



## A HUMAN DEVELOPMENT INDEX FOR THE MEXICO-US BORDER REGIONS

by

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### Introduction

In the 1980s, researchers in the United Nations Development Program (UNDP) created the Human Development Index as an alternative to relying on real per capita income for measuring a country's economic development. While it had long been recognized that per capita income could not capture the multidimensional nature of economic development, other attempts at indices were either too complex or had ignored the income dimension. Under the intellectual guidance of economist Mahbub ul Haq, the UNDP developed a simple but broader index, the Human Development Index, or HDI. This index includes per capita income, and also education and health indices as a broader reflection of economic development.

The HDI is calculated for most countries of the world and has been published in the *Human Development Report* every year since 1990 (<http://www.undp.org>). The index ranges from 0 to 1.00, with countries above 0.8 arbitrarily classified as high human development, those between 0.5 and 0.79 as

medium human development and those below 0.5 as low human development. Importantly, a country's HDI ranking can differ substantially from rankings based on income alone, especially where income is distributed unequally (*Human Development Report, 2000*, pp. 147-50).

The Border Human Development Index (BHDI) is our adaptation of the UNDP's methodology. Our purpose is to provide a comparison of

levels of economic development for the 25 US and 38 Mexican communities that touch the border. This index follows the methodology of the UNDP, maintaining the combination of income, education, and health, but in order to maintain cross-border comparability at the local level, we make a few minor changes with respect to the specific variables we use. We hope that this is the beginning of a richer and more nuanced discussion about comparative development, border needs, and the trajectory of Mexico-US integration in the border region. In the remainder of the brief, we describe a Border Human Development Index (BHDI) and explore what it tells us about the development needs of the border region.

### Defining human development

In order for humans to have a chance in life, they need three basic resources: income, health, and education. With income, the material necessities of life can be obtained, while good health provides individuals with the physical capacity to achieve and to enjoy the fruits of their achievement, and education increases opportunities and choices, along with increasing individuals' productive capacity. Our BHDI shares the limitations of the HDI in that these are simplifications of many dimensions and complexities of human development.

For example, they do not say anything about political and civil freedoms, the absence of which can severely limit individual freedom, opportunities and choices. The point of this exercise, however, is not to have the last word on what is development, but rather to provide a more sophisticated alternative to per capita income, and to encourage an examination of a wider range of indicators.

### Measuring income, education, and health

The income component of the BHDI is per capita income in constant 1996 dollars. Since Mexican income is

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only officially measured at the state and national levels, we estimated income per capita for the border municipios using employment data from the census and official estimates of income in each sector of each border state's economy. Mexican pesos were translated into U.S. dollars using purchasing power parity exchange rates in order to compensate for price differences between the US and Mexico (*Penn World Table Version 6.1*, Heston, Summers, and Aten, 2002). Following the UNDP

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methodology, per capita income was converted to logarithms in order to reduce the impact of extremely high values of income in the index. So, for example, incomes per capita of \$27,334 in San Diego in the year 2000 are less of an advantage over Imperial County’s \$18,508 than the dollar difference (\$8,826) implies.

The educational component of the BHDI is composed of two variables, the proportion of school-aged population that are enrolled in primary and secondary school and the proportion of population 25 and older who have graduated from high school (i.e. completed 12 years of schooling). This is a modification of the UNDP’s index, which combines enrollments with literacy instead of high school graduation rates. Literacy rates are available for local areas along the Mexican border, but the US Census Bureau ceased gathering literacy data at state and local levels after 1970. Both countries report high school completion rates of local populations.

The UNDP’s index includes a measurement of life expectancy at birth as its indicator of health. Life expectancy data is available at the national and state levels for both the US and Mexico, but not at the county or municipio level. Hence, in calculating the BHDI we substitute the infant mortality rate, which is closely correlated with life expectancy and is a good proxy for medical care and conditions of housing, sanitation, and water quality.

Income, education, and health are each converted to a scale that ranges from 0 to 1.00 by taking the

difference between the actual value and a hypothetical maximum and dividing it by the difference between the hypothetical maximum and minimum values, as shown in the following equation:

$$Index = (Maximum\ value - actual\ value) / (Maximum\ value - Minimum\ value).$$

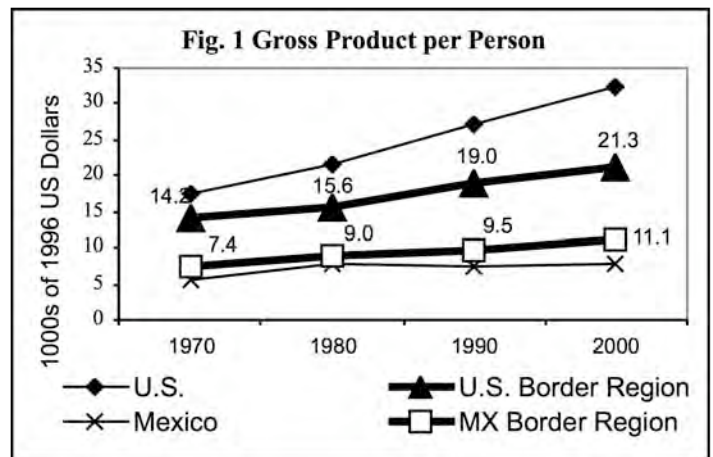
In effect, this ratio is the percentage of the difference between the maximum and minimum values that has been traveled by a region. Each of the three indexes are then combined using equal weights of one-third. For the health and education variables, the maximum value is assumed to be 100 percent and the minimum values are set at 0 percent. In the case of income per capita, we use the UNDP’s definitions of the maximum and minimum as \$40,000 and \$100, respectively. These are arbitrary numbers and their values influence the value of the income index, but not the ranking of counties and municipios.

**Income, education and health indexes**

Our sample includes all 25 US counties and 38 Mexican municipios that touch the border. The primary data sources are the US and Mexican census for 1990 and 2000.

Income

Figure 1 shows the trend in real per capita income (regional gross product per capita, or RGP per capita) from 1969 to 1999. Real per capita income has increased for both border regions, as well as both nations. Mexico’s border region income has consistently been slightly higher than the national level while the US has lower border incomes with a growing gap. The absolute gap in per capita income between the US and Mexico has also grown.



Looking at individual counties and municipios, the data reveal that the two communities with the highest per capita incomes in both 1990 and 2000 are San Diego,

California, and Pima (Tucson), Arizona. The communities with the lowest per capita incomes were Janos, Chihuahua, in 1990, and Santa Cruz, Sonora, in 2000. In general and as expected, incomes in US counties are above Mexican municipios, but there are a few exceptions. In 2000, Ciudad Acuña and Ciudad Juárez were both above the Texas counties of Maverick and Presidio. An additional 12 municipios, including all the Baja California *municipios*, were above Starr county, Texas, the poorest county in the US border region.

These dollar values are then converted to an index where 1 is the maximum and 0 the minimum, according to the UNDP methodology. Figure 2 (below) shows the income index for 1990 and 2000. Individual counties and municipios have indexes that range from 0.94 to 0.69 in 1990 and from 0.97 to 0.69 in 2000.

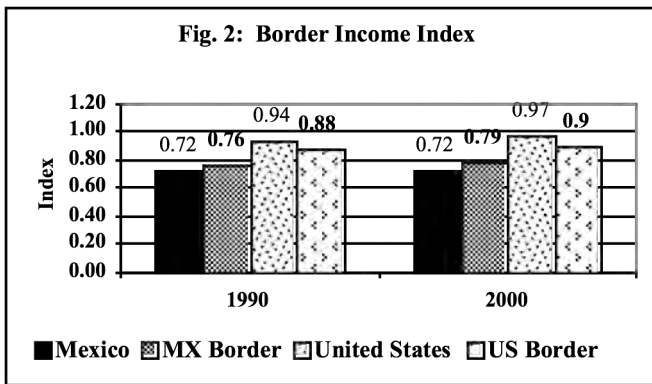


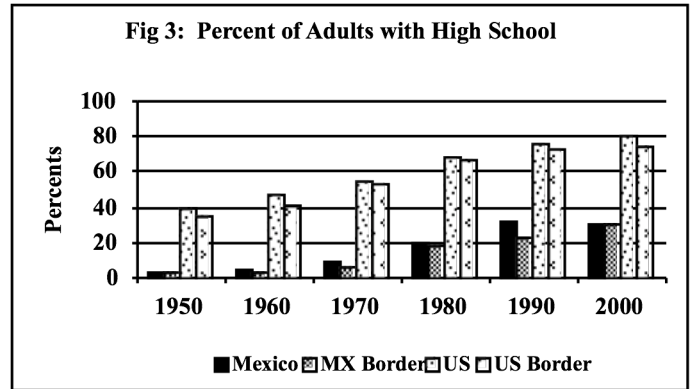
Figure 2 represents averages for each side of the border along with estimates for the US and Mexico as a whole. For the border regions, the gap in gross regional product decreased slightly from 0.12 index points in 1990 to 0.11 points in 2000. The rankings for all counties and *municipios* are in Table A.1 in the appendix.

Education

Both Mexico and the US have increased the percentage of population, ages 6 to 19 that are enrolled in primary and secondary school, but the increase is most dramatic on the Mexican side of the border. (Secondary refers to both middle school and high school or *preparatoria*). In 1950, the Mexican border region (the combined border municipios) had 39 percent of its 6 to 19 year old population in school, compared to 27 percent nationally. This increased to 69 percent in 1990 and 75 percent in 2000 in the Mexican border regions, while the Mexican national figure stood at a nearly identical 76 percent in 2000. The US border region proportions are slightly lower than the national figures, with 83 percent of the age cohort enrolled in 1990

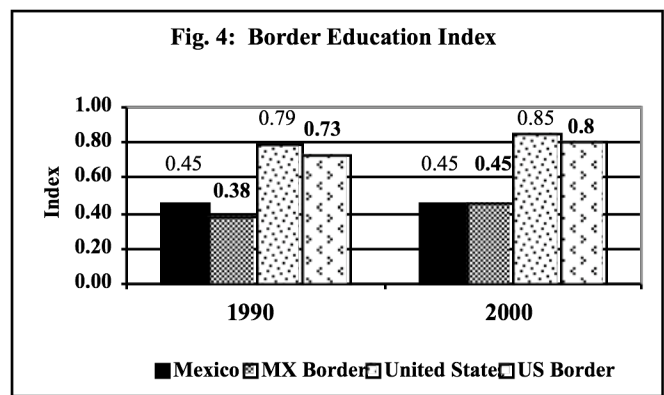
(compared to 87 percent nationally) and 90 percent in 2000 (93 percent nationally).

For educational attainment this study uses the proportion of adult population, 25 years and older who have completed 12 or more years of education. Figure 3 shows the trend in this proportion from 1950 through 2000.



In 1950 only 34 percent of adults in the US border region had 12 or more years of education, increasing to 74 percent in 2000, but always remaining below the national rate. In the Mexican border region in 1950, only 2.6 percent had 12 or more years of education, increasing to 30 percent by 2000, almost up to the 1950 US level. The Mexican border region, though higher in per capita income is lower in educational attainment than the national average.

Enrolment and high school completion rates are combined into an educational index using weights of one-third for enrolment and two-thirds for the high school data. The results for 1990 and 2000 are shown in Figure 4, where it is easy to see a substantial gap between the US and Mexico, both nationally and in the border regions. As Table A.2 in the appendix shows, in 1990, at the local level, the education index ranged from 0.81 in San Diego county to 0.16 in the municipio of Ascension, Sonora.



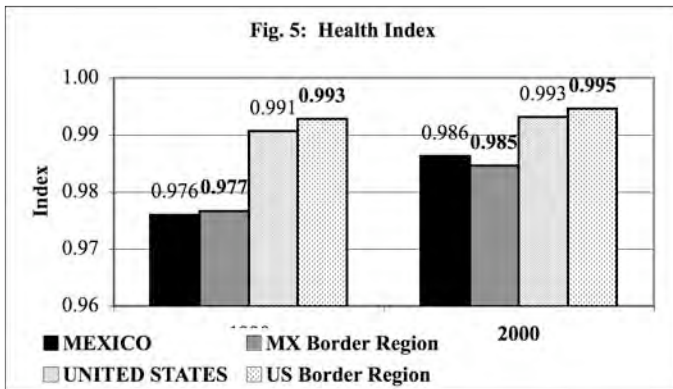
In 2000, the range was from 0.86 in Pima, Arizona, to 0.22 in Manuel Benavides, Chihuahua. There is no overlap between US and Mexican border communities for this

index. Starr, Texas, was the lowest US county in 1990 but still 0.10 index points above the highest Mexican municipio, Mexicali (0.52 to 0.42). By 2000, the gap between the lowest US county (Starr, 0.54) and the highest Mexican municipio (Cananea, Sonora, 0.504) had shrunk to approximately 0.04 index points. In general, however, the cross border gap in education is very large, even larger than the income gap.

Health

The variable used to measure health is infant mortality, measured in number of infant deaths per 1000 live births. In both countries the rate of infant mortality has steadily decreased, falling faster in Mexico than in the US, so that by 2000, the gap between infant mortality rates was very small. The rate on the border is very close to the national rate in both countries. For Mexico, the data is only available for the 1990 and 2000 censuses at the local (border) level.

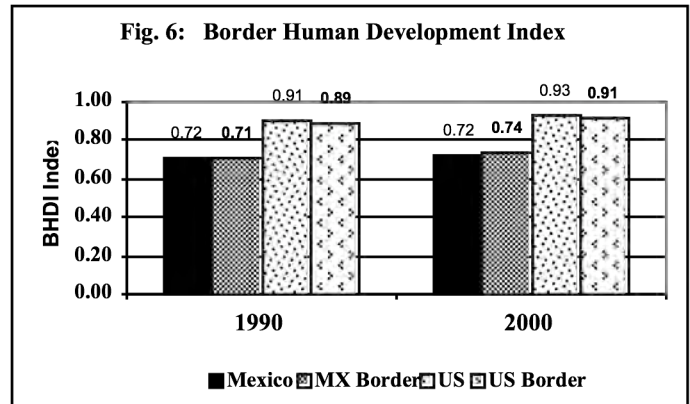
To use this data in the Human Development Index, the infant mortality rate is translated into the infant survivability rate. This index is shown in Figure 5. US-Mexico comparisons across time indicate that differences in health conditions are shrinking and the differences are smaller than those for income or education. The gap between the US and Mexican border regions decreased from .016 to .010 between 1990-2000.



As shown in Table A.3 in the appendix, this index more than the others, has a great deal of overlap between US counties and Mexican municipios. Mexico made major gains in health and has narrowed the gap with the US, at least in infant mortality. At the same time, health issues continue to be a serious problem on the US border, as shown by the fact that the communities with the lowest infant survivability index for the combined Mexican and US regions in 2000 are two Texas counties, Kinney and Hudspeth, with 0.973 and 0.968, respectively.

**Border Human Development Index (BHDI)**

Figure 6 shows the results of combining the income, education and health indexes into the Border Human Development Index. In the aggregate there is a significant gap between the US and Mexico and their respective border regions. The US border region's BHDI is below that of the US and slightly more below in 2000 than in 1990. The Mexican border region, while slightly below the national HDI in 1990, is above the Mexican national rate in 2000. It increased by .04 in the 10 years, while in the US border region it only increased by .019, narrowing the overall BHDI gap.



The indexes for the border communities ranged from 0.62 to 0.92 in 1990 and from 0.65 to 0.94 in 2000. San Diego has the highest BHDI of all the border counties and municipios, followed by Pima County, Arizona, in both years. At the bottom of the ranking are three Mexican municipios: Janos and Manuel Benavides, Chihuahua, and Hidalgo, Coahuila. Overall, there is no US county lower than the highest Mexican municipio, even though there is a considerable amount of overlap of counties and municipios in the infant survivability sub-index and some overlap in the per capita income sub-index. See Table A.4 in the appendix for the rankings of all counties and municipios.

**Conclusions**

Although the Border Human Development Index is a relatively simple index, its construction is a useful exercise. It not only allows us to directly compare economic development levels of border communities on both sides of the border, it also lets us compare the components of the index. Through an examination of the BHDI sub-indexes, we find that education is the area where cross border differences are greatest. This stems from the lack of high school in Mexico as the standard for school leaving. Rather, Mexican law sets the 9<sup>th</sup> grade as the end of compulsory education, a level that the US

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exceeded in the 1920s and 1930s. By comparison, there is a much smaller gap in cross border health indicators, and income differences, while notable, are still less than education differences. Recognizing education as a major factor in the development gap, helps point towards policies that could narrow the gap.

In his discussion of the UNDP’s human development index, Nobel Laureate Amartya Sen recognized the “inescapably crude” nature of the HDI, but also pointed out that it can “broaden substantially the empirical attention that the assessment of development processes receive,” due in part to the fact that it is “not exclusively focused on economic opulence” (Sen, *Human Development Report, 1999*, p. 23). In this regard, we think that the BHDl serves as a useful but rough comparison of the counties and municipios along the US-Mexico border.

For a more detailed description of the BHDl, see Joan B. Anderson and James Gerber, (2004) “A Human Development Index for the United States-Mexico Border.” *Journal of Borderlands Studies*. 19:2. 1-26.

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*The Trans-Border Institute (TBI) is based at the University of San Diego, which is a non-partisan, non-profit organization. TBI provides information and analysis for the benefit of policy makers and stakeholders in the border region. The views and opinions expressed in this report are those of the author, and do not necessarily reflect those of either co-sponsoring institution. Please direct any comments to [transborder@sandiego.edu](mailto:transborder@sandiego.edu).*

**Appendix**  
**Table A.1, BHDI Rankings of US and Mexican Border Communities**  
**Income Sub-Index: Gross Regional Product per Capita**

	1970		1980		1989		1999
<b>MEXICO</b>	0.670	<b>MEXICO</b>	0.724	<b>MEXICO</b>	0.720	<b>MEXICO</b>	0.731
<b>Border Regi</b>	0.719	<b>Border Regi</b>	0.752	<b>Border Reg</b>	0.761	<b>Border Reg</b>	0.786
<b>UNITED ST</b>	0.861	<b>UNITED ST</b>	0.896	<b>UNITED ST</b>	0.936	<b>UNITED ST</b>	0.966
<b>Border Regi</b>	0.828	<b>Border Regi</b>	0.845	<b>Border Reg</b>	0.877	<b>Border Reg</b>	0.896
SD	0.862	SD	0.894	SD	0.926	SD	0.953
Terrell	0.833	Jeff Davis	0.875	Pima	0.896	Pima	0.920
Pima	0.833	Imperial	0.866	Terrell	0.886	Terrell	0.907
Imperial	0.831	Pima	0.863	Hidalgo, NM	0.874	Brewster	0.893
Cochise	0.820	Brewster	0.855	Imperial	0.871	Cochise	0.879
Yuma	0.814	<b>Cananea</b>	0.850	Cochise	0.870	Yuma	0.876
Grant	0.808	Grant	0.849	Yuma	0.870	Grant	0.869
Culberson	0.801	<b>Nava</b>	0.849	Brewster	0.859	EIPaso	0.867
<b>Cananea</b>	0.797	Yuma	0.844	Grant	0.855	Imperial	0.867
donaAna	0.791	Hidalgo, NM	0.844	donaAna	0.852	Hidalgo, NM	0.865
EIPaso	0.786	Santa Cruz, A	0.838	EIPaso	0.849	donaAna	0.865
Santa Cruz, A	0.783	Terrell	0.834	Jeff Davis	0.844	Santa Cruz, A	0.858
Hidalgo, NM	0.783	Cochise	0.834	Santa Cruz, A	0.838	Val Verde	0.854
Jeff Davis	0.782	Culberson	0.834	Val Verde	0.836	Culberson	0.842
Luna	0.780	donaAna	0.819	Luna	0.836	Jeff Davis	0.839
Val Verde	0.774	Presidio	0.815	Kinney	0.824	Kinney	0.836
Brewster	0.772	EIPaso	0.806	Cameron	0.822	Cameron	0.836
<b>Tijuana</b>	0.754	Luna	0.801	Webb	0.819	Luna	0.834
Hudspeth	0.752	Val Verde	0.801	Hidalgo, TX	0.806	Webb	0.834
Presidio	0.751	Hudspeth	0.790	<b>Acuna</b>	0.799	Hudspeth	0.830
<b>Nogales</b>	0.751	Cameron	0.784	Culberson	0.795	Hidalgo, TX	0.824
<b>Acuna</b>	0.747	Kinney	0.777	Presidio	0.794	<b>Acuna</b>	0.824
Webb	0.740	Webb	0.776	Hudspeth	0.789	Zapata	0.813
<b>Agua Prieta</b>	0.740	<b>Piedras Negri</b>	0.773	<b>Juarez</b>	0.786	<b>Juarez</b>	0.805
<b>Caborca</b>	0.739	Hidalgo, TX	0.772	Zapata	0.785	<b>Tijuana</b>	0.798
Kinney	0.735	<b>Naco</b>	0.771	<b>Nava</b>	0.782	<b>Nava</b>	0.798
<b>SLR Colora</b>	0.735	<b>Acuna</b>	0.771	<b>Nogales</b>	0.777	<b>Nogales</b>	0.790
Cameron	0.734	<b>Tijuana</b>	0.770	<b>Piedras Neg</b>	0.772	<b>Piedras Neg</b>	0.790
<b>Puerto Pena</b>	0.732	Zapata	0.767	<b>Tijuana</b>	0.768	Maverick	0.789
<b>Piedras Negri</b>	0.732	<b>Nogales</b>	0.767	Maverick	0.761	Presidio	0.788
<b>Anahuac</b>	0.730	<b>Mexicali</b>	0.765	<b>Ascension</b>	0.759	<b>Mexicali</b>	0.787
<b>Santa Cruz, :</b>	0.729	<b>Agua Prieta</b>	0.763	<b>Cananea</b>	0.757	<b>Cananea</b>	0.780
<b>Mexicali</b>	0.727	<b>Guerrero, Ta</b>	0.758	<b>Mexicali</b>	0.756	<b>Anahuac</b>	0.774
<b>Saric</b>	0.727	<b>Tecate</b>	0.755	<b>Nuevo Larex</b>	0.747	<b>Tecate</b>	0.771
<b>Naco</b>	0.725	<b>Nuevo Larec</b>	0.750	<b>Caborca</b>	0.745	<b>Ojnaga</b>	0.770
<b>Tecate</b>	0.722	<b>Juarez</b>	0.747	<b>Puerto Pena</b>	0.744	<b>Nuevo Larex</b>	0.768
<b>Nuevo Larec</b>	0.716	<b>SLR Colora</b>	0.743	<b>Tecate</b>	0.743	<b>Reynosa</b>	0.765
Hidalgo, TX	0.715	<b>Matamoros</b>	0.742	<b>Matamoros</b>	0.743	<b>Agua Prieta</b>	0.765
<b>Altar</b>	0.709	<b>Ocampo</b>	0.740	<b>Agua Prieta</b>	0.741	<b>Jimenez</b>	0.761
<b>Mier</b>	0.708	<b>Reynosa</b>	0.735	<b>SLR Colora</b>	0.739	<b>Puerto Pena</b>	0.759
<b>Juarez</b>	0.704	<b>Puerto Pena</b>	0.732	<b>Anahuac</b>	0.738	<b>SLR Colora</b>	0.758
<b>Matamoros</b>	0.703	Maverick	0.732	<b>Reynosa</b>	0.738	<b>Caborca</b>	0.757
<b>Miguel Alem :</b>	0.698	<b>Miguel Alem :</b>	0.728	<b>Ojnaga</b>	0.737	<b>Guadalupe</b>	0.757
<b>Guerrero, Ta</b>	0.697	<b>Caborca</b>	0.724	Starr	0.736	<b>Matamoros</b>	0.756
<b>Gustavo Dia</b>	0.687	<b>Saric</b>	0.719	<b>Naco</b>	0.730	Starr	0.751
<b>Reynosa</b>	0.687	<b>Santa Cruz, :</b>	0.718	<b>Jimenez</b>	0.729	<b>Miguel Alem</b>	0.748
Zapata	0.684	<b>Valle Hermo :</b>	0.713	<b>Miguel Alem</b>	0.725	<b>Guerrero</b>	0.744
Maverick	0.679	<b>Rio Bravo</b>	0.713	<b>Guadalupe</b>	0.716	<b>Ascension</b>	0.743
<b>Nava</b>	0.673	<b>Mier</b>	0.712	<b>Camargo</b>	0.712	<b>Praxedis G. C</b>	0.742
<b>Valle Hermo :</b>	0.671	<b>Anahuac</b>	0.711	<b>Santa Cruz,</b>	0.712	<b>Ocampo</b>	0.737
<b>Camargo</b>	0.665	<b>Altar</b>	0.703	<b>Ocampo</b>	0.712	<b>Naco</b>	0.734
<b>Rio Bravo</b>	0.665	<b>Camargo</b>	0.701	<b>Praxedis G. C</b>	0.711	<b>Camargo</b>	0.730
<b>Hidalgo, Co :</b>	0.662	Starr	0.688	<b>Rio Bravo</b>	0.710	<b>Mier</b>	0.728
<b>Ocampo</b>	0.654	<b>Guerrero, Cc</b>	0.685	<b>Gustavo Dia</b>	0.709	<b>Hidalgo, Co</b>	0.728
Starr	0.651	<b>Gustavo Dia</b>	0.679	<b>Altar</b>	0.708	<b>Rio Bravo</b>	0.728
<b>Ojnaga</b>	0.646	<b>Ojnaga</b>	0.660	<b>Mier</b>	0.700	<b>Gustavo Dia</b>	0.727
<b>Manuel Ben :</b>	0.643	<b>Hidalgo, Co :</b>	0.656	<b>Valle Hermo</b>	0.699	<b>Valle Hermo</b>	0.725
<b>Ascension</b>	0.640	<b>Ascension</b>	0.648	<b>Hidalgo, Co</b>	0.695	<b>Manuel Ben</b>	0.725
<b>Janos</b>	0.616	<b>Guadalupe</b>	0.641	<b>Guerrero</b>	0.693	<b>Janos</b>	0.724
<b>Guadalupe</b>	0.614	<b>Jimenez</b>	0.631	<b>Manuel Ben</b>	0.693	<b>Altar</b>	0.721
<b>Jimenez</b>	0.609	<b>Janos</b>	0.608	<b>Guerrero, Ta</b>	0.690	<b>Guerrero, Ta</b>	0.720
<b>Guerrero, Cc</b>	0.599	<b>Praxedis G. G</b>	0.600	<b>Saric</b>	0.690	<b>Saric</b>	0.695
<b>Praxedis G. C</b>	0.594	<b>Manuel Ben :</b>	0.598	<b>Janos</b>	0.689	<b>Santa Cruz,</b>	0.695

Mexican municipios in bold

**Table A.2**  
**Education Sub-Index**

	1990		2000
<b>MEXICO</b>	0.448		0.453
<b>MX Border Region</b>	0.381		0.453
<b>UNITED STATES</b>	0.791		0.845
<b>US Border Region</b>	0.763		0.800
SD	0.812	Pima	0.860
Cochise	0.798	SD	0.858
Pima	0.796	Brewster	0.843
Jeff Davis	0.768	Grant	0.836
Grant	0.758	Cochise	0.835
Hidalgo, NM	0.752	Jeff Davis	0.816
Terrell	0.749	Terrell	0.814
donaAna	0.736	Hidalgo, NM	0.768
Brewster	0.728	Kinney	0.764
EIPaso	0.716	EIPaso	0.750
Yuma	0.711	Yuma	0.743
Luna	0.690	donaAna	0.733
Kinney	0.681	Santa Cruz, AZ	0.720
Santa Cruz, AZ	0.658	Imperial	0.705
Val Verde	0.657	Val Verde	0.698
Imperial	0.650	Culberson	0.680
Culberson	0.642	Cameron	0.680
Zapata	0.636	Webb	0.664
Cameron	0.632	Zapata	0.660
Webb	0.623	Hidalgo, TX	0.644
Hudspeth	0.611	Luna	0.623
Hidalgo, TX	0.609	Hudspeth	0.618
Presidio	0.586	Presidio	0.612
Maverick	0.528	Maverick	0.589
Starr	0.520	Starr	0.539
<b>Mexicali</b>	0.420	<b>Cananea</b>	0.504
<b>Tijuana</b>	0.403	<b>Mexicali</b>	0.502
<b>Nogales</b>	0.400	<b>Nogales</b>	0.492
<b>Naco</b>	0.397	<b>Reynosa</b>	0.483
<b>Gustavo Diaz Ordaz</b>	0.396	<b>Matamoros</b>	0.466
<b>Nuevo Laredo</b>	0.392	<b>Nuevo Laredo</b>	0.457
<b>Reynosa</b>	0.385	<b>Tijuana</b>	0.449
<b>Matamoros</b>	0.383	<b>Tecate</b>	0.445
<b>Piedras Negras</b>	0.382	<b>Caborca</b>	0.439
<b>Juarez</b>	0.377	<b>Juarez</b>	0.439
<b>SLR Colorado</b>	0.376	<b>SLR Colorado</b>	0.433
<b>Agua Prieta</b>	0.369	<b>Miguel Aleman</b>	0.422
<b>Tecate</b>	0.361	<b>Agua Prieta</b>	0.421
<b>Caborca</b>	0.347	<b>Valle Hermoso</b>	0.416
<b>Miguel Aleman</b>	0.347	<b>Mier</b>	0.416
<b>Cananea</b>	0.332	<b>Rio Bravo</b>	0.407
<b>Rio Bravo</b>	0.328	<b>Puerto Penasco</b>	0.402
<b>Acuna</b>	0.323	<b>Gustavo Diaz Ordaz</b>	0.402
<b>Mier</b>	0.320	<b>Piedras Negras</b>	0.401
<b>Valle Hermoso</b>	0.314	<b>Acuna</b>	0.390
<b>Guerrero, Tam</b>	0.312	<b>Ojinaga</b>	0.389
<b>Nava</b>	0.299	<b>Altar</b>	0.367
<b>Altar</b>	0.295	<b>Nava</b>	0.367
<b>Ocampo</b>	0.293	<b>Anahuac</b>	0.363
<b>Camargo</b>	0.287	<b>Camargo</b>	0.352
<b>Anahuac</b>	0.283	<b>Guerrero, Tam</b>	0.348
<b>Puerto Penasco</b>	0.250	<b>Ocampo</b>	0.336
<b>Ojinaga</b>	0.248	<b>Naco</b>	0.325
<b>Santa Cruz, Son</b>	0.247	<b>Ascension</b>	0.321
<b>Hidalgo, Coa</b>	0.243	<b>Santa Cruz, Son</b>	0.308
<b>Saric</b>	0.232	<b>Praxedis G. Guerrero</b>	0.288
<b>Guerrero, Coa</b>	0.223	<b>Guadalupe</b>	0.285
<b>Guadalupe</b>	0.221	<b>Saric</b>	0.283
<b>Praxedis G. Guerrero</b>	0.206	<b>Jimenez</b>	0.257
<b>Janos</b>	0.206	<b>Guerrero, Coa</b>	0.254
<b>Manuel Benavides</b>	0.199	<b>Janos</b>	0.246
<b>Jimenez</b>	0.195	<b>Hidalgo, Coa</b>	0.246
<b>Ascension</b>	0.159	<b>Manuel Benavides</b>	0.217

\* Mexican municipios in bold

**Table A.3**

**Health Sub-Index: Infant Survival Rate**

	1990	2000
MEXICO	0.976	0.986
Border Region	0.977	0.985
UNITED STATES	0.991	0.993
Border Region	0.993	0.995
Santa Cruz, Son	1	<b>Saric</b> 1
Hudspeth	1	<b>Praxedis G. Guerrero</b> 1
Culberson	1	<b>Manuel Benavides</b> 1
Jeff Davis	1	<b>Hidalgo, Coa</b> 1
Terrell	1	<b>Guerrero, Tam</b> 1
Kinney	1	Culberson 1
<b>Guadalupe</b>	0.999195	Jeff Davis 1
<b>Praxedis G. Guerrero</b>	0.997899	Presidio 1
Starr	0.995641	Terrell 1
Hidalgo, TX	0.994439	Zapata 1
<b>Valle Hermoso</b>	0.993837	Cameron 0.996392
<b>Camargo</b>	0.99375	Santa Cruz, AZ 0.996241
Imperial	0.993651	<b>Valle Hermoso</b> 0.996034
Luna	0.993562	EIPaso 0.99559
Val Verde	0.993485	Val Verde 0.995501
Maverick	0.993315	Imperial 0.995334
Cameron	0.993007	donaAna 0.995041
EIPaso	0.992879	Hidalgo, TX 0.994987
Webb	0.992572	Yuma 0.994679
SD	0.992552	SD 0.994059
<b>Anahuac</b>	0.992233	Maverick 0.993976
Yuma	0.992147	Webb 0.993941
donaAna	0.992053	Pima 0.993926
Pima	0.991959	<b>Mier</b> 0.993865
Cochise	0.99176	Starr 0.993831
Presidio	0.991525	Cochise 0.993667
Santa Cruz, AZ	0.990679	<b>Miguel Aleman</b> 0.993432
<b>Rio Bravo</b>	0.990044	<b>Nava</b> 0.992982
<b>Guerrero, Tam</b>	0.989899	<b>Rio Bravo</b> 0.992751
Zapata	0.989848	Brewster 0.991304
Hidalgo, NM	0.989583	<b>Janos</b> 0.991124
<b>Miguel Aleman</b>	0.989432	<b>Anahuac</b> 0.991091
<b>Gustavo Diaz Ordaz</b>	0.987203	Grant 0.990476
<b>Ascension</b>	0.987013	<b>Nuevo Laredo</b> 0.990176
<b>Janos</b>	0.985915	<b>Gustavo Diaz Ordaz</b> 0.990123
<b>Naco</b>	0.985612	<b>Guadalupe</b> 0.989418
<b>Matamoros</b>	0.984986	<b>Matamoros</b> 0.988328
<b>Manuel Benavides</b>	0.983051	<b>Ascension</b> 0.98797
<b>Nuevo Laredo</b>	0.982843	<b>Ocampo</b> 0.987952
Brewster	0.981982	<b>Piedras Negras</b> 0.987607
<b>Reynosa</b>	0.981449	<b>Naco</b> 0.9875
<b>Nava</b>	0.980723	<b>Camargo</b> 0.987406
<b>Puerto Penasco</b>	0.98041	<b>Acuna</b> 0.987165
<b>Piedras Negras</b>	0.977754	Hidalgo, NM 0.987013
<b>Acuna</b>	0.977586	<b>Caborca</b> 0.986577
<b>Mexicali</b>	0.977376	<b>Reynosa</b> 0.986232
<b>Ojinaga</b>	0.97686	<b>Tecate</b> 0.985159
<b>Caborca</b>	0.975439	<b>SLR Colorado</b> 0.984058
<b>Guerrero, Coa</b>	0.975	<b>Cananea</b> 0.983689
<b>Ocampo</b>	0.974684	<b>Santa Cruz, Son</b> 0.983607
<b>Tecate</b>	0.974328	<b>Altar</b> 0.983402
<b>Jimenez</b>	0.972868	<b>Mexicali</b> 0.981839
<b>SLR Colorado</b>	0.97134	<b>Tijuana</b> 0.981574
<b>Altar</b>	0.970588	<b>Jimenez</b> 0.9801
<b>Nogales</b>	0.970495	<b>Ojinaga</b> 0.979927
<b>Tijuana</b>	0.969573	<b>Juarez</b> 0.979649
<b>Saric</b>	0.96875	<b>Puerto Penasco</b> 0.979144
<b>Cananea</b>	0.968254	Luna 0.979003
<b>Juarez</b>	0.959424	<b>Nogales</b> 0.978592
<b>Agua Prieta</b>	0.956853	<b>Guerrero, Coa</b> 0.977778
<b>Mier</b>	0.954545	<b>Agua Prieta</b> 0.973333
<b>Hidalgo, Coa</b>	0.931034	Kinney 0.972973
		Hudspeth 0.967742

**Table A.4**

**Border Human Development Index**

	1990	2000
MEXICO	0.715	0.724
Border Region	0.706	0.741
UNITED STATES	0.906	0.934
Border Region	0.878	0.897
SD	0.910	SD 0.935
Pima	0.895	Pima 0.924
Cochise	0.887	Brewster 0.909
Terrell	0.878	Terrell 0.907
Hidalgo, NM	0.872	Cochise 0.903
Jeff Davis	0.871	Grant 0.899
Grant	0.869	Jeff Davis 0.885
donaAna	0.860	Hidalgo, NM 0.874
Yuma	0.858	Yuma 0.871
Brewster	0.856	EIPaso 0.871
EIPaso	0.853	Santa Cruz, AZ 0.858
Luna	0.840	Kinney 0.858
Imperial	0.838	Imperial 0.855
Kinney	0.835	Val Verde 0.849
Santa Cruz, AZ	0.829	Culberson 0.840
Val Verde	0.829	Cameron 0.837
Cameron	0.816	Webb 0.830
Culberson	0.812	Zapata 0.825
Webb	0.812	Hidalgo, TX 0.821
Zapata	0.804	Luna 0.812
Hidalgo, TX	0.803	Hudspeth 0.805
Hudspeth	0.800	Presidio 0.800
Presidio	0.790	Maverick 0.791
Maverick	0.761	donaAna 0.789
Starr	0.751	Starr 0.761
<b>Mexicali</b>	0.718	<b>Mexicali</b> 0.757
<b>Nogales</b>	0.716	<b>Cananea</b> 0.756
<b>Tijuana</b>	0.714	<b>Nogales</b> 0.753
<b>Piedras Negras</b>	0.711	<b>Reynosa</b> 0.745
<b>Juarez</b>	0.707	<b>Tijuana</b> 0.743
<b>Nuevo Laredo</b>	0.707	<b>Juarez</b> 0.741
<b>Naco</b>	0.704	<b>Nuevo Laredo</b> 0.738
<b>Matamoros</b>	0.704	<b>Matamoros</b> 0.737
<b>Reynosa</b>	0.701	<b>Tecate</b> 0.734
<b>Acuna</b>	0.700	<b>Acuna</b> 0.734
<b>Gustavo Diaz Ordaz</b>	0.697	<b>Caborca</b> 0.728
<b>SLR Colorado</b>	0.695	<b>Piedras Negras</b> 0.726
<b>Tecate</b>	0.693	<b>SLR Colorado</b> 0.725
<b>Caborca</b>	0.689	<b>Miguel Aleman</b> 0.721
<b>Agua Prieta</b>	0.689	<b>Agua Prieta</b> 0.720
<b>Miguel Aleman</b>	0.687	<b>Nava</b> 0.719
<b>Nava</b>	0.687	<b>Puerto Penasco</b> 0.713
<b>Cananea</b>	0.686	<b>Ojinaga</b> 0.713
<b>Rio Bravo</b>	0.676	<b>Mier</b> 0.713
<b>Anahuac</b>	0.671	<b>Valle Hermoso</b> 0.713
<b>Valle Hermoso</b>	0.669	<b>Anahuac</b> 0.709
<b>Camargo</b>	0.664	<b>Rio Bravo</b> 0.709
<b>Guerrero, Tam</b>	0.664	<b>Gustavo Diaz Ordaz</b> 0.706
<b>Ocampo</b>	0.660	<b>Altar</b> 0.690
<b>Mier</b>	0.658	<b>Camargo</b> 0.690
<b>Puerto Penasco</b>	0.658	<b>Guerrero, Tam</b> 0.689
<b>Altar</b>	0.658	<b>Ocampo</b> 0.687
<b>Ojinaga</b>	0.654	<b>Ascension</b> 0.684
<b>Santa Cruz, Son</b>	0.653	<b>Naco</b> 0.682
<b>Guadalupe</b>	0.645	<b>Guadalupe</b> 0.677
<b>Praxedis G. Guerrero</b>	0.638	<b>Praxedis G. Guerrero</b> 0.677
<b>Ascension</b>	0.635	<b>Jimenez</b> 0.666
<b>Jimenez</b>	0.633	<b>Santa Cruz, Son</b> 0.662
<b>Saric</b>	0.630	<b>Saric</b> 0.659
<b>Guerrero, Coa</b>	0.630	<b>Guerrero, Coa</b> 0.658
<b>Janos</b>	0.627	<b>Hidalgo, Coa</b> 0.658
<b>Manuel Benavides</b>	0.625	<b>Janos</b> 0.654
<b>Hidalgo, Coa</b>	0.623	<b>Manuel Benavides</b> 0.647

\* Mexican municipalities in bold