high-
er than in December 1994. By early 1998, maquiladora employment
had increased by nearly two-thirds since December 1994. Undoubt-
edly, the impact of the devaluations on the border region would have
been much greater without a healthy maquiladora industry.

It is worthwhile to examine the maquiladora industry in a broader
context. After three decades of growth, the maquiladora industry now

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employs one million workers, a figure that is slightly less than the annual increase in Mexico s labor force. Even with a generous employment multiplier, Mexico needs a new maquiladora industry every two or three years just to maintain its current level of unemployment.

On the U.S. side of the border, unemployment rates are generally higher and more variable in border counties than in the border states or the nation. Figure 8 displays the unemployment rate for El Paso, Texas, over the last decade. This figure shows a typical pattern among border region MSAs. Among the border MSAs, only San Diego has had an unemployment rate consistently below the national (and state) average in the 1990s. At the other end of the border, Brownsville, Texas, has not had unemployment rates below double digits during the 1990s. Similar unemployment patterns have prevailed in the border region for several decades.

Despite high unemployment rates in the border region, total employment in the U.S. border counties has been growing at a faster rate than in the nation. Figure 9 displays the annual percent change in employment for the border counties, the border counties excluding San Diego, and the nation. In addition to high employment growth rates, Figure 9 also dramatically illustrates the sensitivity of border region employment to national employment trends.

Figure 10: Percent Change by Age

☐ Border Municipios (MX) ■ Border Counties (US)

Another notable trend in border region employment is substantial change in the structure of employment by industry. Historically, government employment at all levels has been a major proportion of total employment in the border region. However, in the border region, as in the nation, government employment as a percent of total employ-

ment has declined in recent decades. Government employment accounted for more than 35 percent of total border region employ-ment in the early 1970s, but this figure decreased to about 20 percent by the mid-1990s. Manufacturing employment in the border region has remained relatively constant as a percent of total employment for more than two decades, despite a decreasing national manufacturing share of total employment. In some border MSAs, such as El Paso,

Figure 11: Border Region Population Pyramid 1995

manufacturing employment has increased dramatically as a percent of total employment. Because both government employment and manufacturing employment are relatively high-wage industries, these trends will have important implications for border region per capita income.

The historical data, both for population and economic indicators, underscore the considerable variability in trends along the U.S.-Mex-ican border and argue for caution in making sweeping generaliza-tions. California, for example, is a very different border environment than is Texas, and while the border is a fact of life for the people who live along its 2,000-mile expanse, its meaning and impact varies in different areas.

THE IMPORTANCE OF AGE STRUCTURE

Demographers, economists, sociologists, and social scientists in general are keenly aware of the importance of the age structure of a population, for it at least partially determines, among many things, future population growth potential, the size of the labor force, per capita income patterns, and the demand for educational facilities, medical services, and much more. Percent change in population by age for the early 1990s is shown in Figure 10. In both the U.S. counties and in the Mexican municipios along the border, the most rapid increase in population in the early 1990s was among the 0 4 age group. In short, the border areas showed substantial births and probably notable in-migration of young children. At labor force ages, 15 64, there was a striking contrast between the U.S. and Mexican sides of the border. In Mexico, the percentage change in labor force age population was more than double the U.S. figure.

A population pyramid is a common graphic device that shows age composition and Figure 11 provides the pyramids for the U.S. and Mexican sides of the border in 1995. The contrasting age distributions reveal that Mexican municipios have considerably more demographic momentum than U.S. counties. Demographic momentum is a phrase meaning capacity for future growth even if fertility rates and migration were at low levels. Examining Figure 11, it is apparent that there is a younger age distribution in Mexico than in the United States, and today s young people will be tomorrow s parents. Put another way, the supply of future mothers has already been born and it is simply a matter of the time it takes them to reach their childbearing years. If the number of potential mothers increases, then births would increase in the future even if fertility rates were constant.

Analyses of population dynamics along the border suggest some demographically important patterns that condition forecasts about the future. First, Mexican municipios have shown strong natural increase; the excess of births over deaths, and levels of natural increase have traditionally been greater on the Mexican side than the U.S. side of the border. But levels of natural increase in the U.S. border region, while generally lower than the Mexican side, have been higher than the U.S. average. Historically, added to this strong natural increase is the fact of an age distribution, especially on the Mexican side of the border, that favors future natural increase. And, finally, there is the migration factor.The border municipios have attracted migrants from elsewhere in Mexico adding to the overall growth rate.

On the U.S. side of the border, trends have been a bit different. U.S. border counties have, in fact, grown from migration, but that

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migration growth tends to be the result of immigration, not migration
from elsewhere in the United States. For example, in 1997 (the most
recent year of U.S. data), 20,176 individuals migrated to San Diego
from abroad, while 4,196 San Diegans left the area and moved else-
where within the United States. Similarly, El Paso gained about
11,632 immigrants during that year, and lost almost eight thousand
persons to other U.S. destinations. This pattern is widespread on the

Table 2: High Series Population Adjacent to the Border, 2000 2020

Area	2000	2010	2020
Border Total	12,376,232	17,144,395	24,099,027
U.S. Subtotal	6,535,848	8,304,648	10,671,306
California	2,941,502	3,355,351	3,889,001
Arizona	1,176,231	1,500,926	1,897,829
New Mexico	224,221	311,794	425,737
Texas	2,193,894	3,136,577	4,458,739
Mexico Subtotal	5,840,384	8,839,747	13,427,721
Baja California	2,188,899	3,424,592	5,343,687
Sonora	563,156	818,840	1,217,468
Chihuahua	1,356,211	2,111,144	3,272,890
Coahuila	301,256	493,352	834,135
Nuevo León	19,465	22,072	24,569
Tamaulipas	1,411,397	1,969,747	2,734,972

U.S. side of the border. So, the U.S. border grows from natural
increase and immigration, with immigration sufficient to more than off-
set the tendency for the border counties to lose population to other
areas of the United States. Should the flow of immigration stop,
growth rates would drop dramatically, although natural increase
would continue for some time. However, should a border area
become a domestic-migration magnet, like Las Vegas, Nevada,
growth rates would accelerate remarkably.

PROJECTING FUTURE POPULATION ON THE BORDER

Detailed methodology for the population projections is provided in
Appendix A. As a brief introduction to the results, it is useful to under-
stand that the projections are done by a method known as cohort-
component and are based upon conditions in the 1990 to 1995 peri-
od. The method makes independent calculations for 36 age-sex
groupings (cohorts) for each county and municipio, and projects
births, deaths, and migration (components) separately for each

cohort. The projection periods available are at five-year intervals. This methodology is designed to be doable for both sides of the border so that a consistent methodology is applied to the United States as well as Mexico. This makes the projections unusual, since, of the many population projections that can be found, none are known that apply consistent methods along, and on both sides, of the border.

Three alternative sets of projections have been prepared. These sets share the same forecast assumptions about natural increase components. Birth rates are held constant at 1990 1995 levels. Deaths rates trend downward slowly, consistent with available national forecasts. The sets differ in their migration assumptions. In the set labeled high, the migration rates that were experienced in the 1990 1995 period are allowed to continue in the future. The low set is in marked contrast to the high series as the intent was to document the growth potential of natural increase in the absence of any migration. Thus, the low series sets migration at zero in all areas beginning immediately after 1995. Finally, an intermediate result that is labeled medium was produced, and in it migration rates were reduced to 75 percent of the early 1990s levels for the 1995 to 2000 projection. Then migration was again reduced to 50 percent of the early 1990s rates for all projection cycles after the year 2000.

BORDER POPULATION IN 2020

High Series: No Change in Migration Rates

Table 2 provides the state-level sums for border counties and municipios under the high series assumption of continued migration rates as were experienced during 1990 to 1995. The full details are available in Appendix B, Table B3.1, and Table B3.2.

A simple continuation of demographic patterns of the early 1990s, trends not unusual in the history of most of the border region, will mean tremendous population growth in the next 25 years. The border population would grow from about 10.6 million in 1995 to more than 24 million persons by 2020. On the Mexican side of the border the population would grow from 4.8 million to almost 13.5 million, while the U.S. side would not even double in size.

On the U.S. side of the border, to continue recent trends to 2020 would imply significant population growth, especially for Texas, which is projected to more than double in border population. On the Mexican side, these projections show that today s metropolitan centers along the border would become very large cities, especially in Baja California, Chihuahua, and Tamaulipas.

Figure 12: Border Region Population Pyramid 2020 (High Series)

Figure 13: Border Region Population Pyramid 2020 (Medium Series)

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Can this happen? One approach to this question is to consider the demographic issues. Migration patterns are truly a key concern. A slowdown in migration to border areas has two impacts. First, of course, the direct effect of migration is reduced. However, with a lot of migration to the border that includes women of childbearing ages and children, the migration patterns of the past have contributed to future births. Consequently, if migration declined there would be this secondary impact that would reduce growth rates. But, how might migration patterns change? On the Mexican side of the border, so long as the northern frontier is a major source of jobs and remains rel-

Table 3:Medium Series Border Population, 2000 2020

Area	2000	2010	2020
Border Total	12,125,349	15,397,769	19,460,216
U.S. Subtotal	6,438,616	7,604,430	8,957,026
California	2,932,628	3,263,538	3,622,559
Arizona	1,150,557	1,339,554	1,542,858
New Mexico	217,834	269,187	328,292
Texas	2,137,597	2,732,151	3,463,317
Mexico Subtotal	5,686,733	7,793,339	10,503,187
Baja California	2,129,078	2,957,489	4,043,896
Sonora	533,897	742,290	988,882
Chihuahua	1,320,454	1,833,626	2,507,297
Coahuila	293,081	420,266	601,216
Nuevo Leon	19,637	22,998	26,586
Tamaulipas	1,390,586	1,816,670	2,335,310

atively wealthy in the eyes of Mexicans elsewhere in the country, then migration would likely continue, as long as there is a supply of potential migrants from elsewhere in Mexico.

It should be noted that Mexican national projections show slower population growth in the next century, reflecting the late twentieth-century fertility decline. Some of the current migration from Mexico to tis border with the United States is certainly a stepping stone for migration to the United States, legal or undocumented. On the one hand, should the United States further control immigration, either legal or undocumented or both, then immigration levels would be reduced, and immigration contributes substantially to U.S. border population growth. On the other hand, it should also be noted that border areas show outmigration to other areas of the United States. It is not known if these are immigrants traveling on after a few years, or long-term residents leaving the area. If these outmigrants to other parts of the country are indeed recent immigrants, then reduced immi-

Figure 14: Border Region Population Pyramid 2020 (Low Series)

gration to the United States would probably diminish the outflow to other parts of the country from border counties, dampening the impact of lessened immigration on the balance of growth.

And just how does one control growth? Not well along the border, seems to be the answer. When responding to these numbers, some individuals in the El Paso area noted that there simply is not enough water to sustain the recent growth patterns. Yet there is little evidence that the price of residential water in Arizona, for example, has discouraged people from moving long distances to be in the area. It is also politically unpopular for elected officials to constrain employment growth along the border, a region desperate for new and better jobs. Hence, it is unlikely that these officials, when faced with a choice, will not vigorously pursue water resources to meet demand one way or another. Finally, it must be remembered that along the border considerable growth is generated by people who are born, grow up, and live out their lives in the area. It would be difficult to tell these people that there is not enough water for them to live where they were born.

Age Composition in 2020 for the High Series
Figure 12 presents the population pyramids for the border counties and municipios summed to national totals for 2020 under the

assumption of no change in migration patterns. The age distribution of the Mexican side of the border would continue to host a considerably younger population than the U.S. side. In absolute numbers, U.S. totals would exceed Mexican totals only at the highest ages. A continuation of recent migration patterns ensures further population growth as the Mexican pyramid retains a high degree of demographic momentum.

Medium Series: Migration Trended in Half

Again, summary data are presented in Table 3 and detailed data are provided in Appendix B, Table B4.1, and Table B4.2.

Reducing migration rates by half diminishes projected population growth along the border through 2020 by about 4.5 million persons, with a new total along the border of about 19.5 million persons, up from 10.6 million in 1995. Therefore, even a sweeping and substantial reduction in migration would not eliminate the growth prospects for the future as the border population would almost double in the next 25 years from the beginning of the projection.

Low Series: Zero Migration from 1995 Onward

Figure 13 is a graphic representation of the expected population growth along the border under the assumption that net migration becomes zero in 1995, an unlikely assumption, but illustrative nonetheless. Under this draconian scenario, all growth is produced from the balance of births and deaths; yet the total border population would still grow by almost five million persons, or about 50 percent, by the year 2020. About 3.1 million of this growth will occur on the Mexican side of the border, reflecting its relatively greater demographic momentum. Appendix B, Table B5.1, and Table B5.2 contain the detailed results for counties and municipios. Along the entire border, only tiny Jeff Davis County in Texas would be projected to experience population decline from 2,067 persons to 2,021 persons between 1995 and 2020.

SUMMARY AND IMPLICATIONS

Evaluation of demographic and economic information on the U.S.-
Mexican border is a matter of perspective. From the U.S. national
view, the U.S. side of the border, (excepting San Diego) is a Third
World region with high unemployment, low wages, low educational
levels, and relatively rapid population growth fueled by both birth
rates and migration from across the border. From the perspective of
U.S. border residents gazing across to the Mexican side, the view is
of uncontrolled and unconstrained population growth and a host of
serious infrastructure problems including water, sewer, roads,
schools, hospitals, and environmental concerns. However, if one
were to look at the Mexican side of the border from the perspective
of much of Mexico, it is a place of opportunity with booming employ-
ment growth and rapid urbanization, adjacent to U.S. shopping and
entertainment. No wonder Mexicans continue to move to the border,
joining a population already growing due to relatively high birth rates.
It is no wonder that some come to the United States, since it is just a
step forward in the chain of migration patterns, joining a culturally and
ethnically similar land one political boundary away.This pattern might
be stopped, supposing the border could truly be closed But the fact
for planning is that these patterns have a long history and there is no
reason to expect some sudden change.

   Projecting population is not difficult as a mathematical exercise,
and evaluation of these projections is a matter of evaluating the var-
ious assumptions. The border population will grow even in the
absence of migration, and certainly the resources and the environ-
ment will be strained further. Population growth of 50 percent along
the border by 2020 is short of war or natural disaster or some
incredible unforseen change in patterns of birth and death a cer-
tainty. Modern death rates are low, and birth rates are simply higher
than the very low rates in the general U.S. population. Mexican birth
rates have already dropped considerably, but scepticism about major
further reductions is appropriate. The figure of 50 percent increase in
population requires one to imagine no further migration to the region,
and certainly the post-1995 data available indicates that this is not
happening.

   Should migration patterns maintain themselves for another 25
years, the impacts are nothing short of astounding. Imagine El Paso
(Texas), Ciudad JuÆrez (Chihuahua), and Las Cruces (New Mexico)
as a single metropolitan center of almost six million persons. Local
officials who have seen these projections respond simply that there
is not enough water, a problem that is of concern along many miles

of the U.S. border with Mexico. But, shutting off the flow of people is
not an easy task and most often local governments scramble to meet
already unmet demands for services, and so it would seem prudent
to plan for substantial population growth on the border, and the atten-
dant growing pains.

If one sides with Adam Smith in thinking the growth of population is
the measure of the wealth of nations, then there is little cause for con-
cern. However, a more realistic view of history, evaluating the current
situation, and projecting future scenarios leaves reason for concern,
for this is not a bright and shining region, at least by the standards of
much of the United States. Where will the employment growth come
from and will it continue to be of marginal wage levels? Where will
water, sewage treatment, and other resources come from, and, par-
ticularly, what will be the source of capital for major infrastructure
additions in the future? It remains to be seen whether these problems
will be noted at the respective federal levels or left to state and local
governments, with attendant expectations about their capacities to
cope.

APPENDIX A
Projection Methodology

The population projections have been prepared using cohort-compo-
nent methodology, which means that births, deaths, and migration
components are projected separately for each of the 18 age groups
(0 4 through 85 and over) for males and females separately (the
cohorts). The projection methodology requires use of detailed age
and sex information from each country in 1990 and 1995. Both coun-
tries conducted censuses in 1990. In 1995, Mexico conducted a cen-
sus while the U.S. Census Bureau published detailed population esti-
mates, by age and sex, for all U.S. counties for 1995. The Mexican
census system, unlike the United States, reported persons for whom
age is unknown. In the 1990 and 1995 Mexican data series used to
prepare the projections, unknown age persons were allocated to
age groups 20 and over according to a procedure recommended in
the international demographics literature.

An important feature of the projections is that the same methodol-
ogy has been used for both counties and municipios. However, this
means that the methodology must be workable for both sides of the
border and so some technical compromises must be made. Thus, for
example, demographers prefer to project births using detailed age-
specific fertility rates. Such rates are not uniformly available along the
U.S.-Mexican border, thus, another method was mandated that

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would be uniformly applicable. The projection methods require only two census period counts or estimates, by age and sex, and survival rate information. The projection intervals are five years at a time.

Birth Projection

In each county and municipio the ratio of children 0 4 years of age divided by the population of women at ages 15 49, the childbearing years, is calculated. These child-woman ratios from 1995 are held constant through the year 2020 in all three series (low, medium, and high), and are applied to the projected future population of women at the childbearing ages after calculating deaths and migration during the projection period. The ratios produce births over the five-year projection interval, and thus produce 0 4 year-olds at the end of the projection interval.

Death Projection

For the United States, Census Bureau projections of survival rates and life expectancy rates by age and sex available in published documents have been used. These U.S.-level projections of mortality rates trend slowly downward over the entire period to 2020. For Mexico, United Nations information on Mexican life expectancy rates, and survival rates by age and sex corresponding to various levels of life expectancy rates have been used. The Mexican death rates for males and females trend downward only to the year 2000 and then are assumed to remain constant at that level into the future. This assumption has more to do with technical constraints of available information than a real forecast, and the projections would probably be slightly low as a result of likely continuing improvements in reducing mortality after 2000 in Mexico. But, in projections, deaths are usually not a major source of error, at least in areas experiencing substantial migration and strong demographic momentum as does the border region.

Migration Projection

Migration rates are produced first for the period from 1990 to 1995 using a procedure known as residual estimation. The technique can be easily illustrated. Imagine a county or municipio that had 1,000 males aged 10 14 years in 1990. Application of the survival rate previously discussed would yield an expected count of 992 males aged 15 19 years in 1995 in the absence of migration. Should the 1995

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APPENDIX B

Table B1.1: Total Population U.S. Border Region

Area	1980	1990	1995
San Diego	1,861,846	2,498,016	2,626,714
Imperial	92,110	109,303	141,082
California (subtotal)	1,953,956	2,607,319	2,767,796
Yuma	90,554	120,739	136,088
Pima	531,443	666,880	755,273
Santa Cruz	20,459	29,676	36,372
Cochise	85,686	97,624	110,423
Arizona (subtotal)	728,142	914,919	1,038,156
Hidalgo	6,049	5,958	6,262
Luna	15,585	18,110	22,578
Doña Ana	96,340	135,510	160,001
New Mexico (subtotal)	117,974	159,578	188,841
El Paso	479,899	591,610	678,629
Culberson	3,315	3,407	3,231
Hudspeth	2,728	2,915	3,143
Jeff Davis	1,647	1,946	2,067
Presidio	5,188	6,637	7,806
Brewster	7,573	8,681	9,074
Terrell	1,595	1,410	1,314
Val Verde	35,910	38,721	42,485
Kinney	2,279	3,119	3,371
Maverick	31,398	36,378	45,219
Dimmitt	11,367	10,433	10,501
Webb	99,258	133,239	172,386
Zapata	6,628	9,279	10,876
Starr	27,266	40,518	52,214
Hidalgo	283,229	383,545	482,461
Cameron	209,727	260,120	307,869
Texas (subtotal)	1,209,007	1,531,958	1,832,646
Border Region Total	4,009,079	5,213,774	5,827,439

Source: U.S. Department of Commerce 1983; 1993; and 1998.

Note: Tables B3.2 B5.2 components may not add to totals due to rounding.

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Table B1.2: Total Population Mexican Border Region

Area	1980	1990	1995
Tijuana	461,256	747,379	991,593
Tecate	30,540	51,556	62,546
Mexicali	510,663	601,938	696,033
Baja California (subtotal)	1,002,459	1,400,873	1,750,172
San Luis Río Colorado	92,791	110,531	133,141
Puerto Peñasco-P.E. Calles	26,754	36,353	37,491
Caborca	50,453	59,159	64,511
Altar	6,027	6,457	7,120
Saric	2,250	2,109	2,265
Nogales	68,075	107,937	133,489
Santa Cruz	1,587	1,472	1,399
Cananea	25,323	26,932	29,256
Naco	4,441	4,643	4,901
Agua Prieta	34,378	39,119	56,231
Sonora (subtotal)	312,079	394,712	469,804
Janos	8,904	10,896	10,772
Ascensión	11,985	16,360	19,646
Juárez	567,369	798,500	1,011,787
Guadalupe	7,774	8,439	8,941
Praxedis G. Guerrero	8,874	9,053	9,580
Ojinaga	26,420	23,909	23,509
Manuel Benavides	4,164	2,794	2,324
Chihuahua (subtotal)	635,490	869,951	1,086,559
Ocampo	9,000	7,853	7,485
Acuña	41,947	56,335	81,528
Jiménez	8,636	8,254	9,280
Piedras Negras	80,291	98,184	116,147
Nava	8,684	16,916	20,444
Guerrero	2,314	2,373	2,135
Hidalgo	751	1,220	1,269
Coahuila (subtotal)	151,623	191,135	238,288
Anáhuac	16,475	17,312	18,276
Nuevo León (subtotal)	16,475	17,312	18,276
Nuevo Laredo	203,285	219,465	275,060
Guerrero	4,191	4,510	3,972
Mier	6,382	6,242	6,240
Miguel Alemán	19,600	21,323	22,366
Camargo	16,014	15,042	15,265
Gustavo Diaz Ordaz	17,830	17,704	15,632
Reynosa	211,411	282,666	337,052
Río Bravo	83,523	94,010	100,370
Valle Hermoso	48,342	51,305	55,284
Matamoros	238,839	303,295	363,486
Tamaulipas (subtotal)	849,417	1,015,562	1,194,727
Border Region Total	2,967,543	3,889,545	4,757,826

Source: INEGI 1998.

Table B.2.1: Percent Change in Population U.S. Border Region

Area	1980–1990	1990–1995	Implied 1990–2000
San Diego	34.2	5.2	10.3
Imperial	18.7	29.1	58.1
California (subtotal)	33.4	6.2	12.3
Yuma	33.3	12.7	25.4
Pima	25.5	13.3	26.5
Santa Cruz	45.1	22.6	45.1
Cochise	13.9	13.1	26.2
Arizona (subtotal)	25.7	13.5	26.9
Hidalgo	-1.5	5.1	10.2
Luna	16.2	24.7	49.3
Doña Ana	40.7	18.1	36.1
New Mexico (subtotal)	35.3	18.3	36.7
El Paso	23.3	14.7	29.4
Culberson	2.8	-5.2	-10.3
Hudspeth	6.9	7.8	15.6
Jeff Davis	18.2	6.2	12.4
Presidio	27.9	17.6	35.2
Brewster	14.6	4.5	9.1
Terrell	-11.6	-6.8	-13.6
Val Verde	7.8	9.7	19.4
Kinney	36.9	8.1	16.2
Maverick	15.9	24.3	48.6
Dimmitt	-8.2	0.7	1.3
Webb	34.2	29.4	58.8
Zapata	40.0	17.2	34.4
Starr	48.6	28.9	57.7
Hidalgo	35.4	25.8	51.6
Cameron	24.0	18.4	36.7
Texas (subtotal)	26.7	19.6	39.3
Border Region Totals	30.0	11.8	23.5

Source: Author calculations from Table B.1.1.

Table B2.2: Percent Change in Population   Mexican Border Region

Area	1980–1990	1990–1995	Implied 1990–2000
Tijuana	62.0	32.7	65.4
Tecate	68.8	21.3	42.6
Mexicali	17.9	15.6	31.3
Baja California (subtotal)	39.7	24.9	49.9
San Luis Río Colorado	19.1	20.5	40.9
Puerto Peñasco-P.E. Calles	35.9	3.1	6.3
Caborca	17.3	9.0	18.1
Altar	7.1	10.3	20.5
Saric	-6.3	7.4	14.8
Nogales	58.6	23.7	47.3
Santa Cruz	-7.2	-5.0	-9.9
Cananea	6.4	8.6	17.3
Naco	4.5	5.6	11.1
Agua Prieta	13.8	43.7	87.5
Sonora (subtotal)	26.5	19.0	38.0
Janos	22.4	-1.1	-2.3
Ascensión	36.5	20.1	40.2
Juárez	40.7	26.7	53.4
Guadalupe	8.6	5.9	11.9
Praxedis G. Guerrero	2.0	5.8	11.6
Ojinaga	-9.5	-1.7	-3.3
Manuel Benavides	-32.9	-16.8	-33.6
Chihuahua (subtotal)	36.9	24.9	49.8
Ocampo	-12.7	-4.7	-9.4
Acuña	34.3	44.7	89.4
Jiménez	-4.4	12.4	24.9
Piedras Negras	22.3	18.3	36.6
Nava	94.8	20.9	41.7
Guerrero	2.5	-10.0	-20.1
Hidalgo	62.5	4.0	8.0
Coahuila (subtotal)	26.1	24.7	49.3
Anáhuac	5.1	5.6	11.1
Nuevo León (subtotal)	5.1	5.6	11.1
Nuevo Laredo	8.0	25.3	50.7
Guerrero	7.6	-11.9	-23.9
Mier	-2.2	0.0	-0.1
Miguel Alemán	8.8	4.9	9.8
Camargo	-6.1	1.5	3.0
Gustavo Díaz Ordaz	-0.7	-11.7	-23.4
Reynosa	33.7	19.2	38.5
Río Bravo	12.6	6.8	13.5
Valle Hermoso	6.1	7.8	15.5
Matamoros	27.0	19.8	39.7
Tamaulipas (subtotal)	19.6	17.6	35.3
Border Region Total	31.1	22.3	44.6

Source: Author calculations from Table B1.2.

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Table B.3.1: High Case Population Projections—U.S. Border Region

Area	1990	1995	2000	2005	2010	2015	2020
San Diego	2,498,016	2,626,714	2,758,849	2,899,162	3,052,314	3,219,316	3,397,223
Imperial	109,303	141,082	182,653	235,810	303,037	386,605	491,778
California (subtotal)	2,607,319	2,767,796	2,943,502	3,136,977	3,357,361	3,607,936	3,891,021
Yuma	120,739	136,088	153,545	173,266	195,798	221,101	248,855
Pima	666,880	755,273	853,313	961,035	1,080,285	1,211,816	1,354,571
Santa Cruz	29,767	36,372	44,465	54,226	66,035	79,908	96,271
Cochise	97,624	110,423	124,908	141,010	158,808	177,881	198,132
Arizona (subtotal)	915,010	1,038,156	1,176,231	1,329,537	1,500,926	1,690,706	1,897,829
Hidalgo	5,958	6,262	6,546	6,816	7,074	7,291	7,472
Luna	18,110	22,578	28,143	35,028	43,584	54,017	66,562
Doña Ana	135,510	160,001	189,532	223,295	261,136	304,067	351,703
New Mexico (subtotal)	159,578	188,841	224,221	265,139	311,794	365,375	425,737
El Paso	591,610	678,629	777,144	886,178	1,008,637	1,142,289	1,287,217
Culberson	3,407	3,231	3,058	2,869	2,682	2,484	2,284
Hudspeth	2,915	3,143	3,428	3,716	4,030	4,308	4,590
Jeff Davis	1,946	2,067	2,196	2,322	2,459	2,577	2,690
Presidio	6,637	7,806	9,165	10,720	12,501	14,479	16,705
Brewster	8,681	9,074	9,501	9,894	10,285	10,704	11,021
Terrell	1,410	1,314	1,243	1,159	1,077	987	901
Val Verde	38,721	42,485	46,762	51,255	55,879	60,436	65,007
Kinney	3,119	3,371	3,656	4,006	4,393	4,813	5,211
Maverick	36,378	45,219	56,001	68,984	84,963	103,744	126,041
Dimmitt	10,433	10,501	10,552	10,568	10,545	10,450	10,316
Webb	133,239	172,386	222,100	284,506	363,438	461,623	583,653
Zapata	9,279	10,876	12,716	14,836	17,298	20,163	23,473

Table B.3.1 Continued

	1990	1995	2000	2005	2010	2015	2020
Starr	40,518	52,214	67,149	85,846	109,311	138,006	173,279
Hidalgo	383,545	482,461	605,449	756,457	944,917	1175,720	1,457,516
Cameron	260,120	307,869	363,774	428,335	504,142	590,558	688,835
Texas (subtotal)	1,531,958	1,832,646	2,193,894	2,621,651	3,136,577	3,743,341	4,458,739
Border Region Total	5,213,865	5,827,439	6,535,849	7,351,298	8,304,648	9,405,344	10,671,307

Source: 1990 and 1995 data are from U.S. Department of Commerce 1993;1998. Author calculations for remaining years.

Table B.3.2 High Case Population Projections — Mexican Border Region

Area	1990	1995	2000	2005	2010	2015	2020
Tijuana	747,379	991,593	1,309,634	1,722,050	2,255,833	2,942,466	3,822,116
Tecate	51,556	62,546	75,942	91,990	111,022	133,397	159,547
Mexicali	601,938	696,033	803,323	924,214	1,057,737	1,203,207	1,362,024
Baja California (subtotal)	1,400,873	1,750,172	2,188,899	2,738,254	3,424,592	4,279,070	5,343,687
San Luis Río Colorado	110,531	133,141	160,205	192,307	229,645	272,560	321,701
Puerto Peñasco-P.E. Calles	36,353	37,491	38,818	40,082	41,123	41,927	42,430
Caborca	59,159	64,511	70,693	77,340	84,135	91,073	98,065
Altar	6,457	7,120	7,877	8,700	9,569	10,470	11,366
Saric	2,109	2,265	2,479	2,703	2,924	3,136	3,343
Nogales	107,937	133,489	164,070	199,919	243,667	297,446	362,203
Santa Cruz	1,472	1,399	1,365	1,328	1,280	1,228	1,164
Cananea	26,932	29,256	31,865	34,519	37,305	40,155	43,103
Naco	4,643	4,901	5,174	5,439	5,682	5,907	6,084
Agua Prieta	39,119	56,231	80,610	114,998	163,510	231,825	328,009
Sonora (subtotal)	394,712	469,804	563,156	677,335	818,840	995,727	1,217,468

Table 3.2 Continued

Janos	10,896	10,772	10,767	10,755	10,706	10,569	10,384
Ascensión	16,360	19,646	23,765	28,763	34,592	41,305	49,062
Juárez	798,500	1,011,787	1,276,573	1,606,143	2,019,075	2,532,379	3,166,092
Praxedis G. Guerrero	8,439	8,941	9,548	10,156	10,757	11,308	11,764
Guadalupe	9,053	9,580	10,199	10,839	11,451	12,027	12,521
Ojinaga	23,909	23,509	23,391	23,350	23,170	22,778	22,163
Manuel Benavides	2,794	2,324	1,968	1,671	1,393	1,134	904
Chihuahua (subtotal)	869,951	1,086,559	1,356,211	1,691,677	2,111,144	2,631,500	3,272,890
Ocampo	7,853	7,485	7,234	7,041	6,842	6,658	6,482
Acuña	56,335	81,528	117,619	168,508	241,466	345,635	492,484
Jiménez	8,254	9,280	10,507	11,847	13,354	14,969	16,672
Piedras Negras	98,184	116,147	137,764	163,009	192,069	225,209	262,996
Nava	16,916	20,444	24,840	30,158	36,435	43,730	52,355
Guerrero	2,373	2,135	1,950	1,775	1,611	1,448	1,303
Hidalgo	1,220	1,269	1,342	1,444	1,575	1,699	1,843
Coahuila (subtotal)	191,135	238,288	301,256	383,782	493,352	639,348	834,135
Anáhuac	17,312	18,276	19,465	20,760	22,072	23,356	24,596
Nuevo León (subtotal)	17,312	18,276	19,465	20,760	22,072	23,356	24,596
Nuevo Laredo	219,465	275,060	344,501	430,210	536,784	667,796	328,248
Guerrero	4,510	3,972	3,680	3,468	3,339	3,247	3,145
Mier	6,242	6,240	6,349	6,444	6,582	6,778	6,977
Miguel Alemán	21,323	22,366	23,484	24,635	25,812	27,006	28,183
Camargo	15,042	15,265	15,561	15,850	16,075	16,230	16,302
Gustavo Díaz Ordaz	17,704	15,632	13,878	12,291	10,827	9,477	8,246
Reynosa	282,666	337,052	402,039	477,464	563,994	662,465	774,085
Río Bravo	94,010	100,370	107,428	114,875	122,296	129,348	135,912

Table B3.2 Continued

	1990	1995	2000	2005	2010	2015	2020
Valle Hermoso	51,305	55,284	59,785	64,623	69,635	74,665	79,658
Matamoros	303,295	363,486	434,692	517,763	614,403	726,256	854,216
Tamaulipas (subtotal)	1,015,562	1,194,727	1,411,397	1,667,623	1,969,747	2,323,268	2,734,972
Border Region Total	3,889,545	4,757,826	5,840,384	7,179,431	8,839,745	10,892,271	13,427,750

Source: INEGI 1998 and author calculations.

Table B4.1: Medium Case Population Projections U.S. Border Region

Area	1990	1995	2000	2005	2010	2015	2020
San Diego	2,498,016	2,626,714	2,757,874	2,888,839	3,022,391	3,157,483	3,294,769
Imperial	109,303	141,082	174,754	205,716	241,147	281,382	327,790
California (subtotal)	2,607,319	2,767,796	2,932,628	3,094,555	3,263,538	3,438,865	3,622,559
Yuma	120,739	136,088	150,728	163,637	177,577	192,464	208,348
Pima	666,880	755,273	834,499	898,079	963,864	1,031,440	1,100,276
Santa Cruz	29,676	36,372	43,065	49,155	55,982	63,475	71,796
Cochise	97,624	110,423	122,265	132,056	142,131	152,233	162,438
Arizona (subtotal)	914,919	1,038,156	1,150,557	1,242,927	1,339,554	1,439,612	1,542,858
Hidalgo	5,958	6,262	6,546	6,817	7,086	7,340	7,588
Luna	18,110	22,578	26,845	30,273	34,060	38,266	43,005
Doña Ana	135,510	160,001	184,443	205,629	228,041	252,084	277,699
New Mexico (subtotal)	159,578	188,841	217,834	242,719	269,187	297,690	328,292
El Paso	591,610	678,629	764,480	842,796	926,121	1,012,755	1,103,065
Culberson	3,407	3,231	3,162	3,172	3,169	3,147	3,114
Hudspeth	2,915	3,143	3,402	3,642	3,903	4,147	4,402
Jeff Davis	1,946	2,067	2,164	2,225	2,286	2,339	2,392

Table B.4.1 Continued

	1990	1995	2000	2005	2010	2015	2020
Presidio	6,637	7,806	8,907	9,835	10,843	11,924	13,121
Brewster	8,681	9,074	9,444	9,737	10,050	10,379	10,664
Terrell	1,410	1,314	1,268	1,251	1,239	1,218	1,200
Val Verde	38,721	42,485	46,412	50,048	53,713	57,398	61,208
Kinney	3,119	3,371	3,598	3,787	3,974	4,167	4,359
Maverick	36,378	45,219	54,225	62,527	71,998	82,555	94,495
Dimmitt	10,433	10,501	10,704	11,011	11,300	11,586	11,890
Webb	133,239	172,386	213,437	252,025	296,827	348,144	407,110
Zapata	9,279	10,876	12,434	13,846	15,408	17,169	19,165
Starr	40,518	52,214	64,597	76,255	89,708	105,025	122,659
Hidalgo	383,545	482,461	584,161	678,076	786,011	909,170	1,050,166
Cameron	260,120	307,869	355,202	398,148	445,601	497,419	554,307
Texas (subtotal)	1,531,958	1,832,646	2,137,597	2,418,381	2,732,151	3,078,542	3,463,317
Border Region Total	5,213,774	5,827,439	6,438,616	6,998,582	7,604,430	8,254,709	8,957,028

Source: U.S. Department of Commerce 1993; 1998; and author calculations.

Table B.4.2: Medium Case Population, Mexican Border Region

Area	1990	1995	2000	2005	2010	2015	2020
Tijuana	747,379	991,593	1,260,121	1,532,687	1,855,867	2,235,062	2,676,672
Tecate	51,556	62,546	74,513	86,875	100,938	116,703	134,271
Mexicali	601,938	696,033	794,444	893,876	1,000,684	1,113,609	1,232,953
Baja California (subtotal)	1,400,873	1,750,172	2,129,078	2,513,438	2,957,489	3,465,374	4,043,896
San Luis Río Colorado	110,531	133,141	157,276	181,842	209,237	239,390	272,468
Puerto Peñasco-P.E. Calles	36,353	37,491	39,527	42,268	44,909	47,455	49,851
Caborca	59,159	64,511	70,926	78,059	85,413	92,993	100,756

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Table B4.2   Continued

Altar	6,457	7,120	7,878	8,706	9,590	10,515	11,464
Saric	2,109	2,265	2,493	2,706	3,045	3,338	3,635
Nogales	107,937	133,489	160,834	188,531	220,591	257,669	299,598
Santa Cruz	1,472	1,399	1,418	1,483	1,542	1,598	1,647
Cananea	26,932	29,236	31,928	34,754	37,721	40,796	43,991
Naco	4,643	4,901	5,261	5,727	6,202	6,682	7,139
Agua Prieta	39,119	56,231	76,356	97,511	124,040	157,126	198,353
Sonora (subtotal)	394,712	469,804	553,897	641,641	742,290	857,562	988,882
Janos	10,896	10,772	11,140	11,883	12,623	13,341	14,085
Ascensión	16,360	19,646	23,368	27,332	31,771	36,726	42,314
Juárez	798,500	1,011,787	1,239,922	1,470,185	1,738,020	2,045,334	2,395,024
Praxedis G. Guerrero	8,439	8,941	9,641	10,446	11,271	12,092	12,891
Guadalupe	9,053	9,580	10,318	11,219	12,149	13,091	14,011
Ojinaga	23,909	23,509	23,957	24,957	25,857	26,630	27,275
Manuel Benavides	2,794	2,324	2,108	2,030	1,935	1,820	1,697
Chihuahua (subtotal)	869,951	1,086,559	1,320,454	1,558,052	1,833,626	2,149,034	2,507,297
Ocampo	7,853	7,485	7,550	7,979	8,416	8,882	9,389
Acuña	56,335	81,528	111,347	142,616	182,340	232,393	294,604
Jiménez	8,254	9,280	10,458	11,693	13,058	14,524	16,081
Piedras Negras	98,184	116,147	135,850	156,263	179,006	204,052	231,580
Nava	16,916	20,444	24,479	28,852	33,820	39,386	45,722
Guerrero	2,373	2,135	2,039	2,028	2,011	1,983	1,954
Hidalgo	1,220	1,269	1,358	1,482	1,615	1,747	1,886
Coahuila (subtotal)	191,135	238,288	293,081	350,913	420,266	502,968	601,216
Anáhuac	17,312	18,276	19,637	21,283	22,998	24,761	26,586
Nuevo León (subtotal)	17,312	18,276	19,637	21,283	22,998	24,761	26,586

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Table B4.2 Continued

	1990	1995	2000	2005	2010	2015	2020
Nuevo Laredo	219,465	275,060	334,955	395,023	464,575	543,880	633,770
Guerrero	4,510	3,972	3,851	3,923	4,025	4,135	4,249
Mier	6,242	6,240	6,453	6,767	7,110	7,483	7,863
Miguel Alemán	21,323	22,366	23,795	25,617	27,521	29,475	31,458
Camargo	15,042	15,265	15,819	16,637	17,432	18,205	18,946
Gustavo Díaz Ordaz	17,704	15,632	14,642	14,382	14,061	13,685	13,265
Reynosa	282,666	337,052	394,864	452,628	515,993	584,684	658,403
Río Bravo	94,010	100,370	108,390	117,870	127,636	137,449	147,230
Valle Hermoso	51,305	55,284	60,082	65,558	71,302	77,209	83,235
Matamoros	303,295	363,486	427,735	493,483	567,015	648,366	736,891
Tamaulipas (subtotal)	1,015,562	1,194,727	1,390,586	1,591,888	1,816,670	2,064,571	2,335,310
Border Region Total	3,889,545	4,757,826	5,706,733	6,677,212	7,793,338	9,064,272	10,503,188

Source: INEGI 1998 and author calculations.

Table B5.1: Low Case Population Projections U.S. Border Region

Area	1990	1995	2000	2005	2010	2015	2020
San Diego	2,498,016	2,626,714	2,754,949	2,876,121	2,990,908	3,094,817	3,191,225
Imperial	109,303	141,082	151,059	161,360	171,743	182,171	193,276
California (subtotal)	2,607,319	2,767,796	2,906,008	3,037,481	3,162,651	3,275,988	3,384,501
Yuma	120,739	136,088	142,278	148,467	154,728	161,113	167,945
Pima	666,880	755,273	778,058	798,149	815,649	830,061	842,722
Santa Cruz	29,676	36,372	38,864	41,301	43,726	46,138	48,691

Table B5.1   Continued

Cochise	97,624	110,423	114,336	117,905	121,076	123,851	126,508
Arizona (subtotal)	914,919	1,038,156	1,073,536	1,105,822	1,135,179	1,161,163	1,185,866
Hidalgo	5,958	6,262	6,546	6,833	7,115	7,398	7,704
Luna	18,110	22,578	22,951	23,304	23,716	24,232	24,939
Doña Ana	135,510	160,001	169,176	178,055	186,650	194,832	202,965
New Mexico (subtotal)	159,578	188,841	198,673	208,192	217,481	226,462	235,608
El Paso	591,610	678,629	726,491	773,077	818,720	862,738	906,332
Culberson	3,407	3,231	3,473	3,704	3,933	4,167	4,414
Hudspeth	2,915	3,143	3,322	3,508	3,692	3,878	4,061
Jeff Davis	1,946	2,067	2,069	2,065	2,052	2,035	2,021
Presidio	6,637	7,806	8,134	8,475	8,825	9,206	9,630
Brewster	8,681	9,074	9,270	9,442	9,591	9,724	9,853
Terrell	1,410	1,314	1,344	1,375	1,402	1,426	1,452
Val Verde	38,721	42,485	45,359	48,154	51,013	53,945	56,949
Kinney	3,119	3,371	3,424	3,462	3,495	3,532	3,589
Maverick	36,378	45,219	48,897	52,639	56,431	60,408	64,706
Dimmit	10,433	10,501	11,159	11,828	12,521	13,251	14,047
Webb	133,239	172,386	187,445	202,846	219,021	235,774	253,445
Zapata	9,279	10,876	11,589	12,328	13,153	14,102	15,191
Starr	40,518	52,214	56,942	61,819	66,945	72,324	78,043
Hidalgo	383,545	482,461	520,296	558,636	598,196	639,572	683,960
Cameron	260,120	307,869	329,487	351,150	373,150	395,906	420,140
Texas (subtotal)	1,531,958	1,832,646	1,968,701	2,104,508	2,242,140	2,381,988	2,527,833
Border Region Total	5,213,774	5,827,439	6,146,918	6,456,003	6,757,453	7,046,600	7,333,809

Source: U.S. Department of Commerce 1993; 1998; and author calculations.

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Table B5.2: Low Case Population Projections – Mexican Border Region

Area	1990	1995	2000	2005	2010	2015	2020
Tijuana	747,379	991,593	1,111,582	1,242,042	1,380,392	1,524,365	1,671,328
Tecate	51,556	62,546	70,226	78,682	87,770	97,438	107,606
Mexicali	601,938	696,033	767,809	845,071	924,613	1,006,003	1,088,659
Baja California (subtotal)	1,400,873	1,750,172	1,949,617	2,165,795	2,392,775	2,627,806	2,867,593
San Luis Río Colorado	110,531	133,141	148,489	165,333	183,050	201,626	220,955
Puerto Peñasco-P.E. Calles	36,353	37,491	41,654	46,185	50,856	55,723	60,790
Caborca	59,159	64,511	71,625	79,374	87,399	95,748	104,417
Altar	6,457	7,120	7,882	8,734	9,649	10,632	11,673
Saric	2,109	2,265	2,533	2,851	3,195	3,564	3,954
Nogales	107,937	133,489	151,127	170,097	190,683	212,650	235,480
Santa Cruz	1,472	1,399	1,576	1,767	1,978	2,208	2,462
Cananea	26,932	29,256	32,117	35,145	38,292	41,583	45,029
Naco	4,643	4,901	5,521	6,230	6,992	7,805	8,648
Agua Prieta	39,119	56,231	63,594	71,769	80,565	89,997	100,042
Sonora (subtotal)	394,712	469,804	526,118	587,485	652,659	721,536	793,450
Janos	10,896	10,772	12,259	13,984	15,902	18,062	20,529
Ascensión	16,360	19,646	22,178	25,063	28,112	31,415	35,004
Juárez	798,500	1,011,787	1,129,968	1,258,069	1,393,175	1,533,470	1,676,142
Praxedis G. Guerrero	8,439	8,941	9,919	10,992	12,138	13,357	14,649
Guadalupe	9,053	9,580	10,675	11,893	13,200	14,586	16,055
Ojinaga	23,909	23,509	25,656	27,954	30,313	32,767	35,336
Manuel Benavides	2,794	2,324	2,529	2,750	2,986	3,234	3,497
Chihuahua (subtotal)	869,951	1,086,559	1,213,184	1,350,705	1,495,826	1,646,891	1,801,212
Ocampo	7,853	7,485	8,498	9,692	11,005	12,495	14,184
Acuña	56,335	81,528	92,530	104,521	117,676	131,859	146,798

Table 5.2   Continued

Jiménez	8,254	9,280	10,314	11,451	12,683	14,013	15,439
Piedras Negras	98,184	116,147	130,108	145,367	161,647	178,909	197,117
Nava	16,916	20,444	23,393	26,734	30,345	34,245	38,489
Guerrero	2,373	2,135	2,303	2,493	2,689	2,894	3,107
Hidalgo	1,220	1,269	1,408	1,567	1,728	1,905	2,102
Coahuila (subtotal)	191,135	238,288	268,554	301,825	337,773	376,320	417,236
Anáhuac	17,312	18,276	20,151	22,226	24,433	26,784	29,328
Nuevo León (subtotal)	17,312	18,276	20,151	22,226	24,433	26,784	29,328
Nuevo Laredo	219,465	275,060	306,317	339,923	375,265	412,221	450,103
Guerrero	4,510	3,972	4,364	4,799	5,276	5,787	6,338
Mier	6,242	6,260	6,765	7,330	7,916	8,531	9,170
Miguel Alemán	21,323	22,366	24,730	27,319	30,066	32,961	35,976
Camargo	15,042	15,265	16,593	18,034	19,531	21,122	22,781
Gustavo Díaz Ordaz	17,704	15,632	16,934	18,306	19,704	21,140	22,602
Reynosa	282,666	337,052	373,340	412,247	452,720	494,081	535,293
Río Bravo	94,010	100,370	111,277	123,201	135,783	148,977	162,750
Valle Hermoso	51,305	55,284	60,973	67,235	73,820	80,732	87,952
Matamoros	303,295	363,486	406,865	454,099	504,315	556,922	610,587
Tamaulipas (subtotal)	1,015,562	1,194,727	1,328,158	1,472,493	1,624,396	1,782,474	1,943,552
Border Region Total	3,889,545	4,757,826	5,305,782	5,900,532	6,527,860	7,181,811	7,852,368

Source: INEGI 1998 and author calculations.

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data show 1,100 males at ages 15 19, the residual estimate of net migration (the balance of in- and outflows) for this cohort would be 108 migrants coming into the area, and the rate would be 108 divided by the initial population of 1,000 males ages 10 14. This calculation is done for all age-sex groupings, with special procedures needed to handle the 85 and over population. Also, the births discussed earlier are not subject to migration directly, although, since the mothers are subject to migration, the child-woman ratio technique will reflect the parental migration patterns.

This residual estimation technique is sensitive to problems of undercount when one period has substantially more or less undercount than the second period. Using the aforementioned migration example, some of the presumed 108 migrants that were estimated may simply be people who were not counted in 1990 but were captured by the 1995 figures. Correcting such a count differential would be a major undertaking and perhaps not even possible for the entire border region.

Three projection series have been prepared and they differ only with respect to the migration assumptions.

High projection series
While labeled high, this set simply assumes a continuation of the migration rates by age and sex which were experienced in each county and municipio in the 1990 to1995 period. The baseline for judging the results is to consider whether the trends in the early 1990s would continue through 2020. In some areas, migration rates were very high and, indeed, by 2020 the population consequences are profound. The combined El Paso, Cuidad JuÆrez, and Las Cruces metropolitan area would grow to nearly six million persons, which raises questions about whether or not such rates can possibly continue. However, San Diego in the early 1990s was in a slump, and current evidence suggests that the period between 1990 and 1995 is too conservative for forecasting the future.

Medium projection series
The migration assumption for this series is that migration rates fall to 75 percent of the 1990 1995 levels during the period between 1995 and 2000 and continue to fall to 50 percent in 2000 and beyond. Thus, the rates trend toward zero from either positive or negative levels, and level off at half of the 1990 1995 rates from 2000 onward.

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Low projection series
The low series is not a forecast but demonstrates an important point
after calculating the results. In the low series, migration rates were
set to zero immediately after 1995. While hardly realistic, the value of
such a series is that all projected population growth in the future
comes solely from the difference between births and deaths, and the
results demonstrate that the border region will continue to grow even
if there is no migration growth.