

**U.S./Mexico Border Health Issues:
The Texas Rio Grande Valley**

Prepared by

**David C. Warner, Ph.D.
Lauren R. Jahnke, M.P.Aff.**

**Regional Center for Health Workforce Studies
Center for Health Economics and Policy
The University of Texas Health Science Center
at San Antonio**

April, 2003

About the Authors

David C. Warner, Ph.D., is Wilbur Cohen Professor of the LBJ School of Public Affairs at The University of Texas at Austin, a visiting professor at The University of Texas School of Public Health, and Associate Scientist with the Regional Center for Health Workforce Studies at The University of Texas Health Science Center at San Antonio.

Lauren R. Jahnke, M.P.Aff., is a freelance consultant in the health policy field and performs research, report-writing, editing, grant-writing, evaluation, and other consulting services for local and state government agencies, non-profit organizations, and companies working with public-sector clients. She owns LRJ Research & Consulting in Austin, Texas.

© Copyright 2003, Regional Center for Health Workforce Studies
at The University of Texas Health Science Center at San Antonio
7703 Floyd Curl Drive, MSC 7907, San Antonio, TX 78229
(210) 567-3169 office / (210) 567-6804 fax
All Rights Reserved

No part of this document may be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system, without permission in writing from the publisher.

Table of Contents

<u>List of Tables</u>	iii
<u>List of Figures</u>	v
<u>Preface and Acknowledgments</u>	vii
<u>Chapter 1. Introduction</u>	1
<u>Medicaid and the State Children’s Health Insurance Program</u>	1
<u>The Uninsured</u>	3
<u>Chapter 2. Profile of the Study Area</u>	6
<u>Chapter 3. Health Indicators</u>	11
<u>Communicable Diseases in the Study Area, Texas, and U.S.</u>	11
<u>Communicable Diseases in Mexico</u>	18
<u>Maternal and Child Health</u>	19
<u>Oral Health</u>	21
<u>Chronic Disease</u>	22
<u>Chapter 4. Health Resources</u>	27
<u>Border Public Health Systems</u>	27
<u>Border Health Programs</u>	30
<u>HRSA’s Role in the Border Health Care System</u>	36
<u>Health Professions</u>	41
<u>Projections of Required Health Resources through 2010</u>	49
<u>Chapter 5. NAFTA and Trade in Health Services</u>	57
<u>Provisions of NAFTA Related to Health Services</u>	57
<u>Cross-Border Practice and Training</u>	59
<u>Chapter 6. The Impact of NAFTA on Border Development and Health Status</u>	63
<u>Provisions of NAFTA Related to Health Services</u>	63
<u>NAFTA’s Impact on Border Housing and Communities</u>	64
<u>Appendix A. Population Projections if Net Migration = 0</u>	68
<u>Appendix B. Population Projections if Net Migration = 1</u>	75
<u>Bibliography</u>	81

List of Tables

<u>Table 1.1</u>	<u>Number and Percents of SCHIP Enrollees for the Study Area and Texas, 2002</u>	2
<u>Table 1.2</u>	<u>Number and Percents of Medicaid Enrollees for the Study Area and Texas, 1998 and 2002</u>	3
<u>Table 1.3</u>	<u>Number and Percent of Uninsured People in the Study Area, Texas, and U.S., 2000</u>	4
<u>Table 3.1</u>	<u>Tuberculosis Case Rates in the Study Area, Texas, and U.S., 2001</u>	12
<u>Table 3.2</u>	<u>Gastrointestinal Disease Case Rates in the Study Area, Texas, and U.S., 1999</u>	14
<u>Table 3.3</u>	<u>Sexually Transmitted Diseases in the Study Area, Texas, and U.S., 1999</u>	15
<u>Table 3.4</u>	<u>Cumulative Cases of HIV/AIDS through end of 2001 in the Study Area, Texas, and U.S.</u>	18
<u>Table 3.5</u>	<u>Estimates of the Number and Percent of People with Diagnosed Diabetes in the Study Area and Texas, 2001</u>	22
<u>Table 4.1</u>	<u>Local Public Health Services in the Study Area, 2000</u>	28
<u>Table 4.2</u>	<u>Mexican Border Health Care Services</u>	29
<u>Table 4.3</u>	<u>A Comparison of Early Childhood Intervention Programs with Total Births and Indicators of Learning Disabilities in the Study Area and Texas, 2000</u>	33
<u>Table 4.4</u>	<u>HRSA Funding in the Study Area, FY 2002</u>	37
<u>Table 4.5</u>	<u>Profile of Community/Migrant Health Centers in the Study Area, 2001</u>	38
<u>Table 4.6</u>	<u>HRSA Grants to UTHSCSA for Health Professions Students</u>	40
<u>Table 4.7</u>	<u>Health Professional Shortage Areas and Medically Underserved Areas by County, 2002</u>	42
<u>Table 4.8</u>	<u>Total Practicing Physicians in the Study Area, Texas, and U.S., 2002</u>	43
<u>Table 4.9</u>	<u>Primary Care Physicians by Specialty in the Study Area and Texas, 2002</u>	44
<u>Table 4.10</u>	<u>Licensed Nurses in the Study Area and Texas, 2002</u>	45
<u>Table 4.11</u>	<u>Dentists in the Study Area, Texas, and U.S., 2002</u>	47

<u>Table 4.12 Nurse Practitioners and Physician Assistants in the Study Area and Texas, 2001</u>	49
<u>Table 4.13 Population Distribution in the Study Area</u>	50
<u>Table 4.14 Number of Physicians and Nurses per 100,000 Population in the Study Area, Texas, and U.S.</u>	51
<u>Table 4.15 Additional Physicians and Nurses Needed to Reach National Ratios per 100,000 Population in the Study Area in 2002</u>	51
<u>Table 4.16 Additional Physicians and Nurses Needed to Reach National Ratios per 100,000 Population in the Study Area in 2010</u>	52
<u>Table 4.17 Summary of Additional Medical Personnel Needed in the Study Area</u>	52
<u>Table 5.1 Health Provisions of NAFTA</u>	58

List of Figures

Figure 2.1 Map of Texas Counties in the Study Area	7
Figure 3.1 Tuberculosis Case Rates in Texas and the Study Area, 1995-2001	12
Figure 3.2 Syphilis and Gonorrhea Case Rates in the Study Area and Texas, 1995-1999	16
Figure 3.3 Crude Birth Rates in the Study Area, Texas, and U.S., 2000	19
Figure 3.4 Percentage of Low Birth-Weight Babies Compared to Percentage of Women Receiving Prenatal Care in First Trimester, 2000	20
Figure 3.5 Percent of Women in the Study Area and Texas Receiving Adequate Prenatal Care Based on the Kessner Index, 2000	21
Figure 4.1 Population per Primary Care Physician in the Study Area, Texas, and U.S., 2002	44
Figure 4.2 Population per Nurse FTE in the Study Area and Texas, 2002	46
Figure 4.3 Population per Dentist in the Study Area, Texas, and U.S., 2001	48

Preface and Acknowledgments

This report is part of a series of publications on health workforce issues and solutions for the United States/Mexico border region, a major area of research at the Regional Center for Health Workforce Studies. It provides a good introduction to the series since the Texas region and its Mexican counterpart make up the largest component of the U.S./Mexico Border, and, most of the unresolved health challenges affecting the lives of Border residents can be found in the Texas Rio Grande Valley.

The study updates a pilot project sponsored by the Health Resources and Services Administration of the U.S. Department of Health and Human Services, begun in 1996 under the direction of the first author and completed in 1999. It revisits the strains that rapid industrialization and the population growth stimulated by NAFTA have placed upon already-limited health services. The access-to-care problems such as poverty, lack of insurance, limited infrastructures, lack of providers and of a culturally sensitive health care delivery system have not substantially changed in spite of many good programs, greater attention to Border issues and many hopes. Tracking the changes that did occur is a necessary first step for guiding the renewed resolve of the border communities, needed targeted interventions and further research.

In spite of the constraints imposed by a limited budget, Professor David Warner, and Ms. Lauren Jahnke succeeded in assembling a well-structured profile of needs and issues that is both informative and thought provoking. They deliberately maintained the basic format of the previous report to increase the comparability and usefulness of the information. With the authors, we gratefully acknowledge the valuable assistance of the National Center for Health Workforce Analysis of the Health Resources and Services Administration, the Texas Department of Health, the Texas Association of Community Health Centers and all the individuals and organizations listed throughout the report that provided data and technical support.

Antonio Furino
Director
Regional Center for Health Workforce Studies
Center for Health Economics and Policy
The University of Texas Health Science Center at San Antonio

Chapter 1. Introduction

This report highlights health issues and resources and details current and future challenges in the Texas/Mexico border region. This area is one of the poorest and most underserved areas in the United States, although many agencies and organizations are now addressing the problems and progress is being made in many areas. The area on both sides of the border is constantly in a state of flux, and large population increases in the area as well as socioeconomic changes have been brought about by the passage of the North American Free Trade Agreement (NAFTA) in 1993, as well as various political and fiscal changes since then. Several of the most important changes and developments affecting access to health care services, including Medicaid, the State Children's Health Insurance Program, and the growing number people without health insurance, are described below.

Medicaid and the State Children's Health Insurance Program

In the last four years there have been expansions and simplifications of publicly funded health insurance for children and adolescents that have significantly expanded coverage in the study area. These include the two-part implementation of the State Children's Health Insurance Program in 1998 and 2000, and the Medicaid simplification initiatives passed by the 77th Texas Legislature in 2001.

The State Children's Health Insurance Program (SCHIP) was developed as part of the federal Balanced Budget Act of 1997. As part of this act, Congress appropriated a fixed amount of funds that individual states could draw down in a program which allowed them to design a health insurance plan for residents below the age of 19 who fell below two times the poverty level. The coverage provided had to either be similar to Medicaid, the state employee's health insurance plan, or the plan provided by the largest HMO in the state. Enrollees could not be eligible for Medicaid or have recently been enrolled in health insurance provided by their parents' employers, and those at higher incomes were expected to meet a higher level of cost-sharing. States were given incentives to develop SCHIP programs since the required state match was only 70 percent of that state's Medicaid match. Texas implemented a minor step of the SCHIP program in 1998 when it extended coverage under Medicaid to all eligible 15-18-year-olds whose family income fell between the AFDC eligibility level (around 24 percent of poverty) and 100 percent of poverty. In the second phase, the 76th Texas Legislature (1999) extended SCHIP to all children and adolescents under 200 percent of poverty who were legal residents of Texas and who met the other SCHIP criteria. This phase began in the spring of 2000. Community-based groups were employed to help inform the public and to promote enrollment, and by 2002 more than 500,000 children were enrolled state wide (see Table 1.1).

Table 1.1
Number and Percents of SCHIP Enrollees
for the Study Area and Texas, 2002

Area	Number of SCHIP Enrollees	Percent of Total 2002 Population	Percent of 2002 Population 18 and under
Cameron	13,932	4.0	11.3
Dimmit	523	5.0	14.8
Hidalgo	31,282	5.2	14.1
Kinney	67	2.0	7.6
Maverick	2,506	5.1	13.4
Starr	3,202	5.7	14.6
Val Verde	1,178	2.6	7.61
Webb	9,776	4.8	12.7
Willacy	968	4.7	14.4
Zapata	545	4.4	12.6
Zavala	574	4.9	13.9
Study Area	64,553	4.7	13.0
Texas	517,241	2.4	8.2

Sources: Texas Health and Human Services Commission, *CHIP Enrollment Activity by County, August 1, 2002*, online at http://www.hhsc.state.tx.us/chip/chip_statewide_web_rpt.pdf, accessed September 17, 2002; and Texas Department of Health, Office of Health Information and Analysis, *Texas Population Projections for 2002*, online at <http://www.tdh.state.tx.us/dpa/popdata/pg02.htm>, accessed September 16, 2002.

Medicaid has traditionally been difficult to enroll in, has had a welfare stigma attached to it, and if one's economic situation improved, enrollees had to report within a month and were subject to being disenrolled. In June 2001, Governor Perry signed into law Senate Bill 43, the Children's Medicaid Eligibility Simplification Bill. The main elements of the bill included a mail-in application and re-certification for Children's Medicaid; a simplified, self-declared assets screen similar to the one used by SCHIP; a single consolidated application and parallel procedures for Medicaid and SCHIP; and phased in continuous eligibility for children through age 19. This included six months continuous eligibility implemented by February 2002 and 12 months continuous eligibility to be implemented by June 2003.¹ These simplification measures removed many of the barriers to Medicaid access and are expected to result in an increase in the number of children on Medicaid. Medicaid enrollments in Texas dipped in the late 1990s to lower levels because of a sturdy economy and the implementation of welfare and immigration reform. Enrollment levels are now increasing again due to the economy worsening since the late 1990s (see Table 1.2).

As indicated in Tables 1.1 and 1.2, the percentage of people enrolled in Medicaid in the study area as well as the percentage of people enrolled in SCHIP are over twice that of the state as a whole.

Table 1.2
Number and Percents of Medicaid Enrollees for
the Study Area and Texas, 1998 and 2002

Area	Number of 1998 Medicaid Enrollees	Percent of 1998 Population	Number of 2002 Medicaid Enrollees	Percent of 2002 Population
Cameron	69,554	21.9	84,630	24.1
Dimmit	2,841	26.7	2,938	28.3
Hidalgo	115,466	22.1	149,252	24.8
Kinney	349	10.1	441	13.1
Maverick	11,304	24.4	12,609	25.8
Starr	15,005	29.0	16,725	29.9
Val Verde	7,796	18.0	8,970	19.4
Webb	37,692	19.5	44,751	21.8
Willacy	5,505	28.7	5,896	28.7
Zapata	2,317	21.7	2,870	22.9
Zavala	3,368	28.3	3,546	30.0
Study Area	271,197	22.0	332,628	24.3
Texas	1,709,094	8.6	2,204,907	10.3

Sources: Texas Health and Human Services Commission (HHSC), *Texas Medicaid Enrollment as of August 2002*, online at http://www.hhsc.state.tx.us/research/dssi/db_search/cntysearch.asp, accessed September 17, 2002; HHSC, *Texas Medicaid Enrollment by Program Categories for August 2002*, online at <http://www.hhsc.state.tx.us/research/dssi/LatestEnrollmentbyCategory.html>, accessed September 17, 2002; HHSC, "Texas Medicaid Enrollment by County for August 1998," in Excel file *Spreadsheet with Texas Historical Enrollment County Information*, downloaded from <http://www.hhsc.state.tx.us/research/dssi.htm>, October 2, 2002; Texas Department of Health, Office of Health Information and Analysis, *Texas Population Projections for 2002*, online at <http://www.tdh.state.tx.us/dpa/popdata/pg02.htm>, accessed September 16, 2002; and Texas State Data Center, Texas Population Estimates Program, *County Estimates, 1994-1999*, online at <http://txsdc.tamu.edu/tpepp/txpopest.php>, accessed August 17, 2002.

The Uninsured

In spite of the increase in availability of free or low cost health care coverage to children in South Texas, the problems of the uninsured remain more persistent and intense in the study area than nearly anywhere else in the nation. In Texas, eligibility of non-aged, non-pregnant, non-disabled adults for Medicaid is limited to parents who have been citizens or legal immigrants since at least 1996 and whose "countable income" is less than 34 percent of the federal poverty level.² For those who have no affordable private insurance or access to Medicaid or Medicare there is the possibility of a public hospital or county indigent care program serving as a safety net. But, except for Maverick County there are no public hospitals in the study area, and the counties are only responsible for covering adults who are below 21 percent of the federal poverty level.

After a county has paid more than 8 percent of its general fund revenues for indigent health care, like Hidalgo County did, the state has a pool to pay for additional costs. However, Hidalgo has represented a high proportion of total state payments from this pool and in April 2001 the state pool ran out of funds, and at that point Hidalgo terminated its indigent care program for the balance of the fiscal year. This is not to say that many poor residents of the study area do not go

to government and charity-supported clinics—often Community Health Centers—but means that for many, the availability of funding for necessary inpatient services is simply not available.

Table 1.3 illustrates the percentages of uninsured persons in the study area counties.

Table 1.3
Number and Percent of Uninsured People in the Study Area,
Texas, and U.S., 2000

Area	Number Uninsured	Percent Uninsured
Cameron	103,474	34.5
Dimmit	3,435	34.5
Hidalgo	173,769	35.0
Kinney	764	31.1
Maverick	14,426	35.3
Starr	21,360	35.2
Val Verde	12,608	31.7
Webb	59,413	34.1
Willacy	6,190	34.8
Zapata	4,029	33.9
Zavala	4,426	35.7
Study Area	403,894	34.6
Texas	4,712,213	25.7
U.S.	38,683,000	14.0

Notes: County and Texas estimates are calculated for people under 65 only, while U.S. estimate may include a small number of people over 65 who do not have Medicare. Many children have been enrolled in Medicaid and SCHIP in Texas since 2000, so these numbers may have decreased slightly; HHSC plans to have updated estimates available in November 2002.

Sources: Texas Health and Human Services Commission, *Estimated Texas Uninsured Population Under Age 65 by County in Year 2000*, Excel spreadsheet; and U.S. Census Bureau, Current Population Survey March 2001, *Table HI06. Health Insurance Coverage Status by State for All People: 2000*, online at http://ferret.bls.census.gov/macro/032001/health/h06_000.htm, accessed September 17, 2002.

Notes

¹ Center for Public Policy Priorities, *Children's Medicaid Eligibility Simplification Bill, SB 43, Sent to Governor* (Policy Page No. 131, May 31, 2001), online at <http://www.cppp.org/products/policypages/131-150/131-150html/PP131.html>, accessed November 14, 2002.

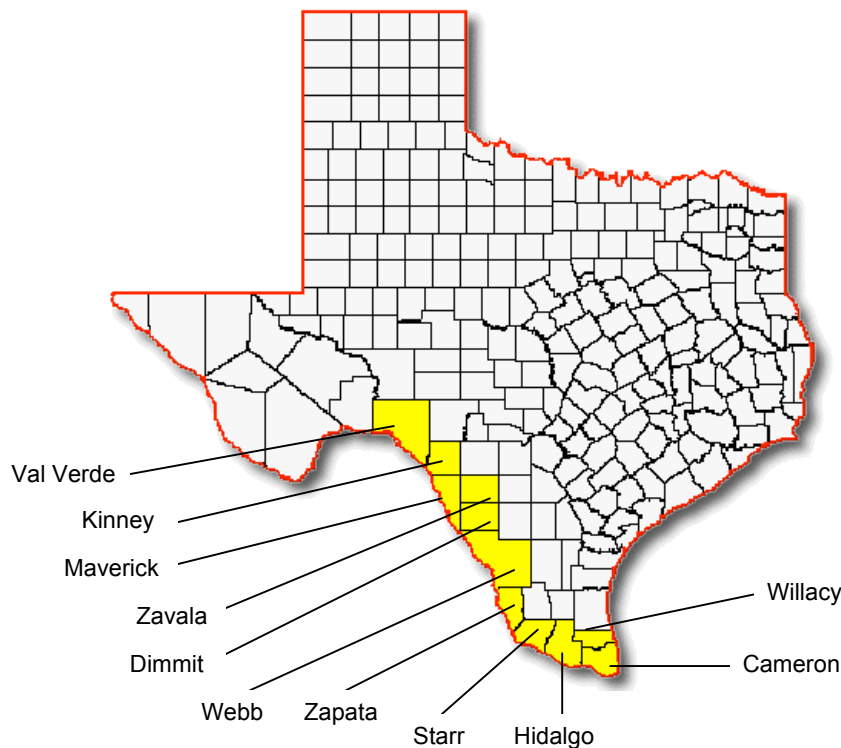
² Families USA, *Uninsured Parents and Medicaid Information, State by State* (Washington, D.C.: Families USA Health Action Annual Conference, January 2001), p.1.

Chapter 2. Profile of the Study Area

The study area includes 11 Texas counties: Cameron, Hidalgo, Starr, and Willacy in the Lower Rio Grande Valley, and Dimmit, Kinney, Maverick, Val Verde, Webb, Zapata, and Zavala in the Mid-Rio Grande Valley (see Figure 2.1). These counties border a number of *municipios* in the neighboring Mexican states of Tamaulipas and Coahuila, and Nuevo Leon. This area was chosen for the study because it has most of the health challenges and opportunities of the entire border region while being sufficiently small for meaningful data collection and analysis.

Some of the main cities in the study area are Brownsville, Del Rio, Eagle Pass, Edinburg, Harlingen, McAllen, and Laredo. Population projections by the Texas State Data Center indicate that without net migration into the area, the population of the 11-county region will reach 1,787,732 by the year 2020. If migration continues at the current rate, the population is estimated to grow to 2,316,322 (the 2000 population was estimated to be 1,301,048). In 2000, 88.2 percent of the population was Hispanic. By 2020, assuming current migration rates, the Hispanic population is projected to be 93.3 percent of the total. (See Appendices A and B for population projections by migration scenario, county, year, and age group.)

Figure 2.1
Map of Texas Counties in the Study Area



In February 2000, the population of the Mexican state of Tamaulipas was estimated to be 2,753,222 and the state of Coahuila was 2,298,070.¹ The population of the *municipios* across the border from the study area in these two states (plus the one municipio in Nuevo Leon that is on the border between these two states) was estimated to be 1,675,605 in 2000 (See Table 4.2 in Chapter 4 for list.)

In 2000, 35.4 percent of the residents in the study area lived below the poverty level compared with an average of 15.4 percent for Texas and 12.4 percent for the United States. Zavala County at 41.8 percent poverty, Starr County at 50.9 percent, and Brooks County (which touches Starr and Hidalgo Counties) at 40.2 percent, are not just the highest county poverty rates in Texas, but in the whole United States.² The average per capita income in 2000 in the region was \$13,622, compared with an average of \$27,752 for Texas and an average of \$29,469 for the U.S.³

More people cross the U.S./Mexico border than any other border in the world. There are over 250 million legal border crossings from Mexico into the United States each year, and over 140 million into Texas.⁴ In addition to legal immigrants, it was estimated that 1.2 million undocumented immigrants are living in Texas in 2002.⁵ In fiscal year 2001, 1,235,717 people were apprehended along the U.S./Mexico border trying to enter the U.S. illegally (25 percent lower than the previous year).⁶ In 1999, about 4.4 million trucks crossed the Texas/Mexico border, 2.3 million from Mexico to Texas and 2.1 million from Texas to Mexico. These were through the nine main ports through which data is available. (There are 23 international crossing points for trade between Texas and Mexico, 16 of which are in the study area.) The busiest border crossing port in Texas, the international bridges connecting Laredo to Nuevo Laredo, had 2.8 million commercial vehicle crossings. The commercial vehicle crossings from Mexico through the nine main Texas ports have increased 216 percent from 1990 to 1999 (726,000 to 2.3 million).⁷

From a health standpoint, the high level of migration between the two countries suggests that infectious diseases may be easily carried from one country into the other. The impact of this health risk is heaviest on the border region, but diseases are also carried to the interior of both countries. Also, because of the high rate of migration and other factors, people from each side of the border often utilize health care services on the other side of the border.

Binational mobility in itself is not a problem, but when public health has a binational dimension, the issues to be addressed become more challenging. Diseases in a mobile population are more difficult to treat and in a border area can be carried across from one country to another. The communicable diseases of most concern are tuberculosis, HIV/AIDS, and rarer diseases such as cholera and dengue fever. Additionally, the common health problems are made more difficult to address by the presence of two separate public health systems whose different priorities and protocols complicate treatment and prevention. For instance, an outbreak of food-borne illness found on one side of the border may have originated on the other side, but detecting its source may require unusual amounts of time and effort because of inadequate binational cooperation.

There were estimated to be 66,846 migrant and seasonal farm workers in the study area in 2000, and when their families are added to the total, 115,794 people traveled away from home for extended periods for agricultural labor.⁸ The migrant and seasonal farm workers in the study area represent 5.19 percent of the total population (8.99 percent including families), while the

number of migrant and seasonal farm workers in Texas (197,393) represents slightly less than 1 percent of the state population, and slightly under 2 percent including their families (362,724).⁹ The outmigration of 9 percent of the population of the study area for three to nine months of each year presents unique challenges for delivering adequate health care to the region, as does the immigration of an estimated 143,000 “winter Texans” (retirees from colder states) who spend about four months each winter in south Texas, especially in the Lower Rio Grande Valley.¹⁰

The 2000 Census reported that 32.5 percent of the population 25 years or older in the 11-county study area had less than a ninth grade education. In the state as a whole, only 11.5 percent of the adult population had not completed ninth grade.¹¹

In addition to these adverse socioeconomic conditions, the region has to contend with the health challenges that are unique to the *colonias*. *Colonias* are substandard housing communities in unincorporated areas often lacking potable water, sewage and electrical infrastructure, and telephone service. There are estimated to be 1,450 *colonias* in Texas in 2002, with an estimated population of 350,000 (compared to 280,000 in 1992).¹² Most of this population lives in Cameron, Hidalgo, Maverick, Starr, Webb, and El Paso Counties. While progress has been made by many organizations attempting to address the infrastructure needs of the *colonias*, there are still large problems due to the underlying problems of poverty and unavailability of other housing options in those areas. Because of inadequate water and sewage facilities, many *colonia* residents face significant health hazards. These are usually combined with significant barriers to accessing health services.

The following chapters address some of these health issues in greater detail.

Notes

¹ Instituto Nacional de Estadística, Geografía e Informática (INEGI), *Mexico's Population by State, 1895-2000*, online at <http://www.inegi.gob.mx/difusion/ingles/fiesoc.html>, accessed September 9, 2002.

² U.S. Census Bureau, *Population by Poverty Status in 1999 for Counties: 2000*, online at <http://www.census.gov/hhes/poverty/2000census/poppvstat00.html>, accessed August 15, 2002.

³ Texas Health and Human Services Commission, *Estimates of Per Capita Personal Income in Texas for Selected Years*, online at <http://www.hhsc.state.tx.us/research/dssi/PerCapInc.html>, accessed August 14, 2002.

⁴ U.S. Department of Transportation, Bureau of Transportation Statistics, *U.S.-Mexico Border Crossing Data*, online at <http://www.bts.gov/programs/itt/cross/mex.html>, accessed September 9, 2002.

⁵ Federation for American Immigration Reform (FAIR), *Texas: Illegal Immigration*, online at <http://www.fairus.org/html/042txill.htm>, accessed September 9, 2002.

⁶ Immigration and Naturalization Service, "Southwest Border Apprehensions," in *Monthly Statistical Report and September FY 2001 Year End Report*, online at <http://www.ins.usdoj.gov/graphics/aboutins/statistics/mrsrsep01/SWBORD.HTM>, accessed September 17, 2002.

⁷ Texas Comptroller of Public Accounts, *Special Report: State Functions at the Texas-Mexico Border and Cross-Border Transportation*, Section I. Economic Factors Affecting Cross-border Transportation (January 2001), online at <http://www.window.state.tx.us/specialrpt/border/index.html>, accessed September 9, 2002.

⁸ Alice C. Larson, *Migrant and Seasonal Farmworker Enumeration Profiles Study, Texas* (Report for Migrant Health Program, Health Resources and Services Administration, 2000), online at <http://bphc.hrsa.gov/migrant/Enumeration/final-tx.pdf>, accessed September 13, 2002.

⁹ Alice C. Larson, *Migrant and Seasonal Farmworker Enumeration Profiles Study, Texas* (Report for Migrant Health Program, Health Resources and Services Administration, 2000), online at <http://bphc.hrsa.gov/migrant/Enumeration/final-tx.pdf>, accessed September 13, 2002.

¹⁰ The University of Texas-Pan American, Center for Tourism Research, *Winter Visitor Study*, online at <http://www.coba.panam.edu/centers/tourism.html>, accessed September 24, 2002.

¹¹ U.S. Census Bureau, *Table DP-2, Profile of Selected Social Characteristics: 2000*, online at <http://quickfacts.census.gov/qfd/states/48000.html>, accessed August 15, 2002.

¹² Texas A&M University, Colonias Program, *Colonias in Texas*, online at <http://chud.tamu.edu>, accessed August 15, 2002.

Chapter 3. Health Indicators

Communicable Diseases in the Study Area, Texas, and U.S.

Many border communities are so closely linked to their counterparts across the border that the two neighboring areas must be considered as one zone in terms of containing the spread of infectious diseases. Being under the jurisdiction of independent public health systems, however, greatly complicates a unified approach to disease control.

The problems are bilateral. The United States is concerned about diseases such as tuberculosis, cholera, and malaria often imported from Mexico, and Mexico is concerned about diseases such as HIV/AIDS often imported from the United States. In Mexico there is further concern about return migrants bringing diseases back to their families in Mexico. Concerns over infectious diseases are not limited to the border because the diseases are likely to move to the interior of either country via migration. For this reason, the public health departments in Los Angeles, Houston, Dallas, and Chicago have been warning for some time that they should be considered “border impact zones.”

The incidence of the more common and hazardous infectious diseases on the U.S. side of the border and some of the issues involved in combating them are discussed in the following sections.

Tuberculosis

Table 3.1 shows that in 2001 tuberculosis rates in the study area were 192 percent higher than in Texas as a whole and 271 percent higher than the nation as a whole. The treatment of tuberculosis in the region is difficult because it usually requires a minimum of six months of drug therapy. Patients from this highly mobile population often interrupt or discontinue treatments as they move around, and travel and the large number of trans-border families reduce the effectiveness of community infection control initiatives.

A major concern in recent years has been the emergence of multi-drug-resistant tuberculosis. From 1995-2001, the number of cases of multi-drug-resistant TB in Texas peaked in 1996 at 141, and has varied since then, with 95 cases reported in 2001. Of these 95 cases, 16 (16.8 percent) occurred in the study area.¹ The presence of drug resistance creates a significant challenge for public health officials because as treatment difficulties increase with population growth and mobility (such as in the border region), so does the possibility of increased drug resistance. This is because early discontinuation of medication contributes to drug resistance, and because tuberculosis has a much longer treatment period than most infections, it is more likely that people will not complete the drug regimen.

Figure 3.1 shows that tuberculosis case rates (per 100,000 population) have been consistently higher in the study area than in Texas as a whole, though rates have tended to decrease most years since 1995.

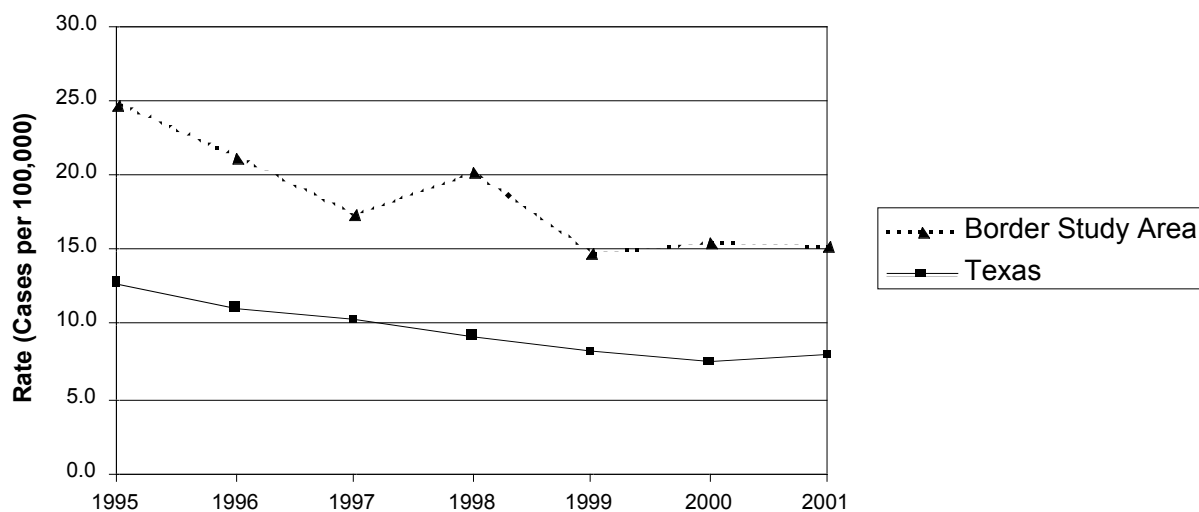
Table 3.1
Tuberculosis Case Rates in the Study Area,
Texas, and U.S., 2001

Cameron	16.0	Webb	16.0
Dimmit	0	Willacy	0
Hidalgo	13.1	Zapata	14.4
Kinney	0	Zavala	14.2
Maverick	23.9	Study Area	15.2
Starr	28.1	Texas	7.9
Val Verde	19.9	United States	5.6

Note: Rates are per 100,000 population.

Sources: Texas Department of Health (TDH), Bureau of Communicable Disease, *Tuberculosis Incidence Rates per 100,000 Population by County, Texas 1995-2001*, online at <http://www.tdh.state.tx.us/tb/RatesbyCountyTBL.htm>, accessed August 16, 2002; TDH, Bureau of Communicable Disease, *Tuberculosis Elimination Division Statistics (Cases by County and Rates by County)*, online at <http://www.tdh.state.tx.us/tb/Stat.htm>, accessed August 16, 2002; Texas State Data Center (TSDC), Texas Population Estimates Program, *County Estimates, 1994-1999*, online at <http://txsdc.tamu.edu/tpepp/txpopest.php>, accessed August 17, 2002; TSDC, Texas Population Projections Program, *2001 Population Projections (Table 2) by County*, online at http://txsdc.tamu.edu/tpepp/table2/csv_county.php, accessed August 12, 2002; TDH, *The Health of Texans*, Austin, Texas, 2002, p. 64.

Figure 3.1
Tuberculosis Case Rates in Texas and the Study Area, 1995-2001



Sources: TDH, Bureau of Communicable Disease, *Tuberculosis Elimination Division Statistics (Cases by County and Rates by County)*, online at <http://www.tdh.state.tx.us/tb/Stat.htm>, accessed August 16, 2002; TSDC, Texas Population Estimates Program, *County Estimates, 1994-1999*, online at <http://txsdc.tamu.edu/tpepp/txpopest.php>, accessed August 17, 2002; TSDC, Texas Population Projections Program, *2001 Population Projections (Table 2) by County*, online at http://txsdc.tamu.edu/tpepp/table2/csv_county.php, accessed August 12, 2002.

Gastrointestinal Diseases

Gastrointestinal diseases, particularly those that are water-borne, are another significant regional health hazard. As seen in Table 3.2, rates of shigellosis (a bacterial infection) and hepatitis A (a viral infection affecting the liver that is often spread by fecally contaminated food or water) are higher in the study area than in Texas as a whole and in the U.S. This was also true in 1994, when shigellosis in the study area was 18.1 and the state was 13.2, and hepatitis A rates were 45 and 15.7 respectively. Hepatitis A rates, often considered a proxy for poor sanitation, were 347 percent higher in the study area as in Texas as a whole in 1999, and 694 percent higher than the U.S.

Rates of salmonellosis, a food-borne infection, were lower in the study area than in Texas and the U.S. in 1994, but in 1999, the rate in the study area was higher. The study area had a rate of 19.9 (per 100,000 population), which was 181 percent higher than Texas, and 134 percent higher than the U.S. rate. Only one case of amebiasis was reported in the study area in 1999 (in Val Verde County), and 37 cases in Texas;² this disease is not reportable on a national basis so a comparison cannot be made.

In recent years, cholera has been of great concern to officials in the United States and Mexico because of the outbreaks that occurred in Peru in 1991 and then spread to a number of other Latin American countries. The number of cases of cholera has greatly decreased in Mexico since 1995. From a decade-high of 16,430 reported cases in Mexico in 1995, there were 1,088 in 1996, 2,356 in 1997, 71 in 1998, 9 in 1999 and only 5 reported in 2000.³ There were no reported cases of cholera in Texas in 1999, and only six in the entire U.S.⁴ In 2001, Mexico was taken off of the World Health Organization's list of cholera epidemic countries.⁵

The fear was that if cholera were to reach the border regions, the poor sanitary conditions of the *colonias* would facilitate the spread of the disease. However, even if this were to occur, the *colonias* are relatively isolated and most Texas and U.S. residents outside the *colonias* have adequate water and sewage systems, so the spreading of cholera in the U.S. would be unlikely.

Table 3.2
Gastrointestinal Disease Case Rates in the Study Area, Texas, and U.S., 1999

Area	Hepatitis A	Salmonellosis	Shigellosis
Cameron	56.1	14.6	23.5
Dimmit	124.4	0	17.8
Hidalgo	38	20.6	19.3
Kinney	29.9	29.9	59.9
Maverick	2.3	4.5	15.8
Starr	16.2	17.8	11.3
Val Verde	22.6	40.7	20.4
Webb	56.5	20.9	10.4
Willacy	15.1	80.3	15.1
Zapata	31.1	38.9	0
Zavala	116.4	7.3	14.6
Study Area	43.7	19.9	18.4
Texas	12.6	11.0	11.4
U.S.	6.3	14.9	6.4

Note: Rates are per 100,000 population.

Sources: Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 19, 2002; Centers for Disease Control and Prevention, *Summary of Notifiable Diseases, United States, 1999, Table 7*, online at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>, accessed August 19, 2002.

Sexually Transmitted Diseases

In 1999, two cases of syphilis (primary and secondary stages), 309 cases of gonorrhea, and 3,453 cases of Chlamydia were reported in the study area.⁶ Table 3.3 shows a comparison of case rates (per 100,000 population) for the study area, Texas, and the United States. The study area has lower rates than Texas as a whole for all three of these STDs, and lower rates than the U.S. for gonorrhea and syphilis. The rate of Chlamydia for the study area is higher than the U.S., and Cameron and Willacy Counties are also higher than the state average. Compared to the rates five years earlier, in 1994, gonorrhea rates were very similar (23.8 in the study area and 162.7 in the state), syphilis rates have significantly improved (was 2.6 and 10.5 respectively), and Chlamydia rates have worsened in the study area and state (was 187.3 and 251.8 respectively).⁷

One possible explanation for the generally lower rates in the study area is that antibiotics are available without a prescription in Mexico, and a number of people may self-treat for STDs. Another explanation could be limited access to laboratory testing. A third is that there is significant underreporting of STDs in the area. However, lower case rates should be looked upon as an opportunity for effective prevention programs to ensure that rates remain low.

Table 3.3
Sexually Transmitted Diseases in the Study Area, Texas, and U.S., 1999

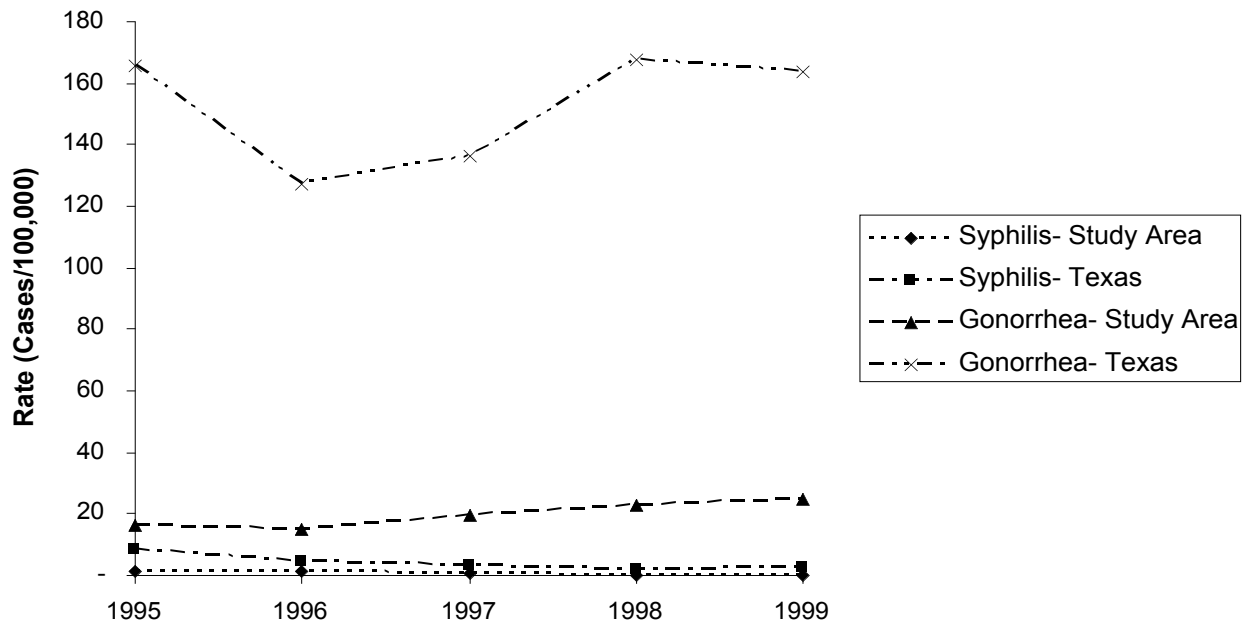
Area	Gonorrhea	P & S Syphilis	Chlamydia
Cameron	35.7	0.6	334.0
Dimmit	26.7	0	133.3
Hidalgo	21.8	0	277.3
Kinney	29.9	0	149.7
Maverick	6.8	0	262.0
Starr	8.1	0	139.3
Val Verde	45.3	0	271.6
Webb	17.0	0	230.5
Willacy	50.2	0	391.7
Zapata	7.8	0	303.1
Zavala	21.8	0	94.6
Study Area	24.7	0.2	276.2
Texas	163.4	2.3	312.7
U.S.	133.2	2.5	254.1

Note: Rates are per 100,000 population.

Sources: Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 19, 2002; Centers for Disease Control and Prevention, *Summary of Notifiable Diseases, United States, 1999, Table 7*, online at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>, accessed August 19, 2002.

Figure 3.2 shows case rates (per 100,000 population) for primary and secondary syphilis and gonorrhea in Texas and in the study area from 1995-1999.

Figure 3.2
Syphilis and Gonorrhea Case Rates in the Study Area and Texas, 1995-1999



Sources: Texas Department of Health, *1997, 1998, and 1999 Epidemiology Annual Reports*, online at <http://www.tdh.state.tx.us/epidemiology/annrepts.htm>, accessed August 19, 2002; Texas Department of Health, *1995 Epidemiology Annual Report* (Austin, Texas, 1997), pp. 151, 165; Texas Department of Health, *1996 Epidemiology Annual Report* (Austin, Texas, 1998), pp. 133, 147.

Vaccine-Preventable Diseases

The study area reported no cases of measles in 1999. Of the seven reported measles cases in Texas in 1999, none were along the Texas/Mexico border, and only one was somewhat near, in Medina County in South Texas. (In 1994, there were 17 cases in Texas and none in the study area.) There were four cases of mumps in the study area in 1999, compared to 35 cases statewide, which is about the same rate for the study area vs. the state.⁸ These rates have significantly improved in the last five years; in 1994, there were 28 mumps cases in the study area and 234 statewide.⁹

The case rates for pertussis or “whooping cough,” a highly contagious upper-respiratory illness, were higher in two study area counties than in the state as a whole in 1999. (Texas had 152 cases, for a rate of 0.8.) There were six cases reported in the study area in 1999: Val Verde had one (2.3 rate), Cameron had three (0.9 rate), and Hidalgo had two (0.4 rate). Even though the rates were higher than the state for Val Verde and Cameron, these two counties only had four cases total.¹⁰ These numbers were similar in 1994, when Texas reported 160 cases and 12 were

reported in the study area.¹¹ In 1999, Texas had nine reported cases of rubella; two of these occurred in the study area, both in Cameron County.¹² Nine cases of rubella were also reported in 1994, with three in the study area (in Cameron and Hidalgo Counties).¹³

The low numbers reported make it difficult to report reliable statistical comparisons of vaccine-preventable diseases between the region and the state. However, one must keep in mind that since many border residents have no regular source of medical care, their illnesses are more likely to go unreported.

Dengue Fever

Dengue fever is a mosquito-transmitted viral disease producing high fever, joint and muscle pain, severe headaches, nausea, vomiting, and a rash. (This is the “classic” form of the disease; there is also a rare and fatal form called dengue hemorrhagic fever.) Dengue is found primarily in tropical and subtropical areas of the world, and there is no vaccine for prevention. Virtually nonexistent throughout the United States, dengue has been occurring along the Texas/Mexico border, with periodic outbreaks of classic dengue and few cases in between. A large outbreak occurred in Texas in 1999, with 66 total cases reported (62 associated with the outbreak), compared to only six total cases in 1998. In this outbreak, 32 of the cases were in Webb County, and 20 more were in other counties in the study area (Cameron, Hidalgo, Starr, and Willacy). A majority of dengue fever cases are a result of travel to other countries, though it has become established along the border as well, since 27 percent of the people with dengue in Texas in 1999 acquired it from living in or traveling through one of these five border counties and had not traveled abroad.¹⁴ There were only five cases reported in Texas in 1996.¹⁵

There are many more cases of dengue fever on the Mexican side of the Texas/Mexico border. Through week 35 of 1999, the Tamaulipas State Department of Health in Mexico reported 31 confirmed cases and 424 unconfirmed cases of dengue fever in three cities bordering Texas: Reynosa, Matamoros, and Nuevo Laredo. In 1998, there were 1,108 cases reported in these three border communities.¹⁶

HIV/AIDS

Texas ranked fourth in the U.S. after California, Florida, and New York for the number of new AIDS cases reported in 1999 (3,181).¹⁷ Compared to the state and relative to other diseases such as tuberculosis, the study area does not have a disproportionately high number of AIDS cases. However, the transient nature of the border population combined with the social stigma of the disease may cause significant underreporting.

Table 3.4 shows the cumulative cases of HIV (that have not progressed to AIDS) and AIDS through December 2001 in the study area, Texas, and U.S.; this is total cases, including people who have since died. (For comparison, the combined figures through June 1996 for these three areas were 614, 37,969, and 461,386 respectively.)¹⁸ The study area accounts for only 2.2 percent of the HIV/AIDS cases in the state (while having about 6.3 percent of the population). However, certain trends within the state are sources of concern for the border population. State figures show that reported cases are decreasing in the white male population while they are increasing among minority populations, especially in women. In 1994, 15.7 percent of reported

new AIDS cases were among Hispanic men and 2.3 percent were Hispanic women. In 2001, these percentages rose to 30 percent for Hispanic men and 20 percent for Hispanic women. The total number of new cases of full-blown AIDS reported in 2001 in Texas was 2,981 (2,334 males and 647 females).¹⁹

Table 3.4
Cumulative Cases of HIV/AIDS through end of 2001 in
the Study Area, Texas, and U.S.

Cameron	462	Webb	300
Dimmit	6	Willacy	23
Hidalgo	594	Zapata	5
Kinney	3	Zavala	6
Maverick	46	Study Area	1,494
Starr	27	Texas	68,327
Val Verde	22	United States	774,467 (through end of 2000)

Sources: Texas Department of Health, HIV/STD Epidemiology Division, *Texas HIV/STD Surveillance Report, Annual Report 2001*, online at http://www.tdh.state.tx.us/hivstd/stats/pdf/surv01_4.pdf, accessed August 21, 2002; Centers for Disease Control and Prevention, *HIV/AIDS Surveillance: General Epidemiology, L178 slide series (through 2000)*, online at <http://www.cdc.gov/hiv/graphics/surveill.htm>, accessed August 21, 2002.

Communicable Diseases in Mexico

The data available from the study area show that Mexico is dealing with many of the same communicable diseases as the U.S. side of the border. Unspecified intestinal disease is a major concern, with a total of 97,313 cases reported in Tamaulipas in 2001.²⁰ Tuberculosis and hepatitis are also significant concerns on the Mexican side. The rate per 100,000 for TB was 38.0 in Tamaulipas and 16.6 in Coahuila in 2000.²¹ In 1995, the Mexican government adopted the DOTS strategy (Directly Observed Treatment, Short-term) for TB treatment, which has been shown to be the most effective treatment in other countries, and use of this method is spreading each year.²² It is expected that surveillance for drug-resistant TB in Mexico will be completed by the end of 2002; studies in three Mexican states in 1997 showed primary resistance to all TB drugs at 14.1 percent.²³ Coordination, reporting, and laboratory networks for TB have all been enhanced in Mexico in the last few years, though there is still room for improvement.

Very high vaccination rates in Mexico (due to the Universal Vaccination Program established in 1990) help combat vaccine-preventable diseases such as measles, a disease which is also declining in Texas. There were no new cases of measles reported in Mexico in 2001.²⁴ (Only seven cases were reported in Texas in 1999, with none reported in 1998, down from 49 reported in 1996 due to an outbreak in Harris County.²⁵)

Other diseases such as typhoid fever, which is virtually nonexistent in the U.S., continue to be a problem in Mexico. In 2001, Tamaulipas reported 916 cases of typhoid and Coahuila reported 686 cases,²⁶ compared with 23 cases in Texas in 1999.²⁷

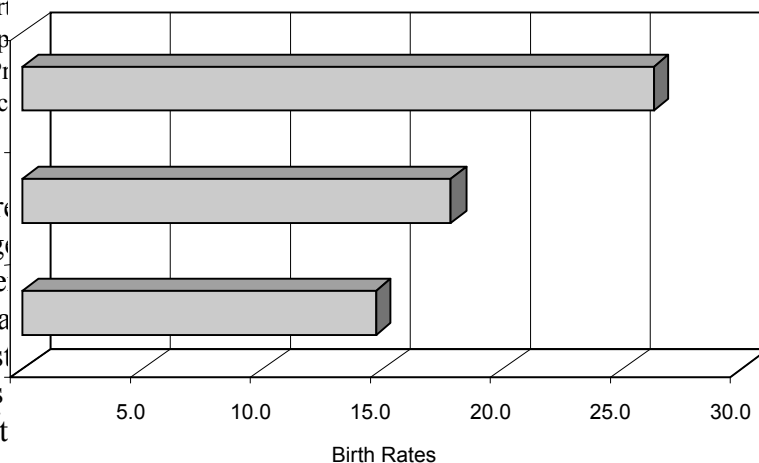
Maternal and Child Health

As shown in Figure 3.3, the crude birth rate of 26.3 per 1,000 population in the study area in 2000 is significantly higher than the Texas or U.S. rates. A high crude birth rate indicates a heavier than average demand for health care services. Each of these birth rates has been decreasing for several years: the rate for the study area in 2000 was 26.3, compared to 31.7 in 1994; the rate for Texas was 17.9 in 2000, compared to 18.9 in 1994; and the rate for the U.S. was 14.7 in 2000, compared to 15.6 in 1993. The crude birth rate in Mexico has also been decreasing: it was estimated to be 20.5 for Mexico as a whole in 2002 (19.4 in Coahuila and 18.4 in Tamaulipas),²⁸ compared to 33.1 for Mexico in 1995.²⁹

Figure 3.3
Crude Birth Rates in the Study Area, Texas, and U.S., 2000

Sources: Texas Department of Health, 1999 and 45, online at <http://www.dhs.gov> and <http://www.cdc.gov>

Figure 3.4 compares the study area with the percentage of low-weight babies (78.8 percent) and t

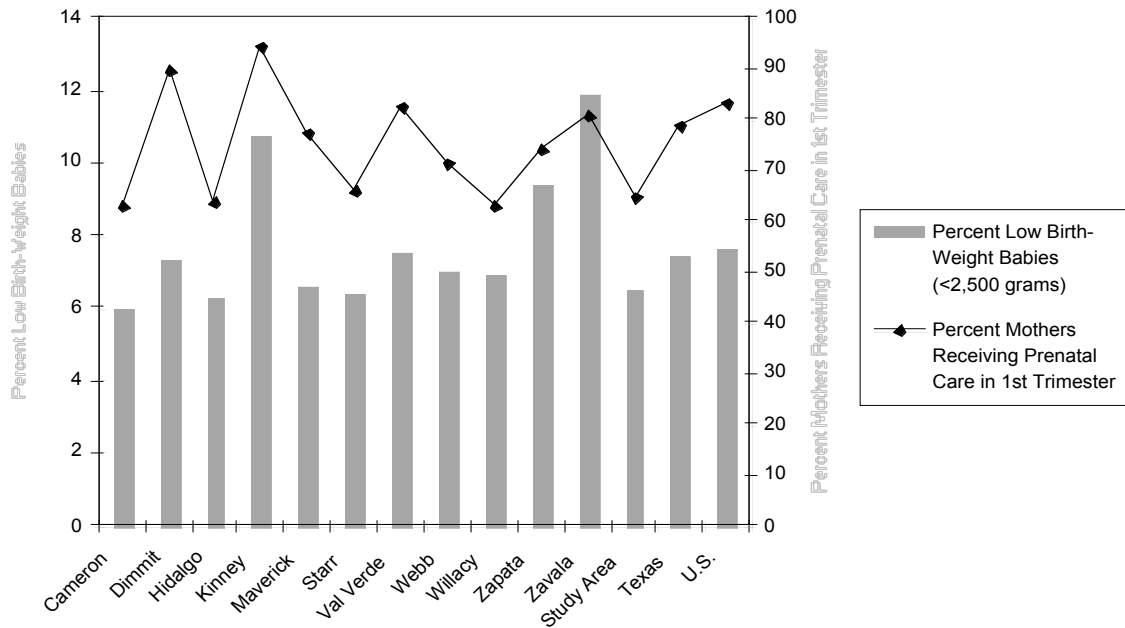


ables

ster
e is
has
vely
ge of
and
ften

reported by women when they give birth instead of their doctors, so some of this care could have occurred on the Mexican side of the border.

Figure 3.4
Percentage of Low Birth-Weight Babies Compared to Percentage of Women Receiving Prenatal Care in First Trimester, 2000



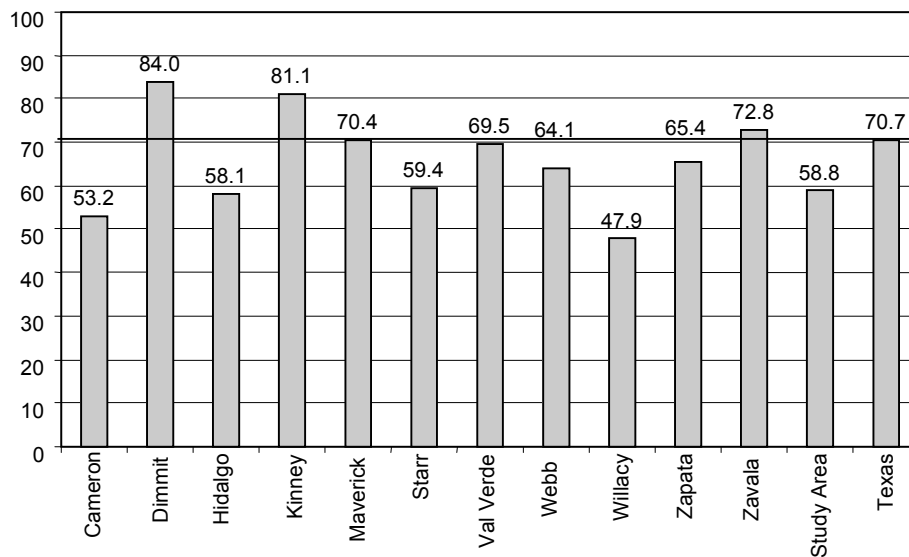
Sources: Texas Department of Health, Bureau of Vital Statistics, *Texas Vital Statistics 2000 Annual Report*, Tables 10, 12, and 45, online at <http://www.tdh.state.tx.us/bvs/stats00/contents.htm>, accessed August 21, 2002; Centers for Disease Control and Prevention, “Births: Final Data for 2000,” *National Vital Statistics Report*, online at http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf, accessed August 21, 2002.

Adequate prenatal care continues to be a problem in the study area. Figure 3.5 shows the percent of women receiving adequate prenatal care according to the Kessner Index rating in each of the counties of the study area and in the state (the U.S. government uses a different system for measuring adequacy of prenatal care). The Kessner Index rates adequacy on the basis of when the trimester began, how many visits were made, and the length of gestation. Most of the rates for the counties of the study area are lower than the state rate of 70.7 (horizontal line on the graph), though much improvement has been made in the last five years—Dimmit, Kinney, and Zavala are actually higher than the state rate, and four other counties are in the 60 to 70 percent range.

In examining maternal and child health, it is important to observe the health conditions of very young children after the immediate post-partum period. Revealing indicators are the proportions

of infants failing to thrive, of those diagnosed with vitamin deficiencies, and of those experiencing developmental delays due to malnutrition and other health and socioeconomic factors. Little hard data is available, but officials believe that the health of young children is a serious challenge for the region. Major problems are low rates of breastfeeding and poor quality diets.

Figure 3.5
Percent of Women in the Study Area and Texas Receiving Adequate Prenatal Care Based on the Kessner Index, 2000



Source: Texas Department of Health, Bureau of Vital Statistics, *Texas Vital Statistics 2000 Annual Report*, Tables 9 and 13, online at <http://www.tdh.state.tx.us/bvs/stats00/contents.htm>, accessed August 22, 2002.

Oral Health

Routine and preventive dental care is important for maintaining not just oral health, but health in general. Early intervention prevents dental problems from becoming chronic and irreversible, and affecting overall health. Most experts recommend a routine teeth cleaning every six months and a more thorough oral exam annually. In 1999, 61.4 percent of Texans had seen a dentist in the past year, while the nationwide average was 68.1 percent. This percentage was lower for the Hispanic population in Texas, at 50 percent.³⁰ Many people without dental insurance in Texas take advantage of the fact that dental care is cheaper on the Mexican side of the border and cross to receive services, but it appears that many more are not receiving any dental services on a routine basis.

Preventive dental care is especially important for children, and Texas Health Steps administers a dental screening program for Medicaid-eligible children ages 1-20 in the state. In state fiscal year 2000, 258,173 children in the study area were eligible for the program, but only 52 percent of these were actually served (received at least one dental health service from Texas Health Steps during the year).³¹ The study area is underserved in the number of dentists available (as detailed in Chapter 4), but it appears that another need is to publicize the programs that already exist such as Texas Health Steps.

Chronic Disease

Another health care burden borne disproportionately by the population of the study area relative to the rest of the state is that of chronic disease in adults below 65 who are not eligible for Medicaid or Medicare until they become totally disabled.

One of these chronic diseases that is disproportionately high along the border is diabetes. An estimated 8 percent of the people age 18 and over in the study area were living with diagnosed diabetes (Type 1 or Type 2) in 2001, compared to 6.2 percent for Texas as a whole (many more cases are suspected to be undiagnosed; figures are not available for people under 18). The percent of diagnosed diabetes in every county in the study area was higher than that for Texas (see Table 3.5). Type 2 diabetes is more prevalent in Native Americans, Hispanics, African Americans, and Asians than in non-Hispanic whites,³² which partially explains these figures, due to the study area's high proportion of Hispanics. Mortality rates for diabetes have also increased in the past decade, taking a heavy toll on Hispanics and other minorities.³³

Table 3.5
Estimates of the Number and Percent of People with Diagnosed Diabetes
in the Study Area and Texas, 2001

Area	Cases of Diagnosed Diabetes	Population 18 and over	Percent of Pop. 18 and over
Cameron	17,531	227,856	7.7%
Dimmit	538	6,949	7.7%
Hidalgo	29,618	380,255	7.8%
Kinney	177	2,527	7.0%
Maverick	2,422	30,466	7.9%
Starr	2,763	34,399	8.0%
Val Verde	2,334	30,962	7.5%
Webb	10,141	127,489	8.0%
Willacy	1,095	13,989	7.8%
Zapata	638	8,296	7.7%
Zavala	615	7,784	7.9%
Study Area	67,872	870,972	8.0%
Texas	1,055,002	15,242,510	6.2%

Source: Texas Department of Health, *Diabetes Prevalence in Texas, 2001* (estimates using the Texas Behavioral Risk Factor Surveillance System), online at <http://www.tdh.state.tx.us/diabetes/data/county.pdf>, accessed August 26, 2002.

One study estimated that the economic cost of diabetes in Texas in 1992 was in excess of \$4 billion. Of this, indirect costs (lost wages due to short-term illness, long-term disability, and premature mortality) amounted to \$2.4 billion. Direct costs (treatment costs) were estimated at \$1.6 billion. Of particular interest is the fact that, while Medicare paid \$659 million in medical costs attributable to diabetes, Medicaid only covered about \$70 million of such care for non-Medicare patients.³⁴ The direct and indirect costs of diabetes in Texas in 1997 were estimated to be \$9 billion.³⁵

Type 1 diabetes is thought to be the result of an autoimmune disorder that gradually kills the insulin-producing cells of the pancreas; it accounts for only 5 to 10 percent of diabetes cases, usually appears during childhood or adolescence, and can often be controlled by taking insulin or other drugs. Diabetes Mellitus, or Type 2 diabetes, is the most prevalent type and is associated with a high-fat, low-fiber diet and being overweight and physically inactive. It usually strikes after age 45; however, in a troubling trend, an increasing number of children and young adults nationwide are developing Type 2 diabetes as more people in these age groups are becoming overweight and obese. The Texas Department of Health helped host an international conference on this phenomena in 1999 and after that developed the first statewide action plan on Type 2 diabetes in children and adolescents, which outlines steps to address this emerging problem.³⁶

Type 2 diabetes can lead to devastating and costly complications such as blindness, kidney failure, strokes, and need for limb amputations; however, almost all complications could be prevented by early detection, improved care, and lifestyle changes such as exercise and healthier diets. It is ironic that funds for medical care in many cases only become available when the preventable or delayable complications of the illness happen and prevent the individual from working.

Many organizations in Texas have recognized the growing problem of diabetes and are developing more programs to address it. The Texas Department of Health is involved in a variety of diabetes programs including the Diabetic Eye Disease Program to provide free eye screenings to uninsured people, a statewide action plan developed by collaboration to address the growing problem of pediatric diabetes, and providing financial and technical support to local organizations addressing diabetes prevention. TDH also collaborates with several federal agencies and the Texas Community Health Care Association in the Diabetes Learning Collaborative, which among other activities has implemented the Capacity/Infrastructure Development (CID) program. This program aims to “improve the health status of minorities in Texas and to establish the capacity and infrastructure to develop, promote, and disseminate breakthrough changes in public primary care systems for diabetes care.”³⁷

Another program, the Texas Diabetes Prevention and Control Initiative, is a collaboration of the Texas Diabetes Council and Bristol-Myers Squibb, and its goal is to “increase awareness of the importance of prevention, diagnosis and proper management of Type 2 diabetes among Texas residents through diabetes prevention activities, early diagnosis and referrals for treatment, and an awareness campaign.”³⁸ It is estimated that more than 1 million people will benefit from this program. The initiative has three pilot screening sites, two of which are along the border: the sites are in Harlingen, El Paso, and Houston.³⁹

Notes

¹ Texas Department of Health, Bureau of Communicable Disease, *Incidence of Drug-Resistant TB Cases by County, Texas, 1995-2001*, online at <http://www.tdh.state.tx.us/tb/DRTBbyCounty.htm>, accessed August 19, 2002.

² Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 19, 2002.

³ Pan American Health Organization, *Table 1: Number of Cholera Cases in the Americas (1991-2001, by Country and Year)*, online at <http://www.paho.org/English/HCP/HCT/EER/cholera-cases-deaths-91-01.htm#table1>, accessed August 21, 2002.

⁴ Centers for Disease Control and Prevention, *Summary of Notifiable Diseases, United States, 1999*, online at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>, accessed August 19, 2002.

⁵ U.S.-Mexico Border Health Commission, *WHO Removes Mexico from Cholera Epidemic List*, online at <http://www.borderhealth.gov/Events/Mexico-WHO/mexico-who.html>, accessed September 19, 2002.

⁶ Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 19, 2002.

⁷ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA (San Antonio, Tex.: Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, October 1999), p. 11.

⁸ Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 19, 2002.

⁹ Texas Department of Health, *1994 Epidemiology Annual Report* (Austin, Texas, 1996), pp. 146, 160.

¹⁰ Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 19, 2002.

¹¹ Texas Department of Health, *1994 Epidemiology Annual Report* (Austin, Texas, 1996), pp. 146, 160.

¹² Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 19, 2002.

¹³ Texas Department of Health, *1994 Epidemiology Annual Report* (Austin, Texas, 1996), pp. 146, 160.

¹⁴ Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 20, 2002.

- ¹⁵ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA (San Antonio, Tex.: Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, October 1999), p. 12.
- ¹⁶ Pan American Health Organization, *Dengue in three border cities in Tamaulipas, Mexico*, online at http://www.fep.paho.org/denguebul/english/section3_2.htm, accessed August 21, 2002.
- ¹⁷ Centers for Disease Control and Prevention, *Summary of Notifiable Diseases, United States, 1999*, online at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>, accessed August 19, 2002.
- ¹⁸ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA (San Antonio, Tex.: Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, October 1999), p. 13.
- ¹⁹ Texas Department of Health, HIV/STD Epidemiology Division, *Texas HIV/STD Surveillance Report, Annual Report 2001*, online at http://www.tdh.state.tx.us/hivstd/stats/pdf/surv01_4.pdf, accessed August 21, 2002.
- ²⁰ Secretaría de Salud de Tamaulipas, *Principales Causas de Enfermedades*, online at <http://salud.tamaulipas.gob.mx/estadisticas/enfermedades.htm>, accessed September 11, 2002.
- ²¹ Texas Department of Health, *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*, March 2002, online at http://www.tdh.state.tx.us/minority/pubs/Disp_all.PDF, accessed September 10, 2002.
- ²² Pan American Health Organization, *Report of the Regional Evaluation Meeting of National TB Control Programs*, online at <http://www.paho.org/English/HCP/HCT/TUB/tb-regional-eval-mtg-2000.PDF>, accessed September 11, 2002.
- ²³ Pan American Health Organization, *Report of the Regional Evaluation Meeting of National TB Control Programs*, online at <http://www.paho.org/English/HCP/HCT/TUB/tb-regional-eval-mtg-2000.PDF>, accessed September 11, 2002.
- ²⁴ Secretaría de Salud de México, *Distribución de Casos Nuevos de Enfermedades por Grupo de Edad, Estados Unidos Mexicanos, 2001*, online at <http://www.epi.org.mx/anuarios/p.pdf>, accessed September 14, 2002. **Note:** “Measles” in Spanish is “sarampión.”
- ²⁵ Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 20, 2002.
- ²⁶ Secretaría de Salud de México, Dirección General de Epidemiología, *Estadísticas en Salud, Boletín Epidemiológico, Vigilancia Epidemiológica Semana 52-2001, Cuadro 4*, online at <http://www.epi.org.mx>, accessed September 11, 2002.
- ²⁷ Texas Department of Health, *1999 Epidemiology Annual Report, Regional Statistical Summaries*, online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 20, 2002.

- ²⁸ Secretaría de Salud de México, *Tasa Bruta de Natalidad por Entidad Federativa, 2002*, online at <http://www.ssa.gob.mx>, accessed September 24, 2002.
- ²⁹ Calculated from birth and population data from: Instituto Nacional de Estadística, Geografía e Informática (INEGI), *Anuario de Estadísticas por Entidad Federativa, Aspectos Demográficos, 1995-1998*, online at <http://tamps.inegi.gob.mx/tamaulipas/difusion/espanol/bvinegi/aef/apsdemo.pdf>, accessed November 6, 2002.
- ³⁰ Texas Department of Health, *The Health of Texans* (Austin, Texas, 2002), pp. 96-97.
- ³¹ Texas Department of Health, Associateship for Family Health, *Texas Health Steps Dental Statewide Report for Service Utilization, SFY 2000*, online at http://www.tdh.state.tx.us/dental/StateW_2000.pdf, accessed September 12, 2002.
- ³² Texas Department of Health, *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*, March 2002, online at http://www.tdh.state.tx.us/minority/pubs/Disp_all.PDF, accessed September 10, 2002.
- ³³ Texas Department of Health, *The Health of Texans* (Austin, Texas, 2002), p. 42.
- ³⁴ Warner, David C., Roy R. McCandless, Louis A. De Nino, John E. Cornell, Jacqueline A. Pugh, and Genevieve M. Marsh, "Cost of Diabetes in Texas, 1992," *Diabetes Care*, vol. 19 (December 1992), pp. 1416-1419.
- ³⁵ Texas Department of Health, *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*, March 2002, online at http://www.tdh.state.tx.us/minority/pubs/Disp_all.PDF, accessed September 10, 2002.
- ³⁶ Texas Department of Health, Texas Diabetes Council, *Type 2 Diabetes in Children and Adolescents Statewide Action Plan*, online at <http://www.tdh.state.tx.us/diabetes/t2child/Statewide%20Action1.pdf>, accessed November 19, 2002.
- ³⁷ Texas Department of Health, *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes*, March 2002, online at http://www.tdh.state.tx.us/minority/pubs/Disp_all.PDF, accessed September 10, 2002.
- ³⁸ Texas Department of Health, Texas Diabetes Council, *Diabetes Prevention and Control Initiative*, online at <http://www.tdh.state.tx.us/diabetes/bms/index.html>, accessed September 10, 2002.
- ³⁹ Texas Department of Health, Texas Diabetes Council, *Diabetes Prevention and Control Initiative*, online at <http://www.tdh.state.tx.us/diabetes/bms/index.html>, accessed September 10, 2002.

Chapter 4. Health Resources

Border Public Health Systems

Border public health is driven by complex systems of federal, state, local, private, and binational components. The public health system in Texas is decentralized. The Texas Department of Health (TDH), the state's health agency located in Austin, is responsible for coordinating funding and programs in 11 public health regions (PHRs).

The counties contained in the study area are part of TDH public health regions 8 and 11. Among them, Cameron and Hidalgo have independent “full-service” county health departments and Webb has an independent full-service city health department in Laredo. (These local health departments receive state and federal funding through TDH as well as local funding.)¹ County health departments in Val Verde and Zavala have closed in the last several years. There are also three “non-participating” local health departments in the study area (meaning that they do not receive funds from TDH): these are the City of Brownsville Health Department and the City of Harlingen Health Department (both in Cameron County), and the City of McAllen Health Department in Hidalgo County.² These three departments provide environmental and public health services, but do not provide direct medical services to individuals. Table 4.1 outlines local public health services available in the study area.

There is also a regional TDH office in the study area (for PHR 11), located in Harlingen, Cameron County. The remaining counties without LHDs are served by the regional offices of PHRs 8 and 11 and clinics operated by TDH.

In the border region, the U.S. public health system is greatly affected by Mexico. Many border residents seek medical care in both countries because of differences in cost, quality, and/or accessibility. The health system prevailing on the other side of the border is described here.

The Mexican health care system consists of three sectors: social security including the Instituto Mexicano del Seguro Social (IMSS) and the Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado (ISSSTE); the Secretaria de Salud y Asistencia (SSA); and the private sector.

IMSS, ISSSTE, and a few other specialized social security programs provide health care services to employed Mexicans. The SSA system administers indigent care. The private sector, a growing part of the Mexican health care system, serves people at all socioeconomic levels, and many physicians in Mexico combine work in public clinics and hospitals with private practice. Because private medical care in Mexico is, for the most part, significantly less expensive than in the U.S., this sector also serves low-income border populations.

**Table 4.1
Local Public Health Services in the Study Area, 2000**

County	2000 Pop.	Number of Hospitals	Services provided by a Local Health Department (LHD)						LHD staff (FTEs)	Total LDH Budgets
			Indigent Services	HIV	STD	TB	Vaccinations	Health Education		
Cameron*	335,227	5	yes	no	yes	yes	yes	yes	246.71	\$10,013,443
Dimmit	10,248	1	-	-	-	-	-	-	-	-
Hidalgo*	569,463	8	yes	no	yes	yes	yes	yes	147	\$5,382,307
Kinney	3,379	0	-	-	-	-	-	-	-	-
Maverick	47,297	1	-	-	-	-	-	-	-	-
Starr	53,597	1	-	-	-	-	-	-	-	-
Val Verde	44,856	1	-	-	-	-	-	-	-	-
Webb	193,117	2	yes	yes	no	yes	yes	yes	180.5	\$9,338,537
Willacy	20,082	0	-	-	-	-	-	-	-	-
Zapata	12,182	0	-	-	-	-	-	-	-	-
Zavala	11,600	0	-	-	-	-	-	-	-	-

* This table combines the information for the three full-service and three non-participating LHDs listed on the previous page, so staff and budgets listed for Cameron and Hidalgo counties are for county and city health departments combined. Also, staff and budget data for the three non-participating LHDs are from FY2002-2003, not FY 1999-2000 as for the full-service LHD data from TDH.

Sources: Texas Department of Health (TDH), Office of Health Information and Analysis, *Texas Census 2000 Population Data*, online at <http://www.tdh.state.tx.us/dpa/popdata/pg00.htm>, accessed September 13, 2002; TDH, Office of Health Information and Analysis, *Texas Acute Care Hospital Utilization Report, 2000*, online at <http://www.tdh.state.tx.us/dpa/survey/UTILREP.PDF>, accessed September 13, 2002; TDH, Bureau of Regional/Local Health Operations, *Part 1, Local Health Agency Budget Reports, Fiscal Year September 1, 1999 to August 31, 2000*, Austin, Texas, 2001; Telephone interviews with City of Harlingen Health Department, City of Brownsville Health Department, and City of McAllen Health Department, October 25, 2002, and November 18, 2002.

Table 4.2 shows the populations and types of available health care facilities in the *municipios* on the border of the three Mexican states that are adjacent to the study area.

Table 4.2
Mexican Border Health Care Services

Municipios Bordering Study Area	2000 Population	Clinics, Mobile Units, Welfare Centers	General Hospitals	Specialty Hospitals
<i>State of Coahuila:</i>				
Acuña	128,130	7	2	1
Guerrero	2,050	3	0	0
Hidalgo	1,441	1	0	0
Jimenez	9,724	7	0	0
Nava	23,019	4	0	0
Piedras Negras	110,487	11	3	0
<i>State of Nuevo Leon</i>				
Anáhuac	18,524	12	0	0
<i>State of Tamaulipas:</i>				
Camargo	16,787	6	0	0
Guerrero	4,366	3	0	0
Gustavo Días Ordáz	16,264	4	0	0
Matamoros	418,141	44	4	0
Mier	6,788	5	0	0
Miguel Alemán	25,704	6	0	0
Nuevo Laredo	310,915	16	4	0
Reynosa	420,463	27	4	1
Rio Bravo	104,229	15	1	0
Valle Hermoso	<u>58,573</u>	<u>12</u>	<u>1</u>	<u>0</u>
TOTALS	1,675,605	183	19	2

Note: These numbers are for public facilities in existence in 1999.

Sources: Instituto Nacional de Estadística, Geografía e Informática (INEGI), Coahuila, *Población Total por Grandes Grupos de Edad Según Municipio, 2000*, online at http://coah.inegi.gob.mx/sociodem/espanol/municipal/mun_02.html, accessed September 13, 2002; INEGI, Tamaulipas, *Población Total por Grandes Grupos de Edad Según Municipio, 2000*, online at http://tamps.inegi.gob.mx/sociodem/espanol/municipal/mun_02.html, accessed September 13, 2002; INEGI, Nuevo Leon, *Población Total por Grandes Grupos de Edad Según Municipio, 2000*, online at http://nl.inegi.gob.mx/sociodem/espanol/municipal/mun_02.html, accessed November 19, 2002; Secretaría de Salud de México, *Situación de la Salud 2000*, online at <http://www.salud.gob.mx>, accessed September 24, 2002 (zip file s_salud2000.zip, downloaded from “Bases de datos” page, unzipped Excel files SIT_COA_2000.xls, SIT_NL_2000.xls, and SIT_TAM_2000.xls, tab Pag11Rec, “Recursos Materiales y Humanos por Jurisdicción y Municipio, 1999”).

Public health services in Mexico are centralized, while, in the U.S., they vary greatly from state to state and even from county to county. This difference affects border cooperation. For example, usually the Mexican side must obtain state or federal approval to create new programs and/or liaisons with local U.S. programs. State and federal officials may not become actively involved in local projects, but they must at least know about them and approve them. On the U.S. side, the degree to which high-level state and federal officials must be apprised of new programs or liaison activities depends on the method of funding and on the particular state’s health care structure. Secondly, while services are not completely uniform in Mexico’s northern border, they share some level of consistency due to the vertical lines of communication characterizing the system. U.S. health officials, on the other hand, lack a unified voice, making large-scale binational cooperation more difficult.

Border Health Programs

United States-Mexico Border Health Commission

The U.S.-Mexico Border Health Commission is in a unique place among all the organizations addressing border health issues due to the high political level of its binational members, the state and federal influence they have, and the leverage they can bring to the table. The idea for a binational border commission started in Texas in the late 1980s, and Congress passed the United States-Mexico Border Health Commission Act in 1994 authorizing the U.S. to enter into an agreement with Mexico to establish a commission for the purpose of strengthening binational cooperation in public health between the two countries. This commission was charged with several duties, the first of which was to carry out a comprehensive needs assessment of the U.S./Mexico border aimed at identifying and evaluating existing and potential health problems, with other responsibilities after this was completed. The needs assessment report was completed in 1999 by the design team, a group of representatives from various agencies and organizations that performed background work before the commission was official.³

The U.S.-Mexico Border Health Commission was officially created in July 2000 when the U.S. Health and Human Services Secretary (then Donna Shalala) and the Mexican Minister of Health (then José Antonio Gonzales) signed a memorandum of agreement to establish the commission. Secretary Shalala had sworn in the 12 U.S. commissioners in January 2000—they consist of the chief health officers from each of the four border states, plus two more people from each state nominated by the governors of each state and appointed by the Secretary of Health and Human Services. The Mexican section also has 12 commissioners (two from each of the six border states) plus the Mexican Minister of Health, for a binational total of 26 commissioners including the U.S. Secretary of Health and Human Services.⁴

The first official commission meeting was held in November 2000, and the commission met again in March 2001 for strategic planning. Its mission is to “provide international leadership to optimize health and quality of life along the U.S./Mexico border,” and it is authorized to do the following activities to carry out its mission:

- Conduct or support health promotion and disease prevention in the border area;
- Conduct or support the establishment of a coordinated system which uses advanced technologies to gather health-related data and monitor health problems in the border area;
- Conduct public health needs assessments in the border area and conduct or support investigations, research, or studies designed to identify and monitor health problems on the border; and
- Provide financial, technical, or administrative support to assist the efforts of public and private nonprofit entities to prevent and resolve health problems.⁵

Additional goals developed by binational consensus include “collaborating with nongovernmental organizations and other entities involved in public health activities; conducting public outreach to draw attention to border health needs; establishing mechanisms for the movement of funds, equipment, and laboratory supplies and samples between both countries; improving communications between health professionals across the border; policy advocacy and attracting new resources to the border; and serving as a venue for broad participation by health

professionals and others interested in improving border health.”⁶ The commission also developed the “Healthy Border/Frontera Saludable 2010” agenda to promote a variety of health goals along both sides of the border, including the four priority areas of tuberculosis, immunizations, HIV/AIDS, and substance abuse.⁷

The Act received appropriations for the U.S. section of \$800,000 for fiscal year 1998, \$1 million for FY 1999, \$1.5 million for FY 2000, and about \$2 million for FY 2001.⁸ The Mexican government also contributes funding for the Mexican staff and activities.

U.S.-Mexico Binational Commission, Health Working Group

The U.S.-Mexico Binational Commission (BNC) was established in 1981 by Presidents Ronald Reagan and Lopez Portillo to serve as a forum for meetings between Cabinet-level officials from the U.S. and Mexico on a variety of issues important to both nations.⁹ The health secretaries for the two nations created a health working group under the BNC in 1996 to create a mechanism for meetings among high-level officials regarding health issues (public health issues were previously discussed under the science and technology group). The group initially prioritized four areas (migrant health, women’s health, smoking prevention with an emphasis on adolescents, and immunizations), and later added three more areas (aging issues, information-sharing, and substance abuse). Recent progress has been made in addressing all of these areas.¹⁰

Pan American Health Organization

The Pan American Health Organization (PAHO), headquartered in Washington, D.C., was started in 1902 as the Pan American Sanitary Bureau, and since 1949 has served as the regional office for the Americas of the World Health Organization. Its mission statement is the following: “To lead strategic collaborative efforts among member states and other partners to promote equity in health, to combat disease, and to improve the quality of, and lengthen, the lives of the peoples of the Americas.”¹¹ The organization has 27 country offices and nine scientific centers that work with the countries of Latin America and the Caribbean to deal with health issues. PAHO’s members include all 35 countries of the Americas, with Puerto Rico as an associate member, and several European countries as participants and observers. Some of its priorities are vulnerable populations, health care access and equity, promoting collaborations with a variety of partners, preventing contagious and chronic diseases, and reducing infant mortality.¹² PAHO has a field office in El Paso that deals with U.S./Mexico border health issues.¹³

South Texas/Border Region Health Education Initiative

In 1995, the Texas Legislature appropriated funds to The University of Texas Health Science Center at San Antonio (UTHSCSA) to implement the South Texas/Border Region Health Education Initiative to enhance healthcare educational opportunities in South Texas. These funds have gradually replaced the HRSA funding for four of the five regional Area Health Education Centers (AHEC) affiliated with UTHSCSA, which fund professional health education and training projects in different regions of South Texas. The South Central AHEC, or Alamo AHEC, still receives federal funding, though the goal is to transition it to state support as well.¹⁴

Of the \$15,750,000 million appropriated for the 1995-97 biennium, \$6 million was earmarked for educational initiatives in the Lower Rio Grande Valley and \$3.5 million for programs in the Mid-Rio Grande Border Area. The balance was allocated to program activities in the Corpus Christi/Coastal Bend Area and to the initiative's support services at UTHSCSA. Additional complementary funds and in-kind support for particular projects were provided by local entities, community groups, and UTHSCSA.¹⁵ The appropriations were \$15,549,976 for the 1997-99 biennium, \$12,640,076 for the 1999-2001 biennium, and \$14,150,000 for the 2001-03 biennium.¹⁶

In the Lower Rio Grande Valley, the initiative led to many new and expanded education and training programs including new degree programs in dental hygiene, occupational therapy, a master's degree in nursing with a family nurse practitioner major, and health careers opportunity programs. The funds were also used to establish family practice and OB/GYN residency programs and to develop medical student rotations. In the Mid-Rio Grande Border Area, the initiative supported new residency and medical student rotations, a mobile ophthalmology van, a nursing program, the South Texas Environmental Education and Research Center in Laredo, and health careers opportunity activities in several school districts. Throughout the region, the initiative has made possible high-speed electronic access to medical school library holdings and distance learning and telemedicine capability for instruction in the health professions and clinical consultations.¹⁷ Some programs are continuous and some are for one year only, but in all, there were about 60 programs in operation under this initiative in fiscal year 2002.¹⁸

Regional Academic Health Center

In 1997, the 75th Texas Legislature authorized the University of Texas System to establish a Regional Academic Health Center (RAHC) to serve the Lower Rio Grande Valley (Cameron, Hidalgo, Starr, and Willacy Counties). Initial appropriations were \$30 million for construction, and four locations were chosen for the divisions of the RAHC (more funds have since been appropriated and raised from other sources). Medical Education Divisions are in McAllen and Harlingen (which is also the headquarters), the Medical Research Division is in Edinburg, and the Public Health Division is in Brownsville; Medical Education and Medical Research are operated by UT Health Science Center San Antonio and Public Health is run by the School of Public Health at UT Health Science Center Houston. The faculty consists primarily of physicians already practicing in the valley, and students attend their first two years of medical school in San Antonio, and then spend their third and fourth years at a RAHC campus for their clinical training. The first class of students started in the summer of 2002 and will graduate in 2004, and the program has been accepting residents for post-graduate training for several years.¹⁹

Texas Interagency Council on Early Childhood Intervention

The Texas Interagency Council on Early Childhood Intervention runs the Early Childhood Intervention Program that provides services to children of all income levels from birth to their third birthdays. Eligibility is established by an interdisciplinary team that determines if the child exhibits significant delay in one or more learning areas or has conditions such as Down's Syndrome, cerebral palsy, or spina bifida that are known to lead to developmental delays. Services are provided directly to the children, but support to families is available through case

management, counseling, training, and parent support groups. Early childhood intervention services are available from public and private nonprofit agencies.

Table 4.3 shows that, relative to state rates, most of the counties in the study area had lower percentages of low-weight births, a smaller proportion of children enrolled in the Early Childhood Intervention Program for birth to 3-year-olds, and fewer children ages 3-5 enrolled in special education (five of the 11 counties have special education rates higher than the state average, but the more populous counties have lower rates, so the overall rate for the study area is still lower). Since many of these counties are among the poorest in the nation, one wonders if, ironically, some of the higher birth weights which can be associated with gestational diabetes are actually keeping many of the children from the benefits of available programs.

The Early Childhood Intervention program served 2,627 children in the study area and 33,909 total children in Texas in 2000 (2.11 and 2.59 percent, respectively, of the total population of children ages birth to three in those areas), as shown in Table 4.3. These percents are very similar to the numbers served in 1996, when 1,759 children in the study area and 23,821 in Texas received services (2.11 in the study area and 2.46 percent in the state).²⁰

Table 4.3
A Comparison of Early Childhood Intervention Programs with Total Births and Indicators of Learning Disabilities in the Study Area and Texas, 2000

Area	Est. Children Birth to Age 3	Children Served: Comprehensive Services	Children Served: Follow Along Services	Total Served	Percent of Population Served	Total Births	Total Births <2,500 grams	Children 3-5 in Special Education (2001-2002)	Percent 2000 Births in Special Education
Cameron	31,780	644	113	757	2.38	8314	502	623	7.5
Dimmit	860	17	5	22	2.56	165	12	23	13.9
Hidalgo	53,812	822	141	963	1.79	15359	969	1,140	7.4
Kinney	176	6	0	6	3.41	37	4	7	18.9
Maverick	4,262	150	8	158	3.71	996	66	53	5.3
Starr	6,863	83	17	100	1.46	1459	94	115	7.9
Val Verde	3,697	106	14	120	3.25	889	67	127	14.3
Webb	19,090	280	98	378	1.98	5777	403	280	4.8
Willacy	1,690	37	12	49	2.90	406	28	30	7.4
Zapata	1,116	16	3	19	1.70	244	23	32	13.1
Zavala	1,082	38	17	55	5.08	202	24	27	13.4
Study Area	124,428	2199	428	2627	2.11	33,848	2,192 (6.5%)	2,457	7.3
Texas	1,307,413	29,407	4,502	33,909	2.59	363,325	26,751 (7.4%)	37,253	10.3

Sources: Texas Interagency Council on Early Childhood Intervention, *FY 2000 ECI Services by County* (Austin, Tex., 2001), pp. 1-10; Texas Department of Health, Bureau of Vital Statistics, *Texas Vital Statistics 2000 Annual Report*, Tables 9 and 10, online at <http://www.tdh.state.tx.us/bvs/stats00/contents.htm>, accessed August 21, 2002; and Texas Education Agency, *Count of Special Education Students by Selected Counties and the State for Ages 3, 4, and 5, 2001-2002* (Public Information Request), Austin, Texas, September 2002.

Binational Programs

Binational health care initiatives offer challenges and opportunities. Working in a binational setting is fraught with difficulties but has the advantage of utilizing two different public health systems that can contribute complementary services and share the burden of addressing common problems.

Binational programs have existed for many years and constitute an important resource for new or enhanced projects in the region. They usually center around a specific problem or disease such as the reduction of local pollution, water management, anencephaly, emergency medical services, HIV/AIDS, and tuberculosis. Binational tuberculosis-control initiatives are particularly well-developed and can provide both lessons and resources for future binational endeavors.

All of the projects currently in operation have an existing set of contacts, an intimate knowledge of the activities that can be shared, experience with setting up and maintaining binational projects, and can possibly be replicated to include issues and diseases not currently addressed. They are one obvious point of departure for increasing binational health care activities in the region. Some of these programs are briefly reviewed below.

The U.S.-Mexico Border Health Association (USMBHA), established in 1943 as an alliance of concerned individuals and organizations from both sides of the border, operates out of the regional field office of the Pan American Health Organization (PAHO) in El Paso. It has a broad scope and maintains active communication among its members in all U.S. and Mexican states.²¹ USMBHA and PAHO are also facilitating seven sister-city binational health councils along the Texas/Mexico border. Each pair of cities has its own council and priorities set by local officials, health officials, and others in the two communities, and the Texas Department of Health is working with the councils to help them coordinate with other border programs that relate to their priorities and eliminate duplicate efforts.²²

Another important binational effort is Ten Against TB. The program is an official multi-state initiative to strengthen cooperation and tuberculosis control programs on both sides of the border (the “ten” refers to the six Mexican states and four U.S. states along the border). Specifically, it is aimed at reducing morbidity, mortality, and disease transmission through these priorities: establishing a binational case-management and referral system, 100 percent use of Directly Observed Therapy (DOT), increasing investigations of patient contacts, strengthening laboratory capacity, educating providers, and upgrading computer and telephone infrastructure to facilitate communications between the partners.²³ The special significance of Ten Against TB, a group created through a long and complex process of genuine binational consensus, is that it was one of the first truly binational health care efforts involving the governments of both countries as well as those of all the border states.

Local binational tuberculosis programs are in operation in El Paso/Ciudad Juarez (Juntos Binational Tuberculosis Project), Laredo/Nuevo Laredo (Los Dos Laredos project), and in the Lower Rio Grande Valley with the Grupo Sin Fronteras project in Brownsville/Matamoros and McAllen/Reynosa. The projects, funded by the Centers for Disease Control and Prevention (CDC) through the Texas Department of Health (TDH), have been very successful in developing effective linkages with the Mexican public health system and have experimented with sharing

some lab resources and patient data. The CDC and TDH are also involved in the binational TB card project, where they plan to give cards to patients on either side of the border with multi-drug-resistant TB that state the patients' current treatment regimen, so they can present the card to doctors and receive the appropriate medications, paid for by Texas if the patient cannot afford them, in an effort to prevent the spread of this dangerous disease (which is made worse by people crossing the border back and forth and not sticking to consistent drug regimens).²⁴

The Migrant Clinicians Network (MCN) has implemented a binational tuberculosis tracking system to follow up and refer to appropriate health services patients with active tuberculosis or in preventative therapy who migrate within the United States or into Mexico. The project has been very successful in keeping track of the individuals enrolled in the network and in establishing linkages with the Mexican health care system. As of June 2002, the tracking system had a cumulative enrollment of over 1,300 patients from 40 U.S. states and Mexico (up from 509 patients in 1999). New patients are continually being enrolled; for example, in the first quarter of 2002, they enrolled 32 patients from Texas and one from Florida, and in the second quarter of 2002, 38 patients from Texas, one each from four other U.S. states, and one from Mexico were enrolled.²⁵

Another project facilitated by TDH that started in 1999 and is still under development is the International Border Health Information System. This is an initiative to expand on previous efforts to establish regular communication links between Texas and the four Mexican states that it borders. A needs assessment by TDH showed that some barriers to communications were not enough phone lines and computers in the health departments along the border in the Mexican states, so Texas is contracting with local health departments along the Texas border, who are in turn working with health departments on the Mexican side to pay for dedicated phone lines, computers, and Internet connections. Phase 1 of the project is underway, which is connecting border health jurisdictions in Tamaulipas and Nuevo Leon (phase 2 is Coahuila and phase 3 is Chihuahua). The main goals are to expedite communications between the health departments on both sides of the border (which is already going on through TDH's Office of Border Health), and to establish a binational health surveillance information system to help in cases of natural or man-made emergencies (which is still under development). The project is being supported by the Border Governors' Conference, which consists of the 10 governors from all the border states (four U.S. states and six Mexican states).²⁶

In the area of the environment and environmental health, a binational program called Border XXI was initiated in 1996 by the U.S. Environmental Protection Agency and others. It ended in 2002 and a new program called Border 2012 is being proposed to take its place. This is another multi-year binational planning effort being developed by the U.S. Environmental Protection Agency, the U.S. Department of Health and Human Services, Mexico's Secretariat of Environment and Natural Resources, Mexico's Secretariat of Health, the U.S. border Tribes, and the environmental agencies from each of the ten U.S. and Mexican border states. The mission of the proposed program is "to protect public health and the environment in the U.S./Mexico border region, consistent with the principles of sustainable development."²⁷ These programs are the latest in a series of formal and informal cooperative efforts developed under the "La Paz Agreement," also known as the "Agreement between the United States of America and United

Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area,” signed in La Paz, Mexico, in 1983 by Presidents Reagan and De la Madrid.²⁸

Other multi-state binational initiatives include the International Boundary and Water Commission (IBWC) dealing with boundary, environmental, and water-related issues between the two nations,²⁹ and the U.S.-Mexico Border Health Commission and U.S.-Mexico Binational Commission, described previously.

HRSA’s Role in the Border Health Care System

The Health Resources and Services Administration (HRSA) is committed to promoting primary care and ensuring quality health services for the underserved. In 1994 the head of HRSA named U.S./Mexico border health as one of HRSA’s eight priority areas and formed a border health task force to prepare a comprehensive report. After this was finished, HRSA created the Border Health Program in 1996 to carry on the task force’s work and to coordinate activities in the border region, and housed this program in the Bureau of Primary Health Care.³⁰ Effective October 1, 2002, the Border Health Program was moved to the Office of International Health, in the Office of the Administrator.³¹

Since HRSA does not provide direct services, but, rather, helps in ensuring their availability, its impact on the study area is the result of HRSA’s direct grants to local entities and block grants to the state. These activities are carried out by HRSA’s four Bureaus: Primary Health Care (BPHC), Maternal and Child Health (MCHB), Health Professions (BHPr), and HIV/AIDS, as well as by “cross-cutting” cooperative projects. They are described next.

Table 4.4 shows the total amount of direct local grants in the study area awarded by HRSA during federal fiscal year 2002. Excluded are funds awarded to projects in the region through HRSA block grants to the state or other programs such as the Hill Burton Hospital Loan Program.

**Table 4.4
HRSA Funding in the Study Area, FY 2002**

Area	BHPr	BPHC	MCHB	Total HRSA Spending in the Tex/Mex Border
Cameron	0	10,011,752	301,512	10,313,238
Dimmit	0	0	0	0
Hidalgo	354,839	4,628,968	0	6,163,656
Kinney	0	0	0	0
Maverick	0	3,797,188	0	3,797,188
Starr	0	1,382,092	0	1,382,092
Val Verde	0	0	0	492,243
Webb	258,912	3,602,660	0	3,861,572
Willacy	0	0	0	0
Zapata	0	0	0	0
Zavala	0	1,204,730	0	1,784,780
Study Area Total	\$613,751	\$25,207,364	\$301,512	\$27,259,876

Source: Frank Cantu, Border Health Field Director, Health Resources and Services Administration, Fax to Lauren Jahnke, November 18, 2002.

Bureau of Primary Health Care

The BPHC supports the delivery of community-based primary and preventative care to underserved and special populations. The bureau's website lists 29 offices, programs, and initiatives that it is involved in.³² Total appropriations for the bureau were \$1.48 billion for FY 2002.³³

In FY 2002, it awarded a total of \$25,207,364 for projects in the study area. Ninety-five percent of these funds went to migrant and community health centers in the study area and several nearby counties (see Table 4.5). The Valley AIDS Council, with locations in Brownsville, McAllen, and Harlingen, received a HRSA grant in 1994 to help with start up but no longer receives direct HRSA funding (though it receives state grants and has other funding sources, for a total budget of \$4,171,968 in 2001).³⁴

In spite of the Bureau of Primary Health Care's efforts to make services available to those who would otherwise have limited or no access to health care, many individuals with little financial resources remain underserved. Due to the low rate of private insurance, poverty, and the limited availability of Medicaid to adults and undocumented children just above the poverty line (though many children are now enrolling in CHIP), the demand for primary care is still much higher than what can be supplied by available resources in the study area.

Table 4.5
Profile of Community/Migrant Health Centers in the Study Area, 2001

C/MHC Indicators	Brownsville Community Health Center	Su Clinica Familiar	Nuestra Clinica del Valle	Vida y Salud Health Systems, Inc.	United Medical Centers	Community Action Council of South Texas	Gateway Community Health Center	South Texas Rural Health Services
Location by City	Brownsville	Harlingen, Raymondville, Santa Rosa, Brownsville, Sebastian*	Pharr, McAllen, Edcouch, Mercedes, Mission, San Juan	Crystal City, Carrizo Springs*, Cotulla*, Uvlade*	Eagle Pass, Del Rio, Brackettville	Rio Grande City, Zapata, Grulla, Roma, Hebbbronville, Benavides, San Isidro*, San Diego*, Freer*	Laredo	Cotulla, Carrizo Springs, Devine, Dilley, Hondo, Pearsall, Uvalde*
Location by County	Cameron	Cameron, Willacy	Hidalgo	Zavala, La Salle*, Uvalde*, Dimmit*	Maverick, Kinney, Val Verde	Starr, Duval, Jim Hogg, Zapata	Webb	La Salle, Dimmit, Medina, Frio
Patient Pop.	17,040	21,055	27,375	6,694	22,578	18,451	11,848	12,938
FTE MDs	8.19	14.07	9.50	2.35	15.5	7.55	5.09	4.0
FTE PAs	2.0	2.0	0	2.0	3.0	4.0	2.0	2.0
FTE NPs/NMs	1.0	6.8	3.0	2.0	1.5	1.0	3.0	0.2
Total Budget	\$8,314,438	\$15,264,504	\$9,549,275	\$4,503,048	\$12,431,638	\$5,477,566	\$8,034,024	\$3,500,032
-CHC 330(e)	3,363,263	2,805,400	3,501,273	1,824,751	3,146,488	1,150,652	3,421,295	1,266,758
-MCH 330(g)	408,981	2,805,400	1,060,616	340,000	486,731	131,440	0	225,069
-State Grants and Programs	229,745	465,881	255,247	696,804	1,699,520	1,230,680	527,689	415,577
-Medicaid	1,107,369	6,026,387	1,133,135	734,819	3,374,727	2,184,141	628,283	599,053
-Medicare	764,390	966,775	763,059	247,251	1,322,719	160,905	412,373	318,447
-Patient Fees	921,325	1,138,518	1,926,293	246,110	1,445,165	282,735	760,605	351,587

* means that the only location in the city or county is an ancillary site such as for WIC or substance abuse treatment.

Notes: The total budget amount includes funding sources not itemized here such as private grants and SCHIP. Nuestra Clinica del Valle was formerly named Hidalgo County Health Care Corporation.

Source: Texas Association of Community Health Centers, Data Compiled by Jennifer Rankin from *2001 Uniform Data System (UDS) Reports* and *TACHC 2002 Membership Directory*, Austin, Texas, September 2002.

Maternal and Child Health Bureau

The MCHB is separated into five main divisions and administers seven major programs that had a total budget of \$942 million in FY 2002.³⁵ The majority of MCHB funds are provided to states in the form of block grants. The state exercises considerable discretion over how the funds are spent. The study area receives maternal and child health funds from the state that originally came from HRSA, but the exact amount is not available. In 2002, in addition to funds provided through the block grant, Brownsville Community Health Center in Cameron County received a special health services grant from MCHB totaling \$301,512.

Bureau of Health Professions

The BHP's mandate is to assist in the development of an adequate and appropriately trained health professional workforce. Its appropriations were \$533 million in FY 2002.³⁶ Its funding to the study area in FY 2002 was \$613,751 (see Table 4.4). One of the programs it has funded in

the past is the Area Health Education Center (AHEC) network, though as mentioned previously, four of the five AHECs affiliated with the University of Texas Health Science Center in San Antonio have been transitioned to state funding (Lower Rio Grande Valley, South Coastal Region, Mid Rio Grande Border, and Winter Garden Border AHECs) and only one still receives HRSA funds (Alamo AHEC).³⁷ The AHECs have performed an effective and important role in developing, recruiting, and retaining primary care professionals in South Texas. The counties in the study area are in three separate South Texas AHEC regions: the Lower Rio Grande Valley AHEC, the Mid Rio Grande Border AHEC, and the Winter Garden Border AHEC. Each AHEC is administered through a separate 501(c)(3) entity with its own local governing board.³⁸

In 2001, BHPPr entered into a five-year, \$1.2 million cooperative agreement with UTHSCSA to establish the Regional Center for Health Workforce Studies, part of the Center for Health Economics and Policy. This research center will help to “develop effective strategies for attracting the right mix of doctors, nurses and other health care professionals to serve the people who live in the border region,” according to Tommy Thompson, secretary for the U.S. Department of Health and Human Services. The center is the fifth of its kind in the country and the first in the southern U.S., so besides researching issues on the Texas/Mexico border, it will also serve the rest of Texas as well as Arkansas, Louisiana, New Mexico, and Oklahoma.³⁹

Another program funded by the BHPPr is the Medical Hispanic Center of Excellence at UTHSCSA. This project includes a variety of activities for medical students such as summer research programs, free tutoring, mentor programs, Spanish courses, and a fourth-year Spanish-only patient rotation.⁴⁰

BHPPr has given grants to UTHSCSA for programs that encourage students to enter the health professions and provide them with the training needed for admission to the appropriate schools. Table 4.6 summarizes these grants.

Table 4.6
HRSA Grants to UTHSCSA for Health Professions Students

Grant	Time Period	Amount	Purpose
Summer Enrichment HCOP Program	9-1-99 to 8-31-02, plus a 2-year extension	\$53,000	A summer program for undergraduate students from St. Mary's University who are interested in health professions; reviews courses in science, math, critical analytical skills, reading, and writing skills; provides workshops, financial aid information, a student panel, and a tour of UTHSCSA.
Spring Board Program I and II	9-1-99 to 8-31-02, plus a 2-year extension	\$70,000	Provides health career awareness and college preparatory activities for students selected from public high schools in San Antonio; offers enhancement courses in critical thinking, reading, writing, algebra, geometry, and problem solving.
HCOP MCAT Prep Course	9-1-99 to 8-31-02, plus a 2-year extension	\$18,000	Students attend a Princeton Review Course to enhance MCAT test-taking skills and to learn the Medical School admissions process.
Medical Hispanic Center of Excellence (MHCOE) Summer Research Program	9-01-02 to 8-31-05	\$20,000	Medical students are provided with summer research opportunities, summer workshops on health issues, and research in the Hispanic community.
MHCOE Tutoring Program	9-01-02 to 8-31-05	\$19,000	Free tutoring for first and second-year medical students.
MHCOE Pre-matriculation Program	9-01-02 to 8-31-05	\$48,000	Provides an overview of the first-year curriculum and emphasizes reading skills, medical terminology, and other verbal reasoning skills in preparation for Medical School; provides screening and enhancement of study and test skills and an overview of the basic sciences.
MHCOE USMLE Group Tutoring	9-01-02 to 8-31-05	\$48,896	Offered to all sophomores who received MHCOE tutoring during their freshman year; sophomores who are having academic difficulty and are referred to or request individual tutoring also will be eligible for USMLE group tutoring.
Health Career Awareness Presentations	10-01-02 to 9-30-03	\$52,000	Provides presentations on a wide variety of health careers through video, interaction, and discussion; available to students from pre-school through college and also available as faculty in-service workshops.

Source: Patty Cerda-Arguijo, Program Coordinator, UTHSCSA, e-mail to Lauren Jahnke, November 20, 2002.

The BHP is responsible for the National Health Service Corps (NHSC), a loan repayment and scholarship program that places many health professionals in underserved areas. Many NHSC-supported health professionals are currently employed in the study area (this program was formerly housed in the Bureau of Primary Health Care). The bureau is also responsible for the Health Professions Shortage Areas program.

Another program funded through the Health Professions Bureau is the Health Education Training Centers Alliance of Texas (HETCAT). HETCAT, administered by UTHSCSA, was established to promote an effective and efficient educational structure for training health professionals and other health care providers and, therefore, improve the supply, distribution, and quality of health personnel in Texas and particularly in the Texas/Mexico border region. The study area is included in the South Central Region of HETCAT.

HIV/AIDS Bureau

The HIV/AIDS Bureau administers the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act. The Act was signed into law in August 1990 (and amended and re-authorized in May 1996 and November 2000) to improve the quality and availability of care for people with HIV/AIDS and their families. HRSA's HIV/AIDS Bureau conducts programs to benefit low-income, uninsured, and underinsured individuals and families affected by HIV/AIDS, and is the largest single source after Medicaid and Medicare for federal funding to these programs. The bureau is divided into five offices and three divisions.⁴¹ Total appropriations for the bureau for FY 2002 were \$1.9 billion.⁴² Funding from the bureau to the study area in FY 2002 was \$1,179,849.⁴³

Cross-Cutting Activities

Within HRSA, cross-cutting activities are programs which apply to many different bureaus' efforts. They include HIV/AIDS, immunizations, infant mortality, rural health, and managed care.

Health Professions

The U.S./Mexico border region has had severe shortages of health professionals for a long time. The study area has seen numbers of some health professionals improve in the past decade (such as primary care physicians), but most of these increases are not relative to the booming growth of the border population, so there continues to be a shortage of health care providers in every county in the study area.

Table 4.7 shows the federally designated professional shortage areas in the region. Health Professional Shortage Area designation—on a scale from 0 to 100 with 0 representing the greatest need—is based on the population-to-health-professional ratio, and proximity as well and accessibility to medical services. These shortage area designations are almost identical to the situation in 1996, except that a different scale was used to show the degree of need (1 to 4).⁴⁴

Table 4.7
Health Professional Shortage Areas and Medically Underserved Areas by County, 2002

County	Degree of Dental Care Health Professional Shortage	Degree of Primary Care Health Professional Shortage	MUA Status (national index = 62)
Cameron	18, whole county	10, whole county 21, one health facility	Partial designation—48 census tracts averaging 44.6
Dimmit	22, whole county	11, whole county (listed with Zavala)	42.0
Hidalgo	18, whole county	11, whole county 9, two prisons	54.4
Kinney	22, whole county	11, whole county	19.4
Maverick	23, whole county	12, whole county	44.4
Starr	24, whole county	18, whole county	45.7
Val Verde	16, whole county	10, whole county	45.6
Webb	20, whole county	10, whole county	Partial designation—19 census tracts averaging 38.2
Willacy	20, whole county	whole county (no score, proposed for withdrawal)	50.0
Zapata	14, whole county	17, whole county	38.8
Zavala	26, whole county	11, whole county (listed with Dimmit)	36.2

Note: The degree of shortage is measured from 0 to 100, with 0 being the greatest need. For MAU status, numbers under 62 are considered underserved.

Sources: Texas Department of Health, *Health Professional Shortage Areas (HPSAs)*, online at <http://www.tdh.state.tx.us/dpa/hpsa.htm>, accessed August 26, 2002; Health Resources and Services Administration (HRSA), *MUA/MUP Database*, online at <http://bphc.hrsa.gov/dsd/default.htm>, accessed August 26, 2002; and HRSA, *Health Professional Shortage Areas Database*, online at <http://www.bphc.hrsa.dhhs.gov/databases/newhpsa/newhpsa.cfm>, accessed September 17, 2002.

For the designation of a Medically Underserved Area (MUA, last column in Table 4.7), the geographic region is compared to the rest of the nation using an index of medical underservice (IMU) resulting from the weighted values of four variables: percentage of aging population, poverty rate, infant mortality rate, and the ratio of primary care physicians per 1,000 population. The value of the national index is 62.0, and areas with index values below that number are designated as underserved. All but two of the study counties qualify for a total MUA designation. In Cameron and Webb Counties, only selected census tracts meet the criteria for underservice. These numbers are all unchanged from 1996, except that two more census tracts were added to the designation in both Cameron and Webb counties.

Physicians

Table 4.8 shows the total number of practicing primary care physicians and specialists in the study area, Texas, and the United States. Nationwide, 35 percent of all practicing physicians are in primary care (defined here as family practice, general practice, internal medicine, obstetrics/gynecology [OB/GYN], and pediatrics). In Texas and in the study area, this percent

risers to 42 percent and 57 percent, respectively (both increasing over the past six years—these percents were 39 and 51 percent in 1996).⁴⁵

Table 4.9 presents the relative size of primary care specialties in the study area, Texas, and the United States. In the study area, family and general practice accounts for 35 percent of primary care physicians, 27 percent specialize in internal medicine, 13 percent are in obstetrics and gynecology, and 24 percent are pediatricians (the most noticeable trend over the past six years is that the percent in family/general practice has decreased by 8 and the percent in pediatrics increased by 6). Some of the least populous counties are lacking physicians in certain specialties. The state of Texas proportions are similar to those for the study area, with a slightly lower percentage of pediatricians and slightly higher percentage of physicians in the other primary care areas (35, 32, 14, and 18 percent respectively).

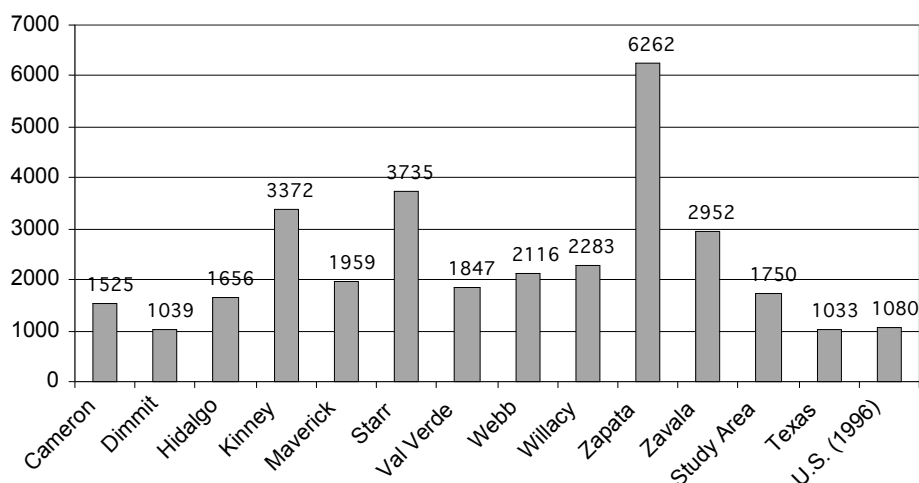
Figure 4.1 shows that the average population per primary care physician in the study area in 2002 (1,750) is significantly larger than that of the state and the country as a whole (1,033 and 1,080, respectively). For the border counties of Kinney, Starr, Zapata, and Zavala, the size of the population per practitioner is much larger than the study area average. The average population per primary care physician has slightly improved for the study area in the past eight years (was 2,015 in 1994), and slightly worsened for the state (973 in 1994).⁴⁶

Table 4.8
Total Practicing Physicians in the Study Area, Texas, and U.S., 2002

Area	Total Physicians (M.D.s & D.O.s)	Primary Care Physicians	Specialists
Cameron	428	230	198
Dimmit	12	10	2
Hidalgo	629	364	265
Kinney	1	1	0
Maverick	36	25	11
Starr	17	15	2
Val Verde	34	25	9
Webb	187	97	90
Willacy	11	9	2
Zapata	2	2	0
Zavala	5	4	1
Study Area	1,362	782	580
Texas	49,297	20,809	28,488
U.S. (1996)	701,200	247,036	454,164

Sources: Texas State Board of Medical Examiners (TSBME), *Physicians by County then Specialty, May 2002*, online at <http://www.tsbme.state.tx.us/demo/docs/d2002/0502/county.htm>, accessed September 15, 2002; TSBME, *Physicians by Specialty, May 2002*, online at <http://www.tsbme.state.tx.us/demo/docs/d2002/0502/spec.htm>, accessed September 15, 2002; Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Information and Analysis, *United States Health Workforce Personnel Factbook*, Tables 101 and 203, online at <ftp://ftp.hrsa.gov/bhpr/nationalcenter/factbook.htm>, accessed September 16, 2002; and American Osteopathic Association, *Osteopathic Medicine*, online at <http://www.aoa-net.org/Consumers/omed.htm>, accessed September 16, 2002.

Figure 4.1
Population per Primary Care Physician in the Study Area,
Texas, and U.S., 2002



Sources: Table 4.8; and Texas Department of Health, Office of Health Information and Analysis, *Texas Population Projections for 2002*, online at <http://www.tdh.state.tx.us/dpa/popdata/pg02.htm>, accessed September 16, 2002.

Table 4.9
Primary Care Physicians by Specialty in the Study Area and Texas, 2002

Area	Family and General Practice	Internal	OB/GYN	Pediatrics	TOTAL
Cameron	60	81	33	56	230
Dimmit	4	1	3	2	10
Hidalgo	134	97	45	88	364
Kinney	0	1	0	0	1
Maverick	7	5	3	10	25
Starr	7	3	0	5	15
Val Verde	14	6	2	3	25
Webb	39	17	17	24	97
Willacy	7	1	0	1	9
Zapata	0	1	0	1	2
Zavala	3	1	0	0	4
Study Area	275	214	103	190	782
Texas	7,347	6,749	2,951	3,762	20,809

Sources: Texas State Board of Medical Examiners (TSBME), *Physicians by County then Specialty, May 2002*, online at <http://www.tsbme.state.tx.us/demo/docs/d2002/0502/county.htm>, accessed September 15, 2002; and TSBME, *Physicians by Specialty, May 2002*, online at <http://www.tsbme.state.tx.us/demo/docs/d2002/0502/spec.htm>, accessed September 15, 2002.

Registered and Vocational Nurses

A 1988 GAO study found a population-to-nurse ratio of 215:1 for the counties in the study area, compared to a ratio of 179:1 for the state of Texas.⁴⁷ By 1996 these figures had improved to 162:1 for the study area and 168:1 for the state as a whole.⁴⁸ In 2002, the ratio had worsened for the study area to 184:1, while improving for Texas to 111:1.

Figure 4.2 shows that the ratio in Kinney is better than the state ratio of 111:1, but the rest of the counties in the study area have worse nurse ratios than the state average (in 1996, four counties in the study area were better than the state average). It should be noted, however, that these ratios combine licensed vocational nurses (LVNs) with registered nurses (RNs) and that LVNs have far less training and are less able to practice independently than RNs. It should also be noted that statistics that depend on population may not truly reflect the need, as most “winter Texans” are not included in the population counts since most leave the border by April, when the census is conducted.

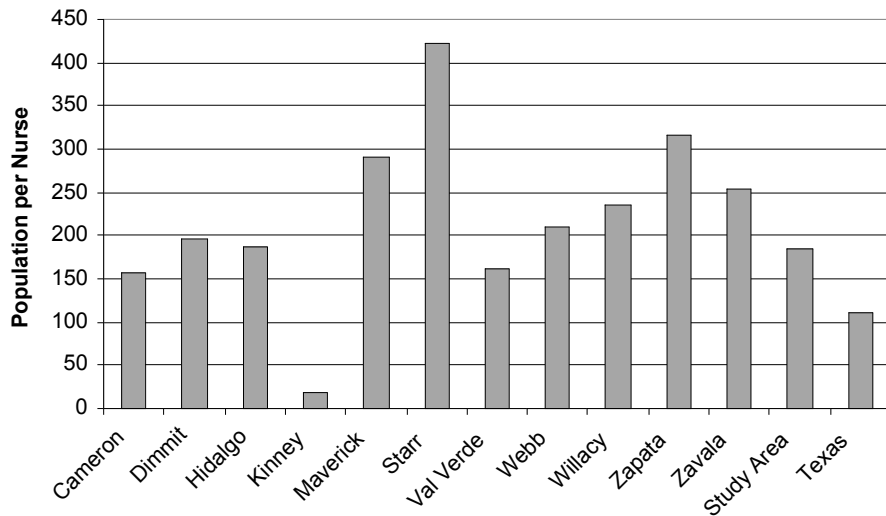
While vocational nurses comprise a little more than 59 percent of the nurse population statewide, they are about 68 percent of the total in the study area (up from 45 percent in 1996). Therefore, one trend contributing to the rise in nurses practicing in the study area in the last six years (5,827 in 1996 compared to 7,440 in 2002) has been a large increase in the number of LVNs. Although the overall number of nurses has risen, the population of the study area has grown much faster than the rate of nurses, causing a decrease in the ratio of nurses to population.

Table 4.10
Licensed Nurses in the Study Area and Texas, 2002

Area	Registered Nurses Full-time	Registered Nurses Part-time	Vocational Nurses	Total FTE Nurse Equivalents
Cameron	1,303	72	894	2,233
Dimmit	18	0	35	53
Hidalgo	1,990	12	1,175	3,227
Kinney	11	4	173	186
Maverick	79	2	89	169
Starr	55	2	77	133
Val Verde	111	12	168	285
Webb	603	43	356	981
Willacy	37	3	49	88
Zapata	16	1	23	40
Zavala	12	3	33	47
Study Area	4,235	265	3,072	7,440
Texas	108,194	19,080	75,285	193,019

Sources: Texas Board of Nurse Examiners, *Currently Licensed Texas RNs by County of Residence, 09/01/2001*, online at <ftp://www.bne.state.tx.us/01-cntstat.pdf>, accessed September 15, 2002; and Texas Board of Vocational Nurse Examiners, Data on LVNs compiled by Pat O’Quinn, Licensing Supervisor, Austin, Texas, September 2002.

Figure 4.2
Population per Nurse FTE in the Study Area and Texas, 2002



Sources: Table 4.10 and Texas Department of Health, Office of Health Information and Analysis, *Texas Population Projections for 2002*, online at <http://www.tdh.state.tx.us/dpa/popdata/pg02.htm>, accessed September 16, 2002.

Dentists

The Texas State Board of Dental Examiners reports a total of 239 dentists with active licenses in the study area as of September 2002 (see Table 4.11). Eighty-eight percent of these dentists are located in Cameron, Hidalgo, and Webb Counties.

Table 4.11
Dentists in the Study Area, Texas, and U.S., 2002

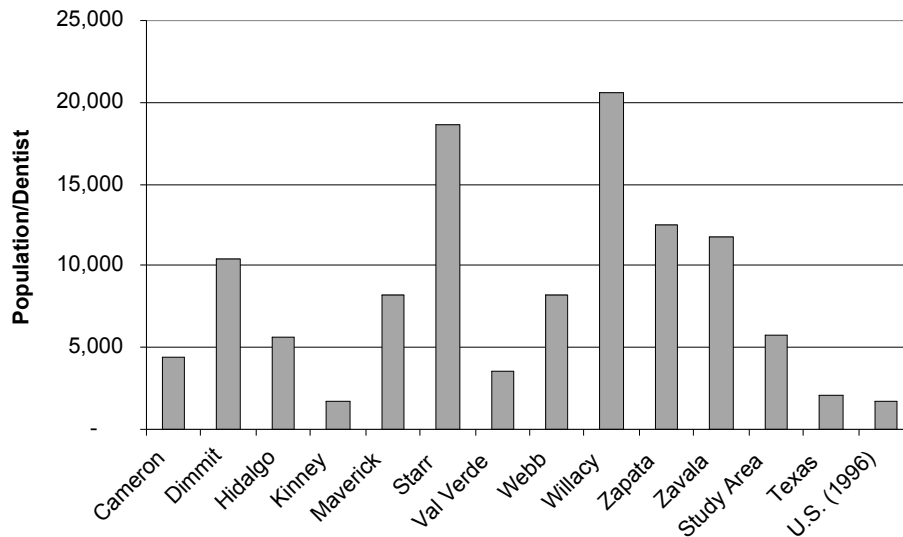
Area	Total Dentists	Population per Dentist
Cameron	79	4,440
Dimmit	1	10,394
Hidalgo	107	5,632
Kinney	2	1,686
Maverick	6	8,161
Starr	3	18,676
Val Verde	13	3,552
Webb	25	8,210
Willacy	1	20,551
Zapata	1	12,523
Zavala	1	11,808
Study Area	239	5,726
Texas	10,147	2,119
U.S. (1996)	154,900	1,722

Sources: Texas State Board of Dental Examiners, Data on current active dental licenses compiled by Sherri Sanders, Director of Licensing and Examinations, Austin, Texas, September 2002; Texas Department of Health, Office of Health Information and Analysis, *Texas Population Projections for 2002*, online at <http://www.tdh.state.tx.us/dpa/popdata/pg02.htm>, accessed September 16, 2002; and Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Information and Analysis, *United States Health Workforce Personnel Factbook*, Table 301, online at <http://bhpr.hrsa.gov/healthworkforce/factbook.htm>, accessed September 16, 2002.

Figure 4.3 shows that in the study area, the population per dentist was more than twice the average for the state and more than three times the ratio for the nation in 2002. Shortages are particularly severe in Dimmit, Starr, Willacy, Zavala, and Zapata Counties, with only one to three dentists in each county and populations per dentist in the five figures. The population per dentist has worsened in the study area since 1996, when the number was 4,633 people per dentist.⁴⁹

All counties in the region are federally designated dental health professional shortage areas (see Table 4.7 on page 42). According to a report from 1991, there are two main reasons for the shortage of dentists in the study area. One is the poverty of the population, and the other is the large supply of dentists on the Mexican side of the border whose rates are substantially below those on the U.S. side.⁵⁰ These factors still hold true a decade later.

Figure 4.3
Population per Dentist in the Study Area, Texas, and U.S., 2001



Source: Data in Table 4.11.

Nurse Practitioners and Physician Assistants

Nurse practitioners and physician assistants are licensed to perform many diagnostic and therapeutic services under the supervision of a physician. The availability of these health professionals increases access to primary care services and helps alleviate health professional shortages. Table 4.12 indicates the availability of nurse practitioners and physician assistants in the study area, which has increased dramatically in the past six years. Ninety-three physician assistants were working in the study area as of September 2001 (up from 25 in 1995), mostly practicing in Cameron and Hidalgo Counties. These two counties also have a majority of the nurse practitioners, which totaled 156 in the study area (up from 75 in 1995).⁵¹

Table 4.12
Nurse Practitioners and Physician Assistants in the Study Area
and Texas, 2001

Area	Nurse Practitioners	Physician Assistants
Cameron	49	21
Dimmit	1	1
Hidalgo	66	43
Kinney	0	0
Maverick	4	3
Starr	0	9
Val Verde	4	5
Webb	31	3
Willacy	0	4
Zapata	1	1
Zavala	0	3
Study Area	156	93
Texas	4,488	2,419

Sources: Texas Board of Nurse Examiners, *Currently Licensed Texas RNs Recognized as Advance Practice Nurses, by County and Recognition Group, 09/01/2001*, online at <ftp://www.bne.state.tx.us/01-apn.pdf>, accessed September 15, 2002; and Texas State Board of Medical Examiners, *Physician Assistants by County, September 2001*, online at <http://www.tsbme.state.tx.us/demo/pa/pa2001/pacounty0901.htm>, accessed September 15, 2002.

Projections of Required Health Resources through 2010

The size of the workforce needed to provide adequate health care is controversial and depends upon the assumptions one makes about workload, age distribution of the population, specialty distribution of the workers, substitutability between providers, kinds of insurance coverage, incentives for both providers and consumers, and rationing mechanisms.⁵²

The population of the study area is currently medically underserved, has experienced rapid growth over the past decade, and is expected to keep growing over the next 20 years, even assuming no net migration. Table 4.13 shows that the age distributions of the study area populations in 2000 and 2010 have about 6 to 9 percent more people ages 0-17 and 2 to 3 percent less above age 65 when compared with the U.S. distribution for 2000. One could conclude that these underlying demographics necessitate a lower need for health professionals than that suggested by comparable national averages. But, in fact, the data underestimates the health needs of the area's population in two ways.

Table 4.13
Population Distribution in the Study Area

Age Groups	2000		2010 – no net migration (scenario 0)		2010 – current migration rate (scenario 1)		2000 U.S.
	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Percent</i>
0-17	454,644	34.9	529,391	34.3	559,546	31.7	25.7
18-24	142,096	10.9	170,784	11.1	220,898	12.5	9.6
25-44	357,769	27.5	402,011	26.0	479,965	27.2	30.2
45-64	217,934	16.8	289,089	18.7	331,199	18.8	22.0
65 +	128,605	9.9	152,925	9.9	171,811	9.7	12.4
Totals	1,301,048	100	1,544,200	100	1,763,419	100	100

Note: According to the Texas State Data Center, the most accurate projected populations will likely be somewhere between the 0 and 1 scenarios (the center also calculates a 0.5 migration scenario).

Sources: Texas State Data Center, see Appendices A and B of this report; and U.S. Census Bureau, *Census 2000 Summary File 2, United States, Total Population (GCT-P5)*, online at <http://factfinder.census.gov/home/en/sf2.html>, accessed September 16, 2002.

First, there are a large number of “snowbirds” or “winter Texans”—residents of other states, not captured by the census in Texas, who come to South Texas from colder northern states in the fall or early winter and stay through spring. This population group is made up of individuals mostly in their 50s, 60s, and 70s who are insured or eligible for Medicare. Their utilization of physicians and hospitals helps finance the current level of health services but also reduces their availability for the rest of the population that is included in the census.

Second, a number of affluent Mexicans use the health services in Harlingen, Brownsville, McAllen, and Laredo. Their utilization contributes to financing local health services, but, at the same time, makes them less available to the U.S. border residents. As more residents of the Mexican side of the border are employed on the U.S. side or become entitled to Medicare payments through eligibility for Social Security benefits, there will be an even larger drain on the health care services that are available to Texas border residents.

Table 4.14 shows the numbers of nurses and physicians per 100,000 population in 1996 for the United States and comparable 2002 figures for Texas and the study area. The providers per 100,000 in the study area are much less than those of both Texas and the U.S. Interestingly, the study area has a higher proportion of primary care physicians than specialists, while the rate of specialists is much higher than that of primary care providers in the state as a whole and in the U.S.

Table 4.14
Number of Physicians and Nurses per 100,000 Population in
the Study Area, Texas, and U.S.

Health Professionals	Study Area Totals	Study Area Rates per 100,000 (based on 2002 est. pop.)	Texas Rates per 100,000 (based on 2002 est. pop.)	U.S. Rates per 100,000 (1996)
Registered Nurses (FTEs)	4,368	319	548	707
Primary Care Physicians	782	57	97	93
Specialty Physicians	580	42	132	170

Sources: Tables 4.8 and 4.10 in this chapter; Texas Department of Health, Office of Health Information and Analysis, *Texas Population Projections for 2002*, online at <http://www.tdh.state.tx.us/dpa/popdata/pg02.htm>, accessed September 16, 2002; and Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Information and Analysis, *United States Health Workforce Personnel Factbook*, Table 401, online at <http://bhpr.hrsa.gov/healthworkforce/factbook.htm>, accessed September 16, 2002.

Table 4.15 indicates how many registered nurses and physicians would have to be practicing in the study area in 2002 to equal the 1996 national ratios of 707 nurses, 93 primary care physicians, and 170 specialty physicians per 100,000 population. The numbers are remarkably high: they are 9,675 nurses (5,307 more than are practicing now), over 2,330 specialists (1,750 more than current), and 1,267 primary care practitioners (485 more than current). These numbers have worsened, i.e., the deficit has gotten larger, in the past five years.

Table 4.15
Additional Physicians and Nurses Needed to Reach National Ratios per
100,000 Population in the Study Area in 2002

Indicator	Registered Nurses (FTEs)	Primary Care Physicians	Specialty Physicians
Study Area Practitioners	4,368	782	580
Number Required to Achieve National Average	9,675	1,267	2,330
Deficit or Surplus	-5,307	-485	-1,750

Source: Calculations on data used in Table 4.14 of this chapter.

Similar estimates for 2010 are shown in Table 4.16 assuming both extremes for migration rates (no net migration, or scenario 0, and current high migration rates, or scenario 1). Even allowing for the current low staffing levels and no net migration, an additional 6,550 RNs, 648 primary care physicians, and 2,049 specialty physicians will be needed by 2010 to accommodate just the natural population growth (ignoring immigration and providers' retirement and relocation

outside the area). If the population grows at the same rate as it has in recent years (including high immigration), then 8,100 additional RNs, 851 primary care physicians, and 2,422 specialists will be required (without accounting for retirement and relocation).

Table 4.16
Additional Physicians and Nurses Needed to Reach National Ratios per
100,000 Population in the Study Area in 2010

	Additional Population from 2002-2010	Number FTE RNs Needed	Difference from Current Number	Number PCPs Needed	Difference from Current Number	Number Specialists Needed	Difference from Current Number
2010 assuming zero net migration	175,757	10,917	6,550	1,430	648	2,629	2,049
2010 assuming current high migration	394,976	12,467	8,100	1,633	851	3,002	2,422

Sources: Tables 4.13 and 4.14 in this chapter.

Table 4.17 summarizes the total number of additional personnel needed for the three different health professions currently and by 2010 to equal 1996 U.S. standards.

Table 4.17
Summary of Additional Medical Personnel Needed in the Study Area

Indicator	Additional Registered Nurse FTEs Needed	Additional Primary Care Physicians	Additional Specialist Physicians
In 2002 to bring up to U.S. standard	5,307	485	1,750
By 2010 assuming zero net migration	6,550	648	2,049
By 2010 assuming current high migration	8,100	851	2,442

Sources: Tables 4.15 and 4.16 in this chapter.

Notes

¹ Texas Department of Health, *Full Service Local Health Departments and Districts of Texas*, online at <http://www.tdh.state.tx.us/brlho/lhds.htm>, accessed September 13, 2002.

² Texas Department of Health, *Non-Participating Local Health Departments*, online at <http://www.tdh.state.tx.us/brlho/nonlhd.htm>, accessed September 13, 2002.

³ U.S.-Mexico Border Health Commission Design Team, *Health on the U.S.-Mexico Border: Past, Present, and Future; A Report to the United States-Mexico Border Health Commission*, online at http://www.borderhealth.gov/About/Border_Health_Report/border_health_report.html, accessed September 19, 2002.

⁴ U.S.-Mexico Border Health Commission, *Events*, online at <http://www.borderhealth.gov/Events/events.html>, accessed September 19, 2002; and Border Information and Outreach Service, "Binational Border Health Commission Comes Online," *Borderlines*, vol. 9, no. 7, August 2001, online at <http://www.us-mex.org/borderlines/2001/bl80/bl80bhc.html>, accessed September 19, 2002.

⁵ Border Information and Outreach Service, "Binational Border Health Commission Comes Online," *Borderlines*, vol. 9, no. 7, August 2001, online at <http://www.us-mex.org/borderlines/2001/bl80/bl80bhc.html>, accessed September 19, 2002.

⁶ Border Information and Outreach Service, "Binational Border Health Commission Comes Online," *Borderlines*, vol. 9, no. 7, August 2001, online at <http://www.us-mex.org/borderlines/2001/bl80/bl80bhc.html>, accessed September 19, 2002.

⁷ Border Information and Outreach Service, "Binational Border Health Commission Comes Online," *Borderlines*, vol. 9, no. 7, August 2001, online at <http://www.us-mex.org/borderlines/2001/bl80/bl80bhc.html>, accessed September 19, 2002.

⁸ Border Information and Outreach Service, "Binational Border Health Commission Comes Online," *Borderlines*, vol. 9, no. 7, August 2001, online at <http://www.us-mex.org/borderlines/2001/bl80/bl80bhc.html>, accessed September 19, 2002.

⁹ U.S. Department of State, *Fact Sheet: Mexico: The Binational Commission*, online at <http://www.state.gov/p/wha/rls/fs/2001/fsjulydec/4990.htm>, accessed September 19, 2002.

¹⁰ U.S. Department of Health and Human Services, Office of Global Health Affairs, *U.S.-Mexico Binational Commission (BNC), The Health Working Group*, online at <http://www.globalhealth.gov/americaffairsusmexico.shtml>, accessed September 19, 2002.

¹¹ Pan American Health Organization (PAHO), *Values, Vision, and Mission*, online at <http://www.paho.org/english/dbi/ecp/mission.htm>, accessed December 2, 2002.

¹² PAHO, *What is PAHO?*, online at <http://www.paho.org/english/dbi/ecp/What-PAHO.htm>, accessed December 2, 2002.

¹³ PAHO, El Paso Field Office, *Pan American Health Organization, U.S.-Mexico Border Office*, online at <http://www.fep.paho.org>, accessed December 2, 2002.

¹⁴ Richard A. Garcia, UTHSCSA, *Message from the Program Director*, online at <http://www.uthscsa.edu/ahec/drctrmsg.htm>, accessed November 25, 2002; and South Central AHEC, *South Central AHEC Frequently Asked Questions and Information*, online at <http://www.alamoahec.org/html/whatis.htm>, accessed November 25, 2002.

¹⁵ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA, Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, October 1999, p. 22.

¹⁶ Joe Chapa, Accountant, South Texas/Border Region Health Education Initiative, UTHSCSA, e-mail to Lauren Jahnke, December 2, 2002.

¹⁷ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA (San Antonio, Tex.: Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, October 1999), pp. 22-23.

¹⁸ Joe Chapa, Accountant, South Texas/Border Region Health Education Initiative, UTHSCSA, e-mail to Lauren Jahnke, December 2, 2002.

¹⁹ Regional Academic Health Center, *RAHC*, online at <http://rahc.uthscsa.edu>, accessed December 2, 2002.

²⁰ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA (San Antonio, Tex.: Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, October 1999), p. 24.

²¹ U.S.-Mexico Border Health Association, *Welcome to the U.S.-Mexico Border Health Association*, online at <http://www.usmbha.org/english/index.htm>, accessed November 25, 2002.

²² Marta Elizondo-Fournier, Coordinator of Communications and International Relations, Office of Border Health, Texas Department of Health, Austin, Texas, telephone interview by Lauren Jahnke, November 27, 2002.

²³ U.S. Health and Human Services Department, Office of Global Affairs, *Ten Against Tuberculosis*, online at <http://www.globalhealth.gov/americaffairsten.shtml>, accessed September 24, 2002.

²⁴ Marta Elizondo-Fournier, Coordinator of Communications and International Relations, Office of Border Health, Texas Department of Health, Austin, Texas, telephone interview by Lauren Jahnke, November 27, 2002.

²⁵ Migrant Clinicians Network, *TB Net Enrollment*, online at http://www.migrantclinician.org/programs/TBNet/tb_enrollment_stats.html, accessed August 26, 2002.

- ²⁶ Marta Elizondo-Fournier, Coordinator of Communications and International Relations, Office of Border Health, Texas Department of Health, Austin, Texas, telephone interview by Lauren Jahnke, November 27, 2002.
- ²⁷ U.S. Environmental Protection Agency, *New U.S.-Mexico Border Environmental Program: Border 2012*, online at <http://www.epa.gov/usmexicoborder/2002/index.htm>, accessed September 24, 2002.
- ²⁸ U.S. Environmental Protection Agency, *New U.S.-Mexico Border Environmental Program: Border 2012*, online at <http://www.epa.gov/usmexicoborder/2002/index.htm>, accessed September 24, 2002.
- ²⁹ International Boundary and Water Commission, *Welcome to the International Boundary and Water Commission*, online at <http://www.ibwc.state.gov>, accessed September 24, 2002.
- ³⁰ Health Resources and Services Administration, *The Border Health Program Priority Unit*, online at <http://bphc.hrsa.gov/bphc/borderhealth/bhpp.htm>, accessed October 2, 2002.
- ³¹ Frank Cantu, Border Health Field Director, Health Resources and Services Administration, e-mail to Lauren Jahnke, December 2, 2002.
- ³² Health Resources and Services Administration, *Bureau of Primary Health Care: Programs, Initiatives, and Offices*, online at http://bphc.hrsa.gov/bphc/index_1.htm, accessed October 2, 2002.
- ³³ Health Resources and Services Administration, *About HRSA*, online at <http://www.hrsa.gov/about.htm>, accessed October 2, 2002.
- ³⁴ Texas Association of Community Health Centers, Data Compiled by Jennifer Rankin from *2001 Uniform Data System (UDS) Reports* and *TACHC 2002 Membership Directory*, Austin, Texas, September 2002.
- ³⁵ Health Resources and Services Administration, *Maternal and Child Health Bureau Factsheet*, online at <ftp://ftp.hrsa.gov/mchb/factsheets/mchb.pdf>, accessed October 2, 2002; and Health Resources and Services Administration, *About HRSA*, online at <http://www.hrsa.gov/about.htm>, accessed October 2, 2002.
- ³⁶ Health Resources and Services Administration, *About HRSA*, online at <http://www.hrsa.gov/about.htm>, accessed October 2, 2002.
- ³⁷ Richard A. Garcia, UTHSCSA, *Message from the Program Director*, online at <http://www.uthscsa.edu/ahec/drcrtrmsg.htm>, accessed November 25, 2002; and South Central AHEC, *South Central AHEC Frequently Asked Questions and Information*, online at <http://www.alamoahhec.org/html/whatis.htm>, accessed November 25, 2002.
- ³⁸ Area Health Education Center of South Texas, *AHEC Home Page*, online at <http://www.uthscsa.edu/ahec>, accessed November 25, 2002.
- ³⁹ The University of Texas Health Science Center San Antonio, "Grant Award Enables UTHSC to Establish Much Needed Workforce Center," *The News*, Vol. XXXIV, No. 46 (Nov. 16, 2001), online at <http://www.uthscsa.edu/opa/issues/New34-46/workforce.html>, accessed November 25, 2002.

⁴⁰ Medical Hispanic Center of Excellence, *Medical Hispanic Center of Excellence*, online at <http://www.uthscsa.edu/hcoe>, accessed December 3, 2002.

⁴¹ Health Resources and Services Administration, *About HIV/AIDS Bureau*, online at <http://hab.hrsa.gov/aboutus.htm>, accessed October 2, 2002.

⁴² Health Resources and Services Administration, *About HRSA*, online at <http://www.hrsa.gov/about.htm>, accessed October 2, 2002.

⁴³ Frank Cantu, Border Health Field Director, Health Resources and Services Administration, Fax to Lauren Jahnke, November 18, 2002.

⁴⁴ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA, Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, October 1999, p. 31.

⁴⁵ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA, Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, October 1999, p. 31.

⁴⁶ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA, Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, October 1999, p. 33.

⁴⁷ Government Accounting Office, *Health Care: Availability in the Texas-Mexico Border Area* (Washington, D.C.: GAO, 1988).

⁴⁸ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA, Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, October 1999, p. 33.

⁴⁹ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA, Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, October 1999, p. 35.

⁵⁰ Ramón Baez, "Availability and Accessibility of Dental Health Services on the Texas-Mexico Border," unpublished paper, The University of Texas Health Science Center, San Antonio, 1991.

⁵¹ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA, Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, October 1999, p. 36.

⁵² Uwe Reinhardt, "Health Manpower Forecasting: The Case of Physician Supply," in *Health Services Research: Key to Health Policy*, ed. Eli Ginzberg (Cambridge, Mass.: Harvard University Press, 1991).

Chapter 5. NAFTA and Trade in Health Services

The North American Free Trade Agreement (NAFTA), signed in November 1993, facilitates trade between the United States, Mexico, and Canada. It removes tariff barriers, restrictions on ownership and travel across the borders for business purposes, and non-tariff barriers to movement of goods and services. This chapter reviews the portion of NAFTA that applies to trade of health services and discusses health service utilization, cross-border, before and after the Agreement. It is crucial for the development of the border region and the improvement of the quality of life and health status of its residents that persistent barriers to free trade be identified, the reasons why they exist be understood, and that initiatives to overcome some of the barriers be sought.

In examining the potential for trade in health services between the United States and Mexico, it is important to note differences in size of health expenditures and health profession workforces between the two countries. In 2000, the U.S. national health expenditure was \$1.299 trillion;¹ this amount represents a per capita expenditure of about \$4618.² The estimated per capita health expenditure in Mexico in 1998 was \$234 (US\$ at official exchange rate).³ In the U.S. there are about 249 physicians per 100,000 people;⁴ in Mexico, the comparable rate is 144 doctors per 100,000 population.⁵ Therefore, the rate of physicians in the U.S. is less than twice the rate in Mexico, but the amount of per capita health expenditure in the U.S. is almost 20 times higher than in Mexico. As for the number of new doctors entering the health professions, approximately 18,000 medical students in the U.S. (M.D.s plus D.O.s)⁶ completed medical school in 1997. In addition, in 2001, 5,934 foreign medical school graduates (45 from Mexico) received certification from the Educational Commission for Foreign Medical Graduates (ECFMG), entitling them to enter residency training programs in the United States.⁷ The number of new medical school graduates in Mexico is more difficult to determine but was estimated to be around 8,000 per year in the mid-1990s.⁸

Provisions of NAFTA Related to Health Services

NAFTA has reinforced existing liberalization of ownership of health facilities and enterprises in the signatory countries. In addition, it facilitates travel and residence for investors from the neighboring countries and establishes procedures for the settlement of investment-related disputes. While NAFTA requires the opening of government contracting to bidders from all the nations, it includes explicit exemptions for government social services including government-run and -financed health services.

NAFTA stipulates that the three signatories should encourage jurisdictions and professional groups to develop mutually acceptable standards and criteria for licensing and certifying professionals and recommend reciprocal recognition of professional qualifications. Engineers, accountants, and architects have already developed agreements, and a number of other professions are in the process of developing binational consensus on educational preparation and practice. In the short run, however, NAFTA allows certain entities and sub-jurisdictions to enter exceptions in the various annexes, and many states have listed reservations. Additional

stipulations include intellectual property and trade in medical goods and services. Table 5.1 summarizes those portions of the Act that pertain to health services.

Table 5.1
Health Provisions of NAFTA

NAFTA	Relevance to Health	Comments
<p>Each federal government must generally treat North American goods in the same manner as its own goods. In addition, Article 301 requires states, provinces, and local governments to treat goods from the other partners as favorably as they treat goods from anywhere, including their own jurisdiction.</p>	<p>The substantial reduction of tariffs and other restraints has led to an increase in sales of medical equipment and supplies from the U.S. to Mexico. In the future, import of pharmaceuticals may be affected.</p>	<p>Article 904 permits each of the NAFTA nations to adopt, maintain or apply product standards relating to safety, health, the environment or consumer protection at levels each country considers appropriate. The agreement allows prohibition of importation of nonconforming goods and services from a NAFTA nation. And, this right applies to all levels of government. There is only a duty to “seek” to ensure state or provincial level compliance with NAFTA in this regard, but there are requirements that the standards be applied to everyone.</p>
<p>NAFTA opens up trade in services by taking the approach that, if the service is not explicitly excluded, it should be open to free trade. This is spelled out in Chapter 12, although Chapter 14 details trade in financial services.</p>	<p>Government-provided services in health care are excluded. The parties cannot require that the service provider live or office in one nation or the other (Article 1205). Also, there should not be a requirement of nationality in order to be certified or licensed. If there is one, it must be explicitly entered by one of the parties or other level of government, and the other nations can reciprocate (1210(3)). Each country must grant temporary entry to business visitors, traders and investors, professionals and accommodate intra-company transferees. (Annex 1603)</p>	<p>Parties should show that licensure requirements be based on objective and transparent criteria and not be more burdensome than necessary to ensure the quality of a service. States and localities had two years to enter additional exceptions to these standards; many already had such exceptions with regard to the health professions. The agreement further stipulates that “the Parties shall encourage the relevant bodies in their respective territories to develop mutually acceptable standards and criteria for licensing and certification of professional service providers and to provide recommendations on mutual recognition to the Commission.” (1210.5(A2))</p>
<p>“Each Party shall accord to investors of another party treatment no less favorable than that it accords, in like circumstances, to its own investors with respect to the establishment, acquisition, expansion, management, conduct, operation, and sale or other disposition of investments.” (1102)</p>	<p>This does not apply to financial services as they are delineated elsewhere (see below). Nor does it mean that governments cannot retain monopolies on functions such as law enforcement, correctional services, income security, social welfare, public education etc. (1101(4)).</p>	<p>Since 100 percent foreign investment in health care facilities was permitted before the passage of NAFTA by all three parties, it will continue to be allowed in the future.</p>
<p>Chapter 14 sets out the basis for ownership of financial institutions across national boundaries and for permitting investors in one nation to develop or invest in institutions in the other two nations.</p>	<p>U.S. entities will be able to increase their share of ownership in Mexican insurance companies and by the year 2000 will be able to own such entities outright so long as they don’t comprise more than set percentages of a particular line of business.</p>	<p>The health insurance industry is in flux after the new Mexican laws on managed care and health insurance were implemented in 2001.</p>
<p>Chapter 13 spells out access to and use of public telecommunications by persons in different national jurisdictions.</p>	<p>None of the parties restricts transmission of data and images.</p>	<p>Limited experiments with telemedicine and teleconferencing have taken place between the U.S. and Mexico.</p>

Cross-Border Practice and Training

The process of attaining medical education is quite different in Mexico than it is in the U.S. In Mexico, students enter medical school immediately after secondary school and receive the clinical and didactic portions of medical education in five to six years. Then, prospective physicians must give at least one year of social service and pass the exams that are required by the individual medical schools. Therefore, it is difficult to judge the rigor of training or the mastery of medical knowledge without knowing the standards of the particular school that the student attended. Progress is being made in this area, however, due to the movement started in the 1990s toward accreditation of medical schools (25 medical schools in Mexico are currently accredited by AMFEM, the Asociación Mexicana de Facultades y Escuelas de Medicina).⁹ The medical school then certifies to the *Secretaría de Educación Pública* (Secretariat of Public Education) that the applicant has completed the requirements of medical education and the Secretariat issues to the applicant a *cédula* or permanent license to practice anywhere in Mexico. A re-certification exam after five years of practice is currently under development. In 2000, there were 140,629 active physicians in Mexico.¹⁰

Medical and surgical specialists are certified by non-governmental specialty boards as in the U.S. To be accepted for specialty training, Mexican medical graduates must take a rigorous national exam that only a relatively small percentage pass. On completion of specialty training, candidates are screened through another exam for board certification. As in the U.S., Mexican law does not prohibit general practitioners from performing procedures performed by specialists although hospitals and other institutions usually limit their ability to do so.

In addition to the differences in the undergraduate training of physicians, other barriers created by both Texas and Mexico discourage practicing medicine across the border. Mexico formerly required that all certified physicians be citizens of Mexico. After the passage of NAFTA, this requirement was amended to a precondition of reciprocity from any nation wanting their citizens to be licensed to practice in Mexico. Texas has registered several regulations in response to NAFTA requirements. With regard to licensure and practice permits, Texas has adopted provisions setting additional requirements for graduates of medical schools outside the U.S. or Canada. In some cases, graduates of foreign medical schools simply cannot meet the qualifications required. This represents a challenge to both the National Treatment (Article 1202) and the Most-Favored-Nation Treatment (Article 1203) requirements of NAFTA. The adoption of reciprocity depends on the success of current efforts to develop similar educational requirements.

While physicians may be limited in their ability to practice across the border, cross-border utilization of their services is quite common with citizens of both countries seeking familiar, preferred, or affordable health care. Many studies have documented the large numbers of Mexican residents who cross to the U.S. for health care. These patients usually pay cash or have insurance coverage because of Medicare eligibility or employment in the United States. Similar studies have documented heavy use of services on the Mexican side of the border by U.S. residents. These studies include a survey of *colonia* residents by the Lower Rio Grande Valley Development Council, surveys of Mexican and American providers, and investigations on whether the insurance coverage offered by employers in Texas covered care in Mexico.¹¹

Several programs provide health care for workers in the migrant stream and for their dependents in Mexico. One of these is the Mexican Social Security system (IMSS), which offers health and maternity insurance to international workers who are Mexican citizens. This program began in 1990 and is called the Program for Social Security for Mexican Workers Living Abroad. The program covers workers in the U.S. and their dependents in Mexico, and the yearly premium varies based on age. Between July 1990 and April 1994 the program enrolled 7,400 workers and 36,700 dependents.¹² In 2002, the program had 5,998 insured members and 19,436 dependents enrolled, for a total of 25,434 beneficiaries.¹³

More recently, several cross-border health insurance plans have been developed in California to cover Mexican workers in the U.S. and their families who may be in Mexico. These range from a Mexican plan that sells an exclusively Mexican PPO to employers in San Diego to cover Mexican citizens for services in Tijuana to California Blue Shield, which sells a dual choice HMO plan with one of the options exclusively for services in Tijuana (except for emergency care and services not available in Tijuana). Blue Shield is developing a plan where the employee would be covered in the U.S. (often at a distance from the border), and HealthNet offers a PPO that includes both a network in Tijuana and a limited network in Los Angeles. Each of these is regulated somewhat differently by the California Department of Managed Care. In Texas, an interim task force is holding hearings and is charged with making recommendations by December 2002 regarding how to regulate cross-border health insurance.

It is quite common for U.S. residents to use Mexican dentists. In particular, “winter Texans,” the price-conscious retirees from the Midwest who become temporary residents of the Lower Rio Grande Valley during the winter months, tend to compensate for the gaps in Medicare coverage in outpatient pharmaceuticals and routine dentistry by using Mexican dentists and pharmacies. A study on the availability of dentists in the U.S. border region reported severe shortages and the prevalence of very poor oral health, and recommended exploring the possibility of developing methods for reimbursing high-quality Mexican dentists so that they may help in meeting the oral health needs of the area.¹⁴

Pharmacists in Texas and in Mexico can fill prescriptions written by either Mexican or U.S. physicians. Surveys in the mid-1990s of discount pharmacies in the U.S. and of selected pharmacies in Mexico found that prices of the same commonly prescribed drugs were, on average, about half as expensive in Mexico as in the U.S.¹⁵ NAFTA has significantly enhanced trade in pharmaceuticals and, until the 1994 Mexican devaluation, in medical equipment as well.

Notes

- ¹ Katharine Levit, Cynthia Smith, Cathy Cowan, Helen Lazenby, and Anne Martin, "Inflation Spurs Health Spending in 2000," *Health Affairs*, vol. 21, no. 1 (Jan./Feb. 2002), pp. 172-181.
- ² Calculated using U.S. population of 281,421,906, from U.S. Census Bureau, *Census 2000 Summary File 2, United States, Total Population (GCT-P5)*, online at <http://factfinder.census.gov/home/en/sf2.html>, accessed September 16, 2002.
- ³ World Health Organization, *Mexico, Key Health Expenditures Indicators*, online at <http://www.who.int/country/mex/en/>, accessed November 7, 2002.
- ⁴ Using population data above and number of physicians reported in Table 4.8 in Chapter 4.
- ⁵ For physicians: Secretaría de Salud de México, *Situación de la Salud 2000* (excel file TIPOU.xls), online at <http://www.ssa.gob.mx>, accessed September 24, 2002. For population: Instituto Nacional de Estadística, Geografía e Informática, *Mexico's Population by State, 1985-2000*, online at <http://www.inegi.gob.mx/difusion/ingles/fiesoc.html>, accessed September 9, 2002.
- ⁶ Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Information and Analysis, *United States Health Workforce Personnel Factbook*, Tables 210 and 216, online at <http://bhpr.hrsa.gov/healthworkforce/factbook.htm>, accessed September 29, 2002.
- ⁷ Educational Commission for Foreign Medical Graduates, *2001 Annual Report* (Philadelphia, Penn., 2002), pp. 8-9, 12.
- ⁸ David C. Warner and Jillian Hopewell, *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*, Report Prepared for HRSA (San Antonio, Tex.: Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, October 1999), p. 40.
- ⁹ Asociación Mexicana de Facultades y Escuelas de Medicina (AMFEM), *Acreditación de Escuelas*, online at <http://www.amfem.edu.mx>, accessed September 25, 2002.
- ¹⁰ Secretaría de Salud de México, *Situación de la Salud 2000*, online at <http://www.ssa.gob.mx>, accessed September 24, 2002 (zip file s_salud2000.zip, downloaded from "Bases de datos" page, unzipped Excel file TIPOU.xls, tab 1p, "Principales Recursos Materiales y Humanos por Tipo de Unidad en las Instituciones Que Proporcionan Servicios Medicos, Estados Unidos Mexicanos, 2000").
- ¹¹ Lyndon B. Johnson School of Public Affairs, *NAFTA and Trade in Medical Services between the U.S. and Mexico*, Mexican Policy Studies Program Policy Report no. 7 (Austin, Tex., 1997), pp. 187-249 (chapter 6 by Katherine Albro and Kindra Norton); Lyndon B. Johnson School of Public Affairs, *Health Care Across the Border*, Mexican Policy Studies Program Policy Report no. 4 (Austin, Tex., 1993), pp. 125-140 (chapter 7 by Nicole Abend and Kendall Moss); and Jeffrey Stys, "Crossing the Border for Private Care: Issues and Innovations for the Texas

Health Insurance Industry,” Professional Report, LBJ School of Public Affairs, The University of Texas at Austin, August 1995.

¹² Miguel Angel Gonzales Block, “Health Policy in Mexico: With Special Reference to the U.S.-Mexico Migrant Population,” Issue Paper prepared for Mini Forums, Border Vision Fronteriza, HRSA (University of Arizona: Rural Health Office, April 1996), p. 7.

¹³ Guadalupe María Bello Morin, Directora Consulado Mexicano en Los Angeles, IMSS, “Social Security Institute of Mexico,” Powerpoint presentation at the Binational Forum on Health Insurance Coverage, Los Angeles, Calif., September 13, 2002.

¹⁴ Ramón Baez, “Availability and Accessibility of Dental Health Services on the Texas-Mexico Border,” unpublished paper, The University of Texas Health Science Center, San Antonio, 1991.

¹⁵ Lyndon B. Johnson School of Public Affairs, *NAFTA and Trade in Medical Services between the U.S. and Mexico*, Mexican Policy Studies Program Policy Report no. 7 (Austin, Tex., 1997), pp. 9-41 (chapter 1 by Robert Hall and Lauren Rivera Jahnke).

Chapter 6. The Impact of NAFTA on Border Development and Health Status

This section describes the impact of NAFTA and its global cousin, the General Agreement on Tariffs and Trade (GATT), on the environment and on the growth, demographics, and health needs of communities along the U.S./Mexico border. Additionally, it discusses why the border region places demands on federal assistance in health and social services that are unique relative to most other areas of the United States.

The future of the study area is closely linked to industrial and agricultural activities. NAFTA and other global changes can have a dramatic impact on both of these economic sectors and, thereby, alter the development of the entire region.

Provisions of NAFTA Related to Health Services

When NAFTA was first signed, analysts were arguing as to whether the provisions in the Act would bring increased industrialization at the border or whether the *maquiladora* plants in the area would move south in search of cheaper labor supply. For the long run, the argument remains unresolved. In the short run, however, the lack of industrial infrastructure in Mexico and the preponderance of markets in the U.S. have induced further concentration of foreign-owned plants on the Mexican side of the border. This, combined with the 1995 Mexican devaluation and recession, has led to an increase in migration from the interior of Mexico to its border cities. It was estimated that almost 600 *maquiladoras* along the Texas/Mexico border employed 375,000 people in March 2000 (and over 600,000 were employed in *maquiladoras* along the U.S./Mexico border). About two-thirds of *maquiladoras* are located along the U.S./Mexico border about one-third are in interior Mexico. Total *maquiladora* production was projected to reach \$83 billion in 2000, with \$66 billion of this generated by the *maquiladoras* on the whole U.S./Mexico border, and \$49 billion specifically by the ones bordering Texas.¹

The impact of NAFTA, GATT, and the 1995 U.S. Farm Bill on agriculture and agricultural workers in the study area has been and will be complex and cross cutting. Produce companies in the Lower Rio Grande Valley, due to recent droughts, the Mexican devaluation, and the higher cost of doing business in the U.S., have been moving their production operations south into Mexico. For example, Griffin and Brand, a major produce corporation in McAllen, moved much of its production to Mexico and Central America. Similarly, Plantation Produce of Mission reduced its acreage devoted to melons and vegetables and shifted the rest of its agricultural production south of the border. When farm production in the winter declines, the Lower Rio Grande Valley becomes less attractive as a home base for migrant farm workers.

Rainfall levels in the Lower Rio Grande Valley have been low since 1998. Consequently, Falcon Reservoir, south of Laredo, which serves both the U.S. and Mexican sides of the border, has been at historically low levels. Farmers on the Mexican side and many farms on the U.S. side have been cut off from irrigation water. Crop and employment losses on both sides have been devastating. A few heavy rains have reduced the crisis, but precipitation in Mexico has

been low in recent years, and long-term water demands are likely to exceed supply. Mexico currently owes the U.S. an allotment of water under the Water Treaty of 1944, but the Mexican government says it does not have enough water to provide all it owes.² President Bush, the International Boundary and Water Commission, and others have been pressing Mexico to find a way to provide the water (most of which would go to the study area).

There has been an unprecedented increase in the demand for U.S. agriculture because GATT, in the most recent round, created a liberalization of world trade in agriculture, and the rapid development of China and Asia has further increased global demand. The increase in demand, combined with significantly reduced incentives under the new U.S. Farm Bill for leaving land out of production, should create substantial increases in agricultural employment in the United States. On the other hand, in the short run, the Asian economic meltdown of 1997-1998 has reduced demand for certain agricultural products. More recently, the 2002 farm bill with its substantial and, from the Mexican point of view, controversial subsidies to U.S. agriculture and the increasing ability of China to compete on a cost basis with the *maquilas* in many industries for goods ultimately to be consumed in the U.S. may significantly influence the structure of jobs and opportunities in both countries.

Greatly increased trade between Mexico and the United States and the use of cities such as Houston, Corpus Christi, and Brownsville as shipping destinations for northern Mexico should lead to additional economic and population growth in the border cities. The main routes from Northeast Mexico are Interstate Highway 35 through Laredo, Highway 77 from Brownsville to San Antonio, and Highway 281 from San Antonio to the new Pharr International Bridge. Another highway is being proposed from the Lower Rio Grande Valley to Corpus Christi, Houston, and beyond.

NAFTA's Impact on Border Housing and Communities

At least, in the short run, NAFTA has the effect of increasing population in the study area. But the region does not have the income or the taxing capacity to pay for an adequate increase in housing and economic infrastructure.

On both sides of the border, many new immigrants have historically settled in *colonias*. *Colonias* are unincorporated clusters of housing lacking most amenities and occupied by low-income residents who buy a plot on time from a developer and build whatever structure they can afford. Until recently, counties had no authority over such developments, and providing sewer, potable water, sidewalks, or storm drains for the residents was not required.

It is estimated that 400,000 Texas residents live in over 1,400 *colonias* along the Texas/Mexico border (within 100 miles of the Mexican border).³ A majority of *colonia* residents live in Hidalgo, Cameron, Starr, and El Paso Counties.⁴ On the one hand, this means that many low-income families were able to establish a home base and home ownership in the United States. On the other hand, it facilitates the concentration of a very low-income and underserved population on the U.S./Mexico border.

Several surveys of *colonia* residents have found much higher prevalence than anywhere else in the country of many troublesome health conditions. Plumbing is also a major problem, in that

half the houses in rural *colonias* and 20 percent in urban *colonias* have incomplete plumbing, and 40 percent of homes in rural *colonias* and 15 percent in urban do not have complete kitchens.⁵ Many residents use large plastic drums to store water, and many draw water from area ditches, which are often contaminated by sewage or agricultural chemicals. Many homes also do not have adequate wastewater facilities, and septic and cesspool solutions to the sewage problems are often not effective because about half of the *colonias* are threatened by flooding since ground water is near the surface in much of the Lower Rio Grande Valley.

Most *colonia* residents do not have health insurance, and the many underserved persons with special health problems living in *colonias* add magnitude and urgency to the needs of the large low-income population in the cities and towns of the study area. Similarly, a very large poor population lives in deplorable environmental and sanitary conditions on the Mexican side of the border.

The cost to provide water and wastewater services to the *colonias* along the Texas/Mexico border is currently estimated to be about \$819 million.⁶ Many state and federal agencies and other organizations are working to improve the conditions in the *colonias* and many major programs addressing these issues have been enacted in the last several years. Some of the organizations involved are the U.S. Department of Housing and Urban Development, the U.S. Environmental Protection Agency, the U.S. Department of Agriculture, the U.S. Department of Health and Human Services, the Texas Department of Health, the Texas Water Development Board, the Texas Commission on Environmental Quality (formerly the Texas Natural Resource Conservation Commission), the Office of the Texas Attorney General, and the Border Low Income Housing Coalition. From 1991-2001, the Texas Water Development Board provided \$665.48 million in funding through various programs in the border region, benefiting almost 100,000 *colonia* residents; \$376.46 million of this total was spent in the study area (almost all of the remaining amount was spent in El Paso County).⁷

As the area continues to grow, the requirements for appropriate infrastructure will be greater and more costly. The Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADBank) have been created as complementary agreements to NAFTA for addressing these environmental infrastructure needs. Formerly NADBank could only finance projects in Mexico or in the U.S. that had reliable revenue streams to cover a commercial level of debt service, but that requirement has been somewhat mitigated. Given the low personal incomes prevailing in the region and the inadequate tax base of local governments, it is unlikely that many projects will be funded through these organizations unless other state and federal agencies provide some of the guaranteed funding.

Another factor accounting for accelerating population growth is the development and expansion of *maquiladora* and related industries. The impact on the U.S. side is expected to be even greater than the estimates of population increases that assume current migration rates (Appendix B). Although one might think of the Rio Grande Valley and the Mid-Rio Grande Area as largely rural areas, they contain five twin cities with large populations. Many residents on the Mexican side are American citizens or have children who are. Several members of these families work in the United States, many in the migrant stream.

As observed earlier, the twin cities should be viewed as a single tightly knit urban complex. For example, Eagle Pass may not be considered a small U.S. town of around 23,000 people because, when combined with its Mexican “sister,” Piedras Negras, it becomes a city of more than 130,000. Similarly, Matamoros-Brownsville, Reynosa-McAllen, and Laredo-Nuevo Laredo are each urban areas of a size equal to that of the largest city in many states. And, while many of the water and airborne diseases as well as the health hazards of industrialization are found on the Mexican side of the border, that population at risk is likely to be entitled either now or in the future to U.S. benefits and health service resources.

Other impacts of NAFTA have been (1) the movement of much of the economic activity in retailing and manufacturing from the U.S. to the Mexican side of the border, (2) an increase in vehicular traffic, and (3) the consequent worsening of air pollution in the larger border cities. In 1999, it was estimated that 7,000 to 8,000 commercial vehicles crossed the bridge daily.⁸ It is likely that pollution is exacerbating asthma problems along the border, especially in children. In 2000, the hospital admission rate for pediatric asthma per 100,000 people under 18 was 209.2 for Texas as a whole, while the rate for several border counties was much higher: Hudspeth was 598.3, Brewster was 590.9, Maverick was 461.4, and several others were higher by less significant amounts.⁹ Asthma is a debilitating and costly problem that, without access to adequate primary care and treatment, will continue to grow and intensify.

Inadequate infrastructure and limited primary care resources and facilities, combined with accelerating demographic growth, continue to produce a crisis in health care availability for the study area.

Notes

¹ Texas Comptroller of Public Accounts, *Special Report: State Functions at the Texas-Mexico Border and Cross-Border Transportation*, Section I. Economic Factors Affecting Cross-border Transportation (January 2001), online at <http://www.window.state.tx.us/specialrpt/border/index.html>, accessed September 9, 2002.

² International Boundary and Water Commission, *Report of the U.S. Section, International Boundary and Water Commission, April 2002*, online at <http://www.ibwc.state.gov/Files/BrandesRpt0402.pdf>, accessed September 25, 2002.

³ Texas Secretary of State, *Colonias Frequently Asked Questions*, online at <http://www.sos.state.tx.us/border/colonias/faqs.shtml>, accessed September 25, 2002.

⁴ Texas Water Development Board, *Economically Distressed Areas*, online at <http://www.twdb.state.tx.us/colonias/index.htm>, accessed September 25, 2002.

⁵ Texas Department of Housing and Community Affairs, *Office of Colonia Initiatives, Background*, online at http://www.tdhca.state.tx.us/au_colonias.htm, accessed September 25, 2002.

⁶ U.S. Environmental Protection Agency, *Colonias Facts* (October 2002, p. 2), online at <http://www.epa.gov/owmitnet/mab/mexican/clnfects.pdf>, accessed November 7, 2002.

⁷ Texas Water Development Board, *A Report on the Activities in the Texas-Mexico Border Region, October 2001*, online at <http://www.twdb.state.tx.us/publications/reports/Colonias/State%20of%20the%20Border%20Report2.pdf>, accessed November 7, 2002.

⁸ Texas Comptroller of Public Accounts, *Special Report: State Functions at the Texas-Mexico Border and Cross-Border Transportation*, Section I. Economic Factors Affecting Cross-border Transportation (January 2001), online at <http://www.window.state.tx.us/specialrpt/border/index.html>, accessed September 9, 2002.

⁹ Texas Health Care Information Council, *Table 11: Pediatric Asthma Admission Rate, Texas, 2000*, from Hospital Inpatient Discharge Public Use Data File, 2000, file name pqi_long_04.pdf, created September 12, 2002.

Appendix A. Population Projections if Net Migration = 0

Note from the Texas State Data Center: “*The Zero Migration (0.0) Scenario*: The zero scenario is a scenario which assumes that immigration and outmigration are equal (i.e., net migration is zero) resulting in growth only through natural increase (the excess or deficit of births relative to deaths). This scenario is commonly used as a base in population projections and is useful in indicating what an area’s indigenous growth (growth due only to natural increase) will be over time. In general, this scenario produces the lowest population projection for counties with historical patterns of population growth through net immigration and the highest population projection for counties with historical patterns of population decline through net outmigration.” (For more information on methods used for these projections see http://txsdc.tamu.edu/tpepp/2001_txpopprj_method.php.)

Total Population by County

Age Groups	2000	2005	2010	2015	2020	<i>Projected Change 2000-2010</i>	<i>Projected Change 2000-2020</i>
<u>Lower Rio Grande Counties</u>							
<u>Cameron</u>							
0-17	113,295	122,912	132,137	142,280	149,694	18,842	36,399
18-24	35,222	40,633	41,994	42,950	45,659	6,772	10,437
25-44	89,721	92,349	99,316	106,529	113,960	9,595	24,239
45-64	59,614	68,055	76,682	81,759	85,922	17,068	26,308
65+	37,375	41,502	45,022	50,855	58,143	7,647	20,768
Total	335,227	365,451	395,151	424,373	453,378	59,924	118,151
<u>Hidalgo</u>							
0-17	201,002	219,098	234,928	250,357	263,161	33,926	62,159
18-24	64,529	71,510	75,640	81,780	86,386	11,111	21,857
25-44	157,323	167,186	180,407	193,111	206,284	23,084	48,961
45-64	91,335	107,315	124,535	137,944	150,390	33,200	59,055
65+	55,274	61,268	66,628	76,261	88,186	11,354	32,912
Total	569,463	626,377	682,138	739,453	794,407	112,675	224,944
<u>Starr</u>							
0-17	20,042	21,894	23,814	25,856	27,792	3,772	7,750
18-24	5,902	7,050	7,371	7,888	8,053	1,469	2,151
25-44	14,537	15,137	16,510	17,685	19,461	1,973	4,924
45-64	8,717	9,902	11,156	12,267	13,158	2,439	4,441
65+	4,399	4,692	5,053	5,586	6,212	654	1,813
Total	53,597	58,675	63,904	69,282	74,676	10,307	21,079
<u>Willacy</u>							
0-17	6,352	6,489	6,870	7,311	7,700	518	1,348
18-24	2,392	2,803	2,733	2,707	2,656	341	264
25-44	5,344	5,458	5,943	6,526	7,068	599	1,724
45-64	3,666	4,062	4,421	4,481	4,524	755	858
65+	2,328	2,316	2,324	2,437	2,625	(4)	297
Total	20,082	21,128	22,291	23,462	24,573	2,209	4,491

Total Population by County

Age Groups	2000	2005	2010	2015	2020	Projected Change 2000-2010	Projected Change 2000-2020
<u>Remaining Counties</u>							
<u>Dimmit</u>							
0-17	3,401	3,195	3,090	3,065	3,179	(311)	(222)
18-24	903	1,271	1,339	1,277	1,114	436	211
25-44	2,530	2,487	2,723	3,091	3,448	193	918
45-64	2,119	2,308	2,480	2,421	2,418	361	299
65+	1,295	1,271	1,289	1,484	1,616	(6)	321
Total	10,248	10,532	10,921	11,338	11,775	673	1,527
<u>Kinney</u>							
0-17	868	799	796	824	894	(72)	26
18-24	180	316	317	313	270	137	90
25-44	728	639	691	762	840	(37)	112
45-64	781	781	784	748	730	3	(51)
65+	822	817	784	781	767	(38)	(55)
Total	3,379	3,352	3,372	3,428	3,501	(7)	122
<u>Maverick</u>							
0-17	17,459	17,930	18,540	19,395	20,735	1,081	3,276
18-24	4,340	5,994	6,533	6,838	6,433	2,193	2,093
25-44	12,613	12,363	13,302	14,687	16,369	689	3,756
45-64	8,391	9,517	10,582	11,159	11,468	2,191	3,077
65+	4,494	4,606	4,853	5,367	6,133	359	1,639
Total	47,297	50,410	53,810	57,446	61,138	6,513	13,841
<u>Val Verde</u>							
0-17	14,382	15,153	15,834	16,803	17,577	1,452	3,195
18-24	4,221	5,099	5,527	5,524	5,652	1,306	1,431
25-44	12,527	12,614	12,939	13,460	14,210	412	1,683
45-64	8,813	9,343	10,197	10,891	11,408	1,384	2,595
65+	4,913	5,233	5,519	5,984	6,386	606	1,473
Total	44,856	47,442	50,016	52,662	55,233	5,160	10,377
<u>Webb</u>							
0-17	69,862	78,255	85,276	92,030	97,941	15,414	28,079
18-24	22,002	24,345	26,253	29,276	31,220	4,251	9,218
25-44	56,535	59,513	63,373	66,638	70,905	6,838	14,370
45-64	30,062	36,473	43,057	48,743	54,037	12,995	23,975
65+	14,656	16,321	18,493	21,900	26,071	3,837	11,415
Total	193,117	214,907	236,452	258,587	280,174	43,335	87,057
<u>Zapata</u>							
0-17	4,025	4,091	4,222	4,435	4,645	197	620
18-24	1,217	1,463	1,538	1,559	1,528	321	311
25-44	2,936	3,061	3,380	3,705	4,100	444	1,164
45-64	2,262	2,418	2,595	2,689	2,751	333	489
65+	1,742	1,680	1,614	1,651	1,723	(128)	(19)
Total	12,182	12,713	13,349	14,039	14,747	1,167	2,565

Total Population by County

<i>Age Groups</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>Projected Change 2000-2010</i>	<i>Projected Change 2000-2020</i>
<u>Zavala</u>							
0-17	3,956	3,915	3,884	4,000	4,157	(72)	201
18-24	1,188	1,452	1,539	1,496	1,382	351	194
25-44	2,975	3,057	3,427	3,784	4,093	452	1,118
45-64	2,174	2,414	2,600	2,686	2,808	426	634
65+	1,307	1,307	1,346	1,502	1,690	39	383
Total	11,600	12,145	12,796	13,468	14,130	1,196	2,530

Hispanic Population by County

<i>Age Groups</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>Projected Change 2000-2010</i>	<i>Projected Change 2000-2020</i>
<u>Lower Rio Grande Counties</u>							
<u>Cameron</u>							
0-17	103,716	113,555	122,752	132,646	139,878	19,036	36,162
18-24	32,616	37,169	38,720	39,894	42,673	6,104	10,057
25-44	78,937	82,921	90,141	97,290	104,438	11,204	25,501
45-64	45,955	55,104	64,377	70,450	75,871	18,422	29,916
65+	21,512	24,987	28,557	34,665	42,129	7,045	20,617
Total	282,736	313,736	344,547	374,945	404,989	61,811	122,253
<u>Hidalgo</u>							
0-17	189,718	208,578	225,243	241,088	254,025	35,525	64,307
18-24	61,085	66,991	70,816	76,941	81,939	9,731	20,854
25-44	143,576	154,939	168,473	180,627	193,516	24,897	49,940
45-64	75,874	92,594	110,175	124,486	138,073	34,301	62,199
65+	32,847	38,652	45,137	56,151	69,239	12,290	36,392
Total	503,100	561,754	619,844	679,293	736,792	116,744	233,692
<u>Starr</u>							
0-17	19,639	21,510	23,449	25,503	27,456	3,810	7,817
18-24	5,778	6,911	7,231	7,749	7,919	1,453	2,141
25-44	14,150	14,749	16,132	17,285	19,044	1,982	4,894
45-64	8,471	9,601	10,803	11,894	12,771	2,332	4,300
65+	4,240	4,508	4,825	5,333	5,920	585	1,680
Total	52,278	57,279	62,440	67,764	73,110	10,162	20,832
<u>Willacy</u>							
0-17	5,890	6,114	6,530	6,988	7,374	640	1,484
18-24	2,087	2,445	2,409	2,411	2,396	322	309
25-44	4,606	4,786	5,261	5,813	6,305	655	1,699
45-64	2,959	3,386	3,765	3,882	3,994	806	1,035
65+	1,667	1,676	1,725	1,852	2,048	58	381
Total	17,209	18,407	19,690	20,946	22,117	2,481	4,908

Hispanic Population by County

Age Groups	2000	2005	2010	2015	2020	Projected Change 2000-2010	Projected Change 2000-2020
<u>Remaining Counties</u>							
<u>Dimmit</u>							
0-17	3,039	2,877	2,800	2,775	2,863	(239)	(176)
18-24	790	1,119	1,187	1,153	1,021	397	231
25-44	2,174	2,169	2,378	2,715	3,034	204	860
45-64	1,718	1,875	2,054	2,023	2,059	336	341
65+	987	952	946	1,090	1,190	(41)	203
Total	8,708	8,992	9,365	9,756	10,167	657	1,459
<u>Kinney</u>							
0-17	593	576	589	604	669	(4)	76
18-24	132	209	211	241	202	79	70
25-44	430	408	463	505	574	33	144
45-64	309	353	402	421	432	93	123
65+	243	262	260	293	329	17	86
Total	1,707	1,808	1,925	2,064	2,206	218	499
<u>Maverick</u>							
0-17	16,771	17,281	17,898	18,786	20,138	1,127	3,367
18-24	4,154	5,747	6,311	6,604	6,228	2,157	2,074
25-44	11,942	11,744	12,662	14,017	15,671	720	3,729
45-64	7,892	8,939	9,959	10,523	10,790	2,067	2,898
65+	4,179	4,246	4,433	4,893	5,615	254	1,436
Total	44,938	47,957	51,263	54,823	58,442	6,325	13,504
<u>Val Verde</u>							
0-17	11,937	12,579	13,310	14,383	15,304	1,373	3,367
18-24	3,218	4,264	4,601	4,522	4,607	1,383	1,389
25-44	9,322	9,392	9,900	10,691	11,518	578	2,196
45-64	6,121	6,634	7,485	8,044	8,499	1,364	2,378
65+	3,251	3,444	3,621	4,017	4,380	370	1,129
Total	33,849	36,313	38,917	41,657	44,308	5,068	10,459
<u>Webb</u>							
0-17	66,707	75,346	82,772	89,796	95,748	16,065	29,041
18-24	21,142	23,305	24,927	27,742	29,921	3,785	8,779
25-44	53,008	55,979	59,791	62,737	66,899	6,783	13,891
45-64	27,684	33,657	39,835	45,358	50,569	12,151	22,885
65+	13,529	15,111	17,121	20,247	24,091	3,592	10,562
Total	182,070	203,398	224,446	245,880	267,228	42,376	85,158
<u>Zapata</u>							
0-17	3,821	3,917	4,048	4,260	4,476	227	655
18-24	1,147	1,378	1,467	1,502	1,468	320	321
25-44	2,715	2,861	3,164	3,475	3,869	449	1,154
45-64	1,782	2,032	2,275	2,433	2,530	493	748
65+	863	876	931	1,075	1,241	68	378
Total	10,328	11,064	11,885	12,745	13,584	1,557	3,256

Hispanic Population by County

<i>Age Groups</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>Projected Change 2000-2010</i>	<i>Projected Change 2000-2020</i>
<u>Zavala</u>							
0-17	3,697	3,667	3,638	3,779	3,947	(59)	250
18-24	1,101	1,350	1,460	1,404	1,295	359	194
25-44	2,755	2,834	3,159	3,498	3,814	404	1,059
45-64	1,955	2,178	2,367	2,478	2,588	412	633
65+	1,074	1,084	1,125	1,259	1,425	51	351
Total	10,582	11,113	11,749	12,418	13,069	1,167	2,487
<u>Total Population of Lower Rio Grande plus Remaining Counties by Age Group</u>							
0-17	454,644	493,731	529,391	566,356	597,475	74,747	142,831
18-24	142,096	161,936	170,784	181,608	190,353	28,688	48,257
25-44	357,769	373,864	402,011	429,978	460,738	44,242	102,969
45-64	217,934	252,588	289,089	315,788	339,614	71,155	121,680
65+	128,605	141,013	152,925	173,808	199,552	24,320	70,947
Total	1,301,048	1,423,132	1,544,200	1,667,538	1,787,732	243,152	486,684
<u>Summary</u>							
LRG	978,369	1,071,631	1,163,484	1,256,570	1,347,034	185,115	368,665
Others	322,679	351,501	380,716	410,968	440,698	58,037	118,019
Grand Total	1,301,048	1,423,132	1,544,200	1,667,538	1,787,732	243,152	486,684
<u>Percent Hispanic Projected by Year</u>							
Total	88.2%	89.4%	90.4%	91.3%	92.1%		

Adapted from: Texas State Data Center, Texas Population Projections Program, *2001 Population Projections (Table 2) by County*, online at http://txsdc.tamu.edu/tpepp/table2/csv_county.php, accessed August 12, 2002.

Appendix B. Population Projections if Net Migration = 1

Note from the Texas State Data Center: “*The 1990-2000 Migration (1.0) Scenario*: The 1990-2000 scenario assumes that the trends in the age, sex and race/ethnicity net migration rates of the 1990s will characterize those occurring in the future of Texas. The 1990s was a period characterized by rapid growth. It is seen here as the high growth alternative because its overall total decade pattern is one of substantial growth (i.e., 22.8% for the 1990-2000 decade for the State). Because growth was so extensive during the 1990s it is likely to be unsustainable over time and thus this scenario is presented here as a high growth alternative. For counties that experienced net outmigration during the 1990s, this scenario produces continued decline.” (For more information on methods used for these projections see http://txsdc.tamu.edu/tppepp/2001_txpopprj_method.php.)

Total Population by County

Age Groups	2000	2005	2010	2015	2020	Projected Change 2000-2010	Projected Change 2000-2020
<u>Lower Rio Grande Counties</u>							
<u>Cameron</u>							
0-17	113,295	124,269	133,071	145,512	159,574	19,776	46,279
18-24	35,222	45,025	52,340	54,442	51,543	17,118	16,321
25-44	89,721	97,813	112,090	129,351	148,371	22,369	58,650
45-64	59,614	71,931	84,762	94,861	104,261	25,148	44,647
65+	37,375	44,240	51,638	62,607	75,800	14,263	38,425
Total	335,227	383,278	433,901	486,773	539,549	98,674	204,322
<u>Hidalgo</u>							
0-17	201,002	231,894	258,242	290,232	333,257	57,240	132,255
18-24	64,529	81,416	103,221	119,667	117,179	38,692	52,650
25-44	157,323	186,833	222,986	266,614	316,713	65,663	159,390
45-64	91,335	116,931	148,664	183,083	224,137	57,329	132,802
65+	55,274	63,962	74,865	93,137	117,695	19,591	62,421
Total	569,463	681,036	807,978	952,733	1,108,981	238,515	539,518
<u>Starr</u>							
0-17	20,042	22,120	23,764	25,694	28,294	3,722	8,252
18-24	5,902	7,574	8,834	9,705	8,880	2,932	2,978
25-44	14,537	15,481	17,076	18,801	21,452	2,539	6,915
45-64	8,717	10,356	12,220	13,986	15,441	3,503	6,724
65+	4,399	5,029	5,765	6,805	7,971	1,366	3,572
Total	53,597	60,560	67,659	74,991	82,038	14,062	28,441
<u>Willacy</u>							
0-17	6,352	6,473	6,635	6,855	7,093	283	741
18-24	2,392	2,863	2,932	2,865	2,613	540	221
25-44	5,344	5,397	5,704	6,189	6,643	360	1,299
45-64	3,666	4,218	4,677	4,792	4,792	1,011	1,126
65+	2,328	2,367	2,464	2,697	3,029	136	701
Total	20,082	21,318	22,412	23,398	24,170	2,330	4,088

Total Population by County

Age Groups	2000	2005	2010	2015	2020	Projected Change 2000-2010	Projected Change 2000-2020
<u>Remaining Counties</u>							
<u>Dimmit</u>							
0-17	3,401	3,242	3,085	2,989	2,991	(316)	(410)
18-24	903	1,239	1,338	1,262	1,065	435	162
25-44	2,530	2,474	2,554	2,719	2,867	24	337
45-64	2,119	2,373	2,599	2,579	2,571	480	452
65+	1,295	1,316	1,387	1,670	1,887	92	592
Total	10,248	10,644	10,963	11,219	11,381	715	1,133
<u>Kinney</u>							
0-17	868	820	819	857	929	(49)	61
18-24	180	342	352	330	291	172	111
25-44	728	636	696	794	883	(32)	155
45-64	781	794	782	714	657	1	(124)
65+	822	867	855	842	804	33	(18)
Total	3,379	3,459	3,504	3,537	3,564	125	185
<u>Maverick</u>							
0-17	17,459	18,624	19,207	19,889	21,366	1,748	3,907
18-24	4,340	6,023	7,387	8,024	7,159	3,047	2,819
25-44	12,613	12,870	13,752	14,879	16,492	1,139	3,879
45-64	8,391	10,056	11,892	13,455	14,641	3,501	6,250
65+	4,494	4,876	5,468	6,494	7,879	974	3,385
Total	47,297	52,449	57,706	62,741	67,537	10,409	20,240
<u>Val Verde</u>							
0-17	14,382	15,074	15,418	16,108	16,743	1,036	2,361
18-24	4,221	5,251	5,960	5,850	5,524	1,739	1,303
25-44	12,527	12,916	13,278	13,832	14,475	751	1,948
45-64	8,813	9,804	11,148	12,215	13,033	2,335	4,220
65+	4,913	5,444	6,041	6,854	7,662	1,128	2,749
Total	44,856	48,489	51,845	54,859	57,437	6,989	12,581
<u>Webb</u>							
0-17	69,862	80,614	91,035	103,934	120,302	21,173	50,440
18-24	22,002	28,669	35,188	40,298	38,973	13,186	16,971
25-44	56,535	68,448	85,068	104,930	128,719	28,533	72,184
45-64	30,062	38,752	48,810	59,375	71,303	18,748	41,241
65+	14,656	16,956	20,155	25,226	32,011	5,499	17,355
Total	193,117	233,439	280,256	333,763	391,308	87,139	198,191
<u>Zapata</u>							
0-17	4,025	4,269	4,512	4,814	5,179	487	1,154
18-24	1,217	1,584	1,834	1,961	1,855	617	638
25-44	2,936	3,233	3,683	4,211	4,859	747	1,923
45-64	2,262	2,584	2,982	3,270	3,533	720	1,271
65+	1,742	1,798	1,834	2,028	2,217	92	475
Total	12,182	13,468	14,845	16,284	17,643	2,663	5,461

Total Population by County

<i>Age Groups</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>Projected Change 2000-2010</i>	<i>Projected Change 2000-2020</i>
<u>Zavala</u>							
0-17	3,956	3,921	3,758	3,707	3,663	(198)	(293)
18-24	1,188	1,400	1,512	1,437	1,286	324	98
25-44	2,975	2,933	3,078	3,203	3,280	103	305
45-64	2,174	2,451	2,663	2,721	2,735	489	561
65+	1,307	1,306	1,339	1,514	1,750	32	443
Total	11,600	12,011	12,350	12,582	12,714	750	1,114

Hispanic Population by County

<i>Age Groups</i>	<i>2000</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>Projected Change 2000-2010</i>	<i>Projected Change 2000-2020</i>
<u>Lower Rio Grande Counties</u>							
0-17	103,716	115,050	124,197	136,747	150,973	20,481	47,257
18-24	32,616	41,644	49,098	51,446	48,710	16,482	16,094
25-44	78,937	88,461	103,180	120,500	139,463	24,243	60,526
45-64	45,955	57,721	70,714	81,905	92,706	24,759	46,751
65+	21,512	26,526	32,169	41,152	52,534	10,657	31,022
Total	282,736	329,402	379,358	431,750	484,386	96,622	201,650
<u>Hidalgo</u>							
0-17	189,718	221,289	248,465	280,788	323,768	58,747	134,050
18-24	61,085	76,959	98,304	114,678	112,518	37,219	51,433
25-44	143,576	174,481	211,098	254,187	304,008	67,522	160,432
45-64	75,874	100,626	132,024	167,118	209,141	56,150	133,267
65+	32,847	41,964	53,642	72,449	97,173	20,795	64,326
Total	503,100	615,319	743,533	889,220	1,046,608	240,433	543,508
<u>Starr</u>							
0-17	19,639	21,725	23,395	25,353	27,952	3,756	8,313
18-24	5,778	7,433	8,688	9,554	8,732	2,910	2,954
25-44	14,150	15,105	16,727	18,439	21,081	2,577	6,931
45-64	8,471	10,051	11,870	13,637	15,096	3,399	6,625
65+	4,240	4,838	5,530	6,545	7,677	1,290	3,437
Total	52,278	59,152	66,210	73,528	80,538	13,932	28,260
<u>Willacy</u>							
0-17	5,890	6,100	6,311	6,559	6,800	421	910
18-24	2,087	2,497	2,603	2,573	2,365	516	278
25-44	4,606	4,754	5,064	5,527	5,943	458	1,337
45-64	2,959	3,522	4,035	4,229	4,342	1,076	1,383
65+	1,667	1,712	1,822	2,068	2,402	155	735
Total	17,209	18,585	19,835	20,956	21,852	2,626	4,643

Hispanic Population by County

Age Groups	2000	2005	2010	2015	2020	Projected Change 2000-2010	Projected Change 2000-2020
<u>Remaining Counties</u>							
<u>Dimmit</u>							
0-17	3,039	2,924	2,803	2,722	2,707	(236)	(332)
18-24	790	1,079	1,181	1,136	979	391	189
25-44	2,174	2,168	2,235	2,375	2,501	61	327
45-64	1,718	1,936	2,186	2,218	2,261	468	543
65+	987	996	1,038	1,280	1,488	51	501
Total	8,708	9,103	9,443	9,731	9,936	735	1,228
<u>Kinney</u>							
0-17	593	593	613	639	704	20	111
18-24	132	232	237	257	225	105	93
25-44	430	409	475	531	609	45	179
45-64	309	354	405	410	397	96	88
65+	243	263	259	289	323	16	80
Total	1,707	1,851	1,989	2,126	2,258	282	551
<u>Maverick</u>							
0-17	16,771	17,944	18,518	19,220	20,689	1,747	3,918
18-24	4,154	5,756	7,116	7,721	6,874	2,962	2,720
25-44	11,942	12,247	13,074	14,134	15,669	1,132	3,727
45-64	7,892	9,465	11,256	12,800	13,912	3,364	6,020
65+	4,179	4,519	5,049	6,025	7,384	870	3,205
Total	44,938	49,931	55,013	59,900	64,528	10,075	19,590
<u>Val Verde</u>							
0-17	11,937	12,552	12,958	13,749	14,521	1,021	2,584
18-24	3,218	4,397	5,055	4,904	4,577	1,837	1,359
25-44	9,322	9,648	10,145	10,936	11,680	823	2,358
45-64	6,121	6,947	8,244	9,265	10,143	2,123	4,022
65+	3,251	3,577	3,929	4,525	5,165	678	1,914
Total	33,849	37,121	40,331	43,379	46,086	6,482	12,237
<u>Webb</u>							
0-17	66,707	77,332	87,865	100,895	117,267	21,158	50,560
18-24	21,142	27,602	33,787	38,519	37,239	12,645	16,097
25-44	53,008	64,695	81,052	100,478	123,965	28,044	70,957
45-64	27,684	35,889	45,494	55,828	67,608	17,810	39,924
65+	13,529	15,748	18,804	23,578	30,007	5,275	16,478
Total	182,070	221,266	267,002	319,298	376,086	84,932	194,016
<u>Zapata</u>							
0-17	3,821	4,092	4,334	4,641	5,036	513	1,215
18-24	1,147	1,499	1,763	1,902	1,794	616	647
25-44	2,715	3,034	3,480	3,997	4,654	765	1,939
45-64	1,782	2,165	2,624	3,007	3,318	842	1,536
65+	863	962	1,109	1,389	1,689	246	826
Total	10,328	11,752	13,310	14,936	16,491	2,982	6,163

Hispanic Population by County

Age Groups	2000	2005	2010	2015	2020	Projected Change 2000-2010	Projected Change 2000-2020
<u>Zavala</u>							
0-17	3,697	3,667	3,511	3,493	3,471	(186)	(226)
18-24	1,101	1,293	1,428	1,343	1,199	327	98
25-44	2,755	2,714	2,820	2,931	3,012	65	257
45-64	1,955	2,209	2,422	2,520	2,547	467	592
65+	1,074	1,085	1,123	1,274	1,486	49	412
Total	10,582	10,968	11,304	11,561	11,715	722	1,133

Total Population of Lower Rio Grande plus Remaining Counties by Age Group

0-17	454,644	511,320	559,546	620,591	699,391	104,902	244,747
18-24	142,096	181,386	220,898	245,841	236,368	78,802	94,272
25-44	357,769	409,034	479,965	565,523	664,754	122,196	306,985
45-64	217,934	270,250	331,199	391,051	457,104	113,265	239,170
65+	128,605	148,161	171,811	209,874	258,705	43,206	130,100
Total	1,301,048	1,520,151	1,763,419	2,032,880	2,316,322	462,371	1,015,274

Summary

LRG	978,369	1,146,192	1,331,950	1,537,895	1,754,738	353,581	776,369
Others	322,679	373,959	431,469	494,985	561,584	108,790	238,905
Grand Total	1,301,048	1,520,151	1,763,419	2,032,880	2,316,322	462,371	1,015,274

Percent Hispanic Projected by Year

Total	88.2%	89.8%	91.1%	92.3%	93.3%
-------	-------	-------	-------	-------	-------

Adapted from: Texas State Data Center, Texas Population Projections Program, *2001 Population Projections (Table 2) by County*, online at http://txsdc.tamu.edu/tpepp/table2/csv_county.php, accessed August 12, 2002.

Bibliography

- American Osteopathic Association. *Osteopathic Medicine*. Online at <http://www.aoa-net.org/Consumers/omed.htm>, accessed September 16, 2002.
- Area Health Education Center of South Texas. *AHEC Home Page*. Online at <http://www.uthscsa.edu/ahec>, accessed November 25, 2002.
- Asociación Mexicana de Facultades y Escuelas de Medicina (AMFEM). *Acreditación de Escuelas*. Online at <http://www.amfem.edu.mx>, accessed September 25, 2002.
- Baez, Ramón. "Availability and Accessibility of Dental Health Services on the Texas-Mexico Border." Unpublished paper. The University of Texas Health Science Center, San Antonio, 1991.
- Bello, Guadalupe María Morin. Directora Consulado Mexicano en Los Angeles, IMSS. "Social Security Institute of Mexico." Powerpoint presentation at the Binational Forum on Health Insurance Coverage. Los Angeles, Calif., September 13, 2002.
- Border Information and Outreach Service. "Binational Border Health Commission Comes Online." *Borderlines*, vol. 9, no. 7, August 2001. Online at <http://www.us-mex.org/borderlines/2001/bl80/bl80bhc.html>, accessed September 19, 2002.
- Cantu, Frank. Border Health Field Director, Health Resources and Services Administration. Fax to Lauren Jahnke, November 18, 2002.
- Cantu, Frank. Border Health Field Director, Health Resources and Services Administration. E-mail to Lauren Jahnke, December 2, 2002.
- Center for Public Policy Priorities. *Children's Medicaid Eligibility Simplification Bill, SB 43, Sent to Governor* (Policy Page No. 131, May 31, 2001). Online at <http://www.cppp.org/products/policypages/131-150/131-150html/PP131.html>, accessed November 14, 2002.
- Centers for Disease Control and Prevention. "Births: Final Data for 2000," *National Vital Statistics Report*. Online at http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf, accessed August 21, 2002.
- Centers for Disease Control and Prevention. *HIV/AIDS Surveillance: General Epidemiology, L178 slide series (through 2000)*. Online at <http://www.cdc.gov/hiv/graphics/surveill.htm>, accessed August 21, 2002.
- Centers for Disease Control and Prevention. *Summary of Notifiable Diseases, United States, 1999*. Online at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4853a1.htm>, accessed August 19, 2002.

- Cerda-Arguijo, Patty. Program Coordinator, UTHSCSA. E-mail to Lauren Jahnke, November 20, 2002.
- Chapa, Joe. Accountant, South Texas/Border Region Health Education Initiative, UTHSCSA. E-mail to Lauren Jahnke, December 2, 2002.
- Educational Commission for Foreign Medical Graduates. *2001 Annual Report*. Philadelphia, Penn., 2002.
- Elizondo-Fournier, Marta. Coordinator of Communications and International Relations, Office of Border Health, Texas Department of Health, Austin, Texas. Telephone interview by Lauren Jahnke, November 27, 2002.
- Families USA. *Uninsured Parents and Medicaid Information, State by State*. Washington, D.C.: Families USA Health Action Annual Conference, January 2001.
- Federation for American Immigration Reform (FAIR). *Texas: Illegal Immigration*. Online at <http://www.fairus.org/html/042txill.htm>, accessed September 9, 2002.
- Furino, Antonio, Don R. Miller. *Changes in the Health Care Workforce, the Texas/Mexico Border Region: 1996/97 – 2001*. United States-Mexico Border Health Association Meeting, Chihuahua City, Mexico, June 4-7, 2002.
- Garcia, Richard A. UTHSCSA. *Message from the Program Director*. Online at <http://www.uthscsa.edu/ahec/drcrtrmsg.htm>, accessed November 25, 2002.
- Gonzales Block, Miguel Angel. "Health Policy in Mexico: With Special Reference to the U.S.-Mexico Migrant Population." Issue Paper prepared for Mini Forums, Border Vision Fronteriza, HRSA. University of Arizona, Rural Health Office, April 1996.
- Government Accounting Office. *Health Care: Availability in the Texas-Mexico Border Area*. Washington, D.C., 1988.
- Health Resources and Services Administration. *About HIV/AIDS Bureau*. Online at <http://hab.hrsa.gov/aboutus.htm>, accessed October 2, 2002.
- Health Resources and Services Administration. *About HRSA*. Online at <http://www.hrsa.gov/about.htm>, accessed October 2, 2002.
- Health Resources and Services Administration. Bureau of Health Professions. National Center for Health Workforce Information and Analysis. "Table 101. Estimated Supply of Selected Health Personnel and Practitioner-to-Population Ratios, Selected Years 1970-1996," "Table 203. Number, Percent and Physician-to-Population Ratios of Professionally Active MDs and Patient Care MDs by Primary Care Specialty, Selected Years 1981-1996," "Table 301. Professionally Active and Private Practice Dentists and Dentist-to-Population Ratios, Selected Years 1975-1996," and "Table 401. Estimated Number of Registered Nurses Employed by Highest Educational Preparation 1980-

1996.” In *United States Health Workforce Personnel Factbook*. Online at <ftp://ftp.hrsa.gov/bhpr/nationalcenter/factbook.htm>, accessed September 16, 2002.

Health Resources and Services Administration. Bureau of Health Professions. National Center for Health Workforce Information and Analysis. “Table 210. First-year and Total Enrollments in and Graduates from Schools of Allopathic Medicine by Gender, Academic Years 1975-76 to 1997-98,” and “Table 216. First-year and Total Enrollments in and Graduates from Schools of Osteopathic Medicine by Gender, Academic Years 1975-76 to 1996-97.” In *United States Health Workforce Personnel Factbook*. Online at <ftp://ftp.hrsa.gov/bhpr/nationalcenter/factbook.htm>, accessed September 29, 2002.

Health Resources and Services Administration. *Bureau of Primary Health Care: Programs, Initiatives, and Offices*. Online at http://bphc.hrsa.gov/bphc/index_1.htm, accessed October 2, 2002.

Health Resources and Services Administration. *Health Professional Shortage Areas Database*. Online at <http://www.bphc.hrsa.dhhs.gov/databases/newhpsa/newhpsa.cfm>, accessed September 17, 2002.

Health Resources and Services Administration. *Maternal and Child Health Bureau Factsheet*. Online at <ftp://ftp.hrsa.gov/mchb/factsheets/mchb.pdf>, accessed October 2, 2002.

Health Resources and Services Administration. *MUA/MUP Database*. Online at <http://bphc.hrsa.gov/dsd/default.htm>, accessed August 26, 2002.

Health Resources and Services Administration. *The Border Health Program Priority Unit*. Online at <http://bphc.hrsa.gov/bphc/borderhealth/bhpp.htm>, accessed October 2, 2002.

Immigration and Naturalization Service. “Southwest Border Apprehensions.” In *Monthly Statistical Report and September FY 2001 Year End Report*. Online at <http://www.ins.usdoj.gov/graphics/aboutins/statistics/msrsep01/SWBORD.HTM>, accessed September 17, 2002.

Instituto Nacional de Estadística, Geografía e Informática (INEGI). *Anuario de Estadísticas por Entidad Federativa, Aspectos Demográficos, 1995-1998*. Online at <http://tamps.inegi.gob.mx/tamaulipas/difusion/espanol/bvinegi/aef/apsdemo.pdf>, accessed November 6, 2002.

Instituto Nacional de Estadística, Geografía e Informática. *Mexico's Population by State, 1985-2000*. Online at <http://www.inegi.gob.mx/difusion/ingles/fiesoc.html>, accessed September 9, 2002.

Instituto Nacional de Estadística, Geografía e Informática, Coahuila. *Población Total por Grandes Grupos de Edad Según Municipio, 2000*. Online at http://coah.inegi.gob.mx/sociodem/espanol/municipal/mun_02.html, accessed September 13, 2002.

- Instituto Nacional de Estadística, Geografía e Informática, Nuevo Leon. *Población Total por Grandes Grupos de Edad Según Municipio, 2000*. Online at http://nl.inegi.gob.mx/sociodem/espanol/municipal/mun_02.html, accessed November 19, 2002.
- Instituto Nacional de Estadística, Geografía e Informática, Tamaulipas. *Población Total por Grandes Grupos de Edad Según Municipio, 2000*. Online at http://tamps.inegi.gob.mx/sociodem/espanol/municipal/mun_02.html, accessed September 13, 2002.
- Interfaith Center on Corporate Responsibility. *Landmark Study Shows Mexican Maquiladora Workers Not Able to Meet Basic Needs on Sweatshop Wages*. Press Release June 2001. Online at http://www.iccr.org/news/press_releases/pr_maquila.htm, accessed September 25, 2002.
- International Boundary and Water Commission. *Report of the U.S. Section, International Boundary and Water Commission, April 2002*. Online at <http://www.ibwc.state.gov/Files/BrandesRpt0402.pdf>, accessed September 25, 2002.
- International Boundary and Water Commission. *Welcome to the International Boundary and Water Commission*. Online at <http://www.ibwc.state.gov>, accessed September 24, 2002.
- Larson, Alice C. *Migrant and Seasonal Farmworker Enumeration Profiles Study, Texas*. (Report for Migrant Health Program, Health Resources and Services Administration, 2000.) Online at <http://bphc.hrsa.gov/migrant/Enumeration/final-tx.pdf>, accessed September 13, 2002.
- Levit, Katharine, Cynthia Smith, Cathy Cowan, Helen Lazenby, and Anne Martin. "Inflation Spurs Health Spending in 2000." *Health Affairs*. Vol. 21, no. 1 (Jan./Feb. 2002), pp. 172-181.
- Lyndon B. Johnson School of Public Affairs. *Health Care Across the Border*. Mexican Policy Studies Program Policy Report no. 4, Austin, Tex., 1993.
- Lyndon B. Johnson School of Public Affairs. *NAFTA and Trade in Medical Services between the U.S. and Mexico*. Mexican Policy Studies Program Policy Report no. 7, Austin, Tex., 1997.
- Medical Hispanic Center of Excellence. *Medical Hispanic Center of Excellence*. Online at <http://www.uthscsa.edu/hcoe>, accessed December 3, 2002.
- Migrant Clinicians Network. *TB Net Enrollment*. Online at http://www.migrantclinician.org/programs/TBNet/tb_enrollment_stats.html, accessed August 26, 2002.
- Pan American Health Organization. *Dengue in three border cities in Tamaulipas, Mexico*. Online at http://www.fep.paho.org/denguebul/english/section3_2.htm, accessed August 21, 2002.

- Pan American Health Organization. El Paso Field Office. *Pan American Health Organization, U.S.-Mexico Border Office*. Online at <http://www.fep.paho.org>, accessed December 2, 2002.
- Pan American Health Organization. *Report of the Regional Evaluation Meeting of National TB Control Programs*. Online at <http://www.paho.org/English/HCP/HCT/TUB/tb-regional-eval-mtg-2000.PDF>, accessed September 11, 2002.
- Pan American Health Organization. *Table 1: Number of Cholera Cases in the Americas (1991-2001, by Country and Year)*. Online at <http://www.paho.org/English/HCP/HCT/EER/cholera-cases-deaths-91-01.htm#table1>, accessed August 21, 2002.
- Pan American Health Organization. *Tuberculosis along the United States-Mexico Border*. Online at <http://www.fep.paho.org/bul9/BorderTB.asp>, accessed September 11, 2002.
- Pan American Health Organization. *Values, Vision, and Mission*. Online at <http://www.paho.org/english/dbi/ecp/mission.htm>, accessed December 2, 2002.
- Pan American Health Organization. *What is PAHO?* Online at <http://www.paho.org/english/dbi/ecp/What-PAHO.htm>, accessed December 2, 2002.
- Regional Academic Health Center. *RAHC*. Online at <http://rahc.uthscsa.edu>, accessed December 2, 2002.
- Reinhardt, Uwe. "Health Manpower Forecasting: The Case of Physician Supply." In *Health Services Research: Key to Health Policy*, ed. Eli Ginzberg. Cambridge, Mass: Harvard University Press, 1991.
- Secretaría de Salud de México. Dirección General de Epidemiología. *Estadísticas en Salud, Boletín Epidemiológico, Vigilancia Epidemiológica Semana 52-2001*. Online at <http://www.epi.org.mx>, accessed September 11, 2002.
- Secretaría de Salud de México. *Distribución de Casos Nuevos de Enfermedades por Grupo de Edad, Estados Unidos Mexicanos, 2001*. Online at <http://www.epi.org.mx/anuarios/p.pdf>, accessed September 14, 2002.
- Secretaría de Salud de México. *Situación de la Salud 2000*. Online at <http://www.ssa.gob.mx>, accessed September 24, 2002. (Zip file s_salud2000.zip, downloaded from "Bases de datos" page, unzipped Excel files SIT_COA_2000.xls, SIT_NL_2000.xls, and SIT_TAM_2000.xls, tab Pag11Rec; and TIPOU.xls, tab 1p).
- Secretaría de Salud de México. *Tasa Bruta de Natalidad por Entidad Federative, 2002*. Online at <http://www.ssa.gob.mx>, accessed September 24, 2002.
- Secretaría de Salud de Tamaulipas. *Jurisdicciones Sanitarias III, IV, V*. Online at <http://salud.tamaulipas.gob.mx/infraestructura/jurisdicciones/j1.htm>, accessed September 14, 2002.

- Secretaría de Salud de Tamaulipas. *Principales Causas de Enfermedades*. Online at <http://salud.tamaulipas.gob.mx/estadisticas/enfermedades.htm>, accessed September 11, 2002.
- South Central AHEC. *South Central AHEC Frequently Asked Questions and Information*. Online at <http://www.alamoahec.org/html/whatis.htm>, accessed November 25, 2002.
- Stys, Jeffrey. "Crossing the Border for Private Care: Issues and Innovations for the Texas Health Insurance Industry." Professional Report, LBJ School of Public Affairs, The University of Texas at Austin, August 1995.
- Texas A&M University. Colonias Program. *Colonias in Texas*. Online at <http://chud.tamu.edu>, accessed August 15, 2002.
- Texas Association of Community Health Centers. Data Compiled by Jennifer Rankin from *2001 Uniform Data System (UDS) Reports and TACHC 2002 Membership Directory*. Austin, Texas, September 2002.
- Texas Board of Nurse Examiners. *Currently Licensed Texas RNs by County of Residence, 09/01/2001*. Online at <ftp://www.bne.state.tx.us/01-cntstat.pdf>, accessed September 15, 2002.
- Texas Board of Nurse Examiners. *Currently Licensed Texas RNs Recognized as Advance Practice Nurses, by County and Recognition Group, 09/01/2001*. Online at <ftp://www.bne.state.tx.us/01-apn.pdf>, accessed September 15, 2002.
- Texas Board of Vocational Nurse Examiners. Data on LVNs compiled by Pat O'Quinn, Licensing Supervisor. Austin, Texas, September 2002.
- Texas Comptroller of Public Accounts. *Special Report: State Functions at the Texas-Mexico Border and Cross-Border Transportation* (January 2001). Online at <http://www.window.state.tx.us/specialrpt/border/index.html>, accessed September 9, 2002.
- Texas Department of Health. *1994 Epidemiology Annual Report*. Austin, Texas, 1996.
- Texas Department of Health. *1995 Epidemiology Annual Report*. Austin, Texas, 1997.
- Texas Department of Health. *1996 Epidemiology Annual Report*. Austin, Texas, 1998.
- Texas Department of Health. *1997 Epidemiology Annual Report*. Online at <http://www.tdh.state.tx.us/epidemiology/97annual/frames/frames.htm>, accessed August 20, 2002.
- Texas Department of Health. *1998 Epidemiology Annual Report*. Online at <http://www.tdh.state.tx.us/epidemiology/98annual/frames/frames.htm>, accessed August 20, 2002.

- Texas Department of Health. *1999 Epidemiology Annual Report*. Online at <http://www.tdh.state.tx.us/epidemiology/99annual/frames/frames.htm>, accessed August 19, 2002.
- Texas Department of Health. Associateship for Family Health. *Texas Health Steps Dental Statewideness Report for Service Utilization, SFY 2000*. Online at http://www.tdh.state.tx.us/dental/StateW_2000.pdf, accessed September 12, 2002.
- Texas Department of Health. Bureau of Communicable Disease. *Tuberculosis Elimination Division Statistics (Cases by County and Rates by County)*. Online at <http://www.tdh.state.tx.us/tb/Stat.htm>, accessed August 16, 2002.
- Texas Department of Health. Bureau of Communicable Disease. *Tuberculosis Incidence Rates per 100,000 Population by County, Texas 1995-2001*. Online at <http://www.tdh.state.tx.us/tb/RatesbyCountyTBL.htm>, accessed August 16, 2002.
- Texas Department of Health. Bureau of Vital Statistics. *Texas Vital Statistics 2000 Annual Report*. Online at <http://www.tdh.state.tx.us/bvs/stats00/contents.htm>, accessed August 21, 2002.
- Texas Department of Health. *Diabetes Prevalence in Texas, 2001* (estimates using the Texas Behavioral Risk Factor Surveillance System). Online at <http://www.tdh.state.tx.us/diabetes/data/county.pdf>, accessed August 26, 2002.
- Texas Department of Health. *Health Disparities in Texas: An Epidemiologic Review of Priority Health Outcomes* (March 2002). Online at http://www.tdh.state.tx.us/minority/pubs/Disp_all.PDF, accessed September 10, 2002.
- Texas Department of Health. *Health Professional Shortage Areas (HPSAs)*. Online at <http://www.tdh.state.tx.us/dpa/hpsa.htm>, accessed August 26, 2002.
- Texas Department of Health. HIV/STD Epidemiology Division. *Texas HIV/STD Surveillance Report, Annual Report 2001*. Online at http://www.tdh.state.tx.us/hivstd/stats/pdf/surv01_4.pdf, accessed August 21, 2002.
- Texas Department of Health. Office of Health Information and Analysis. *Texas Acute Care Hospital Utilization Report, 2000*. Online at <http://www.tdh.state.tx.us/dpa/survey/UTILREP.PDF>, accessed September 13, 2002.
- Texas Department of Health. Office of Health Information and Analysis. *Texas Census 2000 Population Data*. Online at <http://www.tdh.state.tx.us/dpa/popdata/pg00.htm>, accessed September 13, 2002.
- Texas Department of Health. Office of Health Information and Analysis. *Texas Population Projections for 2002*. Online at <http://www.tdh.state.tx.us/dpa/popdata/pg02.htm>, accessed September 16, 2002.

- Texas Department of Health. Texas Diabetes Council. *Diabetes Prevention and Control Initiative*. Online at <http://www.tdh.state.tx.us/diabetes/bms/index.html>, accessed September 10, 2002.
- Texas Department of Health. Texas Diabetes Council. *Type 2 Diabetes in Children and Adolescents Statewide Action Plan*. Online at <http://www.tdh.state.tx.us/diabetes/t2child/Statewide%20Action1.pdf>, accessed November 19, 2002.
- Texas Department of Health. *The Health of Texans*. Austin, Texas, 2002.
- Texas Department of Housing and Community Affairs. *Office of Colonia Initiatives, Background*. Online at http://www.tdhca.state.tx.us/au_colonias.htm, accessed September 25, 2002.
- Texas Education Agency. *Count of Special Education Students by Selected Counties and the State for Ages 3, 4, and 5, 2001-2002* (Public Information Request). Austin, Texas, September 2002.
- Texas Health and Human Services Commission. *CHIP Enrollment Activity by County, August 1, 2002*. Online at http://www.hhsc.state.tx.us/chip/chip_statewide_web_rpt.pdf, accessed September 17, 2002.
- Texas Health and Human Services Commission. *Estimates of Per Capita Personal Income in Texas for Selected Years*. Online at <http://www.hhsc.state.tx.us/research/dssi/PerCapInc.html>, accessed August 14, 2002.
- Texas Health and Human Services Commission. *Estimated Texas Uninsured Population Under Age 65 by County in Year 2000*. Excel spreadsheet.
- Texas Health and Human Services Commission. *Texas Medicaid Enrollment as of August 2002*. Online at http://www.hhsc.state.tx.us/research/dssi/db_search/cntysearch.asp, accessed September 17, 2002.
- Texas Health and Human Services Commission. "Texas Medicaid Enrollment by County for August 1998." In Excel file *Spreadsheet with Texas Historical Enrollment County Information*. Downloaded from <http://www.hhsc.state.tx.us/research/dssi.htm>, October 2, 2002.
- Texas Health and Human Services Commission. *Texas Medicaid Enrollment by Program Categories for August 2002*. Online at <http://www.hhsc.state.tx.us/research/dssi/LatestEnrollmentbyCategory.html>, accessed September 17, 2002.
- Texas Health Care Information Council. *Table 11: Pediatric Asthma Admission Rate, Texas, 2000*. From Hospital Inpatient Discharge Public Use Data File, 2000, file name pqi_long_04.pdf, created September 12, 2002.
- Texas Interagency Council on Early Childhood Intervention. *FY 2000 ECI Services by County*. Austin, Tex., 2001.

- Texas Secretary of State. *Colonias Frequently Asked Questions*. Online at <http://www.sos.state.tx.us/border/colonias/faqs.shtml>, accessed September 25, 2002.
- Texas State Board of Dental Examiners. Data on current active dental licenses compiled by Sherri Sanders, Director of Licensing and Examinations. Austin, Texas, September 2002.
- Texas State Board of Medical Examiners. *Physician Assistants by County, September 2001*. Online at <http://www.tsbme.state.tx.us/demo/pa/pa2001/pacounty0901.htm>, accessed September 15, 2002.
- Texas State Board of Medical Examiners. *Physicians by County then Specialty, May 2002*. Online at <http://www.tsbme.state.tx.us/demo/docs/d2002/0502/county.htm>, accessed September 15, 2002.
- Texas State Board of Medical Examiners. *Physicians by Specialty, May 2002*. Online at <http://www.tsbme.state.tx.us/demo/docs/d2002/0502/spec.htm>, accessed September 15, 2002.
- Texas State Data Center. Texas Population Estimates Program. *County Estimates, 1994-1999*. Online at <http://txsdc.tamu.edu/tpepp/txpopest.php>, accessed August 17, 2002.
- Texas State Data Center. Texas Population Projections Program. *2001 Methodology for Texas Population Projections*. Online at http://txsdc.tamu.edu/tpepp/2001_txpopprj_method.php, accessed August 12, 2002.
- Texas State Data Center. Texas Population Projections Program. *2001 Population Projections (Table 2) by County*. Online at http://txsdc.tamu.edu/tpepp/table2/csv_county.php, accessed August 12, 2002.
- Texas Water Development Board. *A Report on the Activities in the Texas-Mexico Border Region, October 2001*. Online at <http://www.twdb.state.tx.us/publications/reports/Colonias/State%20of%20the%20Border%20Report2.pdf>, accessed November 7, 2002.
- Texas Water Development Board. *Economically Distressed Areas*. Online at <http://www.twdb.state.tx.us/colonias/index.htm>, accessed September 25, 2002.
- The University of Texas Health Science Center San Antonio. "Grant Award Enables UTHSC to Establish Much Needed Workforce Center." *The News*, Vol. XXXIV, No. 46 (Nov. 16, 2001). Online at <http://www.uthscsa.edu/opa/issues/New34-46/workforce.html>, accessed November 25, 2002.
- The University of Texas-Pan American. Center for Tourism Research. *Winter Visitor Study*. Online at <http://www.coba.panam.edu/centers/tourism.html>, accessed September 24, 2002.
- U.S. Census Bureau. *Census 2000 Summary File 2, United States, Total Population (GCT-P5)*. Online at <http://factfinder.census.gov/home/en/sf2.html>, accessed September 16, 2002.

- U.S. Census Bureau. *Current Population Survey March 2001, Table HI06. Health Insurance Coverage Status by State for All People: 2000*. Online at http://ferret.bls.census.gov/macro/032001/health/h06_000.htm, accessed September 17, 2002.
- U.S. Census Bureau. *Population by Poverty Status in 1999 for Counties: 2000*. Online at <http://www.census.gov/hhes/poverty/2000census/poppvstat00.html>, accessed August 15, 2002.
- U.S. Census Bureau. *Table DP-2, Profile of Selected Social Characteristics: 2000*. Online at <http://quickfacts.census.gov/qfd/states/48000.html>, accessed August 15, 2002.
- U.S. Department of Health and Human Services. Office of Global Affairs. *Ten Against Tuberculosis*. Online at <http://www.globalhealth.gov/americaaffairsten.shtml>, accessed September 24, 2002.
- U.S. Department of Health and Human Services. Office of Global Health Affairs. *U.S.-Mexico Binational Commission (BNC), The Health Working Group*. Online at <http://www.globalhealth.gov/americaaffairsusmexico.shtml>, accessed September 19, 2002.
- U.S. Department of Transportation. Bureau of Transportation Statistics. *U.S.-Mexico Border Crossing Data*. Online at <http://www.bts.gov/programs/itt/cross/mex.html>, accessed September 9, 2002.
- U.S. Department of State. *Fact Sheet: Mexico: The Binational Commission*. Online at <http://www.state.gov/p/wha/rls/fs/2001/fsjulydec/4990.htm>, accessed September 19, 2002.
- U.S. Environmental Protection Agency. *Colonias Facts* (October 2002, p. 2). Online at <http://www.epa.gov/owmitnet/mab/mexican/clnfcts.pdf>, accessed November 7, 2002.
- U.S. Environmental Protection Agency. *New U.S.-Mexico Border Environmental Program: Border 2012*. Online at <http://www.epa.gov/usmexicoborder/2002/index.htm>, accessed September 24, 2002.
- U.S.-Mexico Border Health Association. *Welcome to the U.S.-Mexico Border Health Association*. Online at <http://www.usmbha.org/english/index.htm>, accessed November 25, 2002.
- U.S.-Mexico Border Health Commission. *Events*. Online at <http://www.borderhealth.gov/Events/events.html>, accessed September 19, 2002.
- U.S.-Mexico Border Health Commission. *WHO Removes Mexico from Cholera Epidemic List*. Online at <http://www.borderhealth.gov/Events/Mexico-WHO/mexico-who.html>, accessed September 19, 2002.
- U.S.-Mexico Border Health Commission Design Team. *Health on the U.S.-Mexico Border: Past, Present, and Future; A Report to the United States-Mexico Border Health*

Commission. Online at http://www.borderhealth.gov/About/Border_Health_Report/border_health_report.html, accessed September 19, 2002.

Warner, David C., and Jillian Hopewell. *NAFTA and the U.S./Mexico Border Health: The Impact on HRSA-Sponsored Programs*. Report Prepared for HRSA. Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, October 1999.

Warner, David C., Roy R. McCandless, Louis A. De Nino, John E. Cornell, Jacqueline A. Pugh, and Genevieve M. Marsh. "Cost of Diabetes in Texas, 1992." *Diabetes Care*, vol. 19 (December 1992), pp. 1416-1419.

World Health Organization. *Mexico, Key Health Expenditures Indicators*. Online at <http://www.who.int/country/mex/en/>, accessed November 7, 2002.