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Report to the Honorable
Lloyd Bentsen, U.S. Senate

October 1988

HEALTH CARE

Availability in the Texas-Mexico Border Area

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United States
General Accounting Office
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Human Resources Division

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October 26, 1988

The Honorable Lloyd Bentsen
United States Senate

Dear Senator Bentsen:

In your March 25, 1988 letter, you noted that in counties in the area along the Texas-Mexico border, health and public officials have indicated that health care is a primary concern. This is due, the officials note, to (1) the vast numbers of immigrants seeking health care and (2) the fiscal burden posed by the weak Texas economy—including widespread poverty and a low standard of living—on communities in these counties.

In view of the concerns expressed, you requested that we obtain information on the health problems of the population and the availability of health care in the Texas-Mexico border area counties.

Objectives, Scope, and Methodology

In response to your request, we have obtained the following information on the area: (1) birth and death rates, (2) reported incidence of diseases, (3) availability of health care providers, (4) availability of health care facilities, and (5) federal, state, and local health programs. Our sources for most information were reports published by the U.S. Department of Health and Human Services, state and local agencies, and independent researchers. Where appropriate, we augmented such information by discussions with state and local officials.

At the national level, we obtained data on births and deaths (including fetal deaths) from the National Center for Health Statistics and data on diseases from the Centers for Disease Control. We also collected data on health professionals and health facilities from national organizations, such as the American Medical Association and the American Hospital Association.

At the state level, for both Texas and the border counties, we obtained statistics from the Texas Department of Health on population, births, deaths (including fetal deaths), diseases, health care facilities, and health services. In order to determine Medicaid and other program funding, as well as the number of people served, we also reviewed and analyzed, by county, state data from the Texas Department of Health Services for fiscal year ending August 31, 1987. We obtained data on health professionals from various Texas health examination boards. In

addition, we interviewed state officials to obtain both background and detailed information on Texas health programs, especially those focused on the border area.

At the local level, we spoke with some county and regional health department officials to obtain data on the programs they offered, including eligibility requirements, numbers of participants, and funding and expenditures.

We did not independently verify the data collected from these sources nor the information provided by other sources. Our review was carried out from April through July 1988 in accordance with generally accepted government auditing standards.

Background

The Texas segment of the U.S. Mexico border extends about 1,000 miles and comprises 16 counties; 1.5 million people live in the area, with Hispanics making up 73 percent of the population and blacks, 1.6 percent. About 9 percent of the population of Texas lives in this area, earning the lowest income in the state; those living below the poverty level ranged from 24.3 percent in Culberson County to 55.1 in Presidio County. At least 111,000 people in the area live in substandard housing in rural districts, most of which have polluted water and inadequate sewage facilities.

Results in Brief

The information we obtained is summarized below.

Birth and Death Rates

In the border area, the general birth rate was higher and the death rate was lower than in the United States. There were 92 births per 1,000 women of childbearing age in the border area and 66 in the United States. There were lower death rates across all age groups in the border area than in the United States. This may be due, in part, to the higher death rate for blacks, who make up a much larger percentage of the U. S. population than the border area population. The leading causes of death in both the border area and the United States, in order of incidence, were heart disease, cancer, stroke, accidents, chronic obstructive pulmonary disease, and pneumonia and influenza (classified as one category).

Diseases and Other Health Problems

Communicable diseases that were reported at a relatively higher rate in the border area than in the United States included gastrointestinal diseases, hepatitis, tuberculosis, and syphilis. Few cases of AIDS have been reported in the border area from January 1980 to June 1988. Cases of other communicable diseases in the border area, not common in most parts of the United States, were reported, including leprosy and malaria, but the reported cases were low compared with other health problems. Reporting and diagnostic practices varied from county to county, leading to fluctuations in rates and possible underreporting of communicable diseases.

We were unable to obtain data on the incidence of noncommunicable health problems in the border area. However, various research studies are available on the health of Mexican-Americans, who make up a majority of the border population. These studies found that obesity, diabetes mellitus, and gallbladder disease were common among Mexican-Americans. Such health problems are expected to be higher in the border area because they have a possible genetic link to the Mexican-American community.

Health Care Providers

The majority of the border counties have physician shortages, according to the U.S. Public Health Service; half of the counties have fewer than 10,000 people, and half have fewer than five physicians. Most of the physicians are located in the more populated counties. Moreover, eight of the counties have dentist shortages. There were relatively fewer nurses and physician assistants in the border area than in Texas in general. In addition, sparsely populated counties have few emergency care personnel, such as those who staff ambulances.

Health Care Facilities

The majority of hospitals are in the most populated border counties. Some border counties do not have a hospital or clinic facilities and emergency care equipment; however, each of these counties has a population under 9,000. In the entire border area, there are nine federal migrant centers and community health centers (clinics) and, in three counties, six ambulatory surgical centers. Most emergency care vehicles were concentrated in the most populated counties, leaving rural counties, covering vast geographic distances, with little coverage.

Federal, State, and Local Health-Related Programs

Four categories of federal, state, and local health-related programs could benefit various segments of the border population, depending on whether program eligibility requirements are met.

The first category, maternal and child health programs, includes the federal Special Supplemental Food Program for Women, Infants, and Children (WIC), along with several state and local programs. These programs provide food, medical services, and family planning; an estimated 209,194 border area residents were eligible for WIC in 1987, noted the Texas Department of Health. Program expenditures in the 16 border counties in 1987 were $28,642,779. In 1987, state and local programs ranged in size, serving as few as 458 clients to as many as 61,655; funding ranged from $1.3 million to $5.4 million.

The second category, disease-specific programs, provides screening and medical services for diabetes, cancer, and kidney disease. Federal and state or local programs served from 226 clients in one program to 734 in another. Data on the numbers served and funding for these programs were not always available for 1987, but funding ranged from $336,024 to $720,546 for the programs on which information was available.

The third category, general prevention and treatment programs (offered at the state or local level), provides adult health screening services for various chronic diseases, dental care, and immunization. In 1987, the number of clients in these programs ranged from 5,934 to 133,106, and funding (for programs with data available) ranged from $111,000 to $2.97 million.

The fourth category, general assistance programs, includes Medicaid and three state and local programs. In 1987, 160,372 clients were served under Medicaid in all 16 of the border counties, with Medicaid expenditures of $173,776,083. In 1987, the number of clients in state and local programs ranged from 2,153 to 7,962 in the programs with data available; program funding ranged from $258,457 to $3.2 million.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from its issue date. At that time, we will send copies to other interested congressional members and committees, as well as other interested parties.

The major contributors to this report are listed in appendix VII.

Sincerely yours,

Janet L. Shikles

Janet L. Shikles
Associate Director

Contents

Tables

Figures

Abbreviations

AIDS	acquired immunodeficiency syndrome
HHS	Department of Health and Human Services
WIC	Special Supplemental Food Program for Women, Infants, and Children

Description and Economy of the Border Area

Nature of Area

Extending close to 1,000 miles along the Rio Grande, from El Paso to the Gulf Coast, is the Texas segment of the U.S.-Mexico border. For the purposes of this report, we have defined the border area as comprising the 16 Texas counties contiguous to the border. Running from west to east on the map (see figure I.1), these counties are, in order, El Paso, Hudspeth, Culberson, Jeff Davis, Presidio, Brewster, Terrell, Val Verde, Kinney, Dimmit, Maverick, Webb, Zapata, Starr, Hidalgo, and Cameron.

According to the 1988 population estimates from the Texas Department of Health, 89 percent of the border population of 1.5 million people live in urban counties where jobs are concentrated (see table I.1). The four major cities in the Texas border area, in order of size, are El Paso in El Paso County, McAllen in Hidalgo County, Brownsville in Cameron County, and Laredo in Webb County. Like most urban centers along the U.S.-Mexico border, each of these cities has an urban counterpart on the Mexican side. Nevertheless, the greater part of the Texas border area is rural (that is, farmland, ranches, and sparse population), particularly in the mountainous counties of Culberson, Hudspeth, Jeff Davis, and Presidio.

Residents in the border counties account for about 9 percent of the projected Texas population as of 1988. Hispanics account for 73 percent of the border population, about 23 percent of the state population, and, as of 1986, about 7 percent of the U.S. population. Blacks account for 1.6 percent of the border population, about 11 percent of the state population, and, as of 1986, about 12 percent of the U.S. population. Non-Hispanic whites account for about 25 percent of the border population and, as of 1986, about 79 percent of the U.S. population.

Figure I.1: Texas Border Area Counties and Their Major Cities in GAO Study

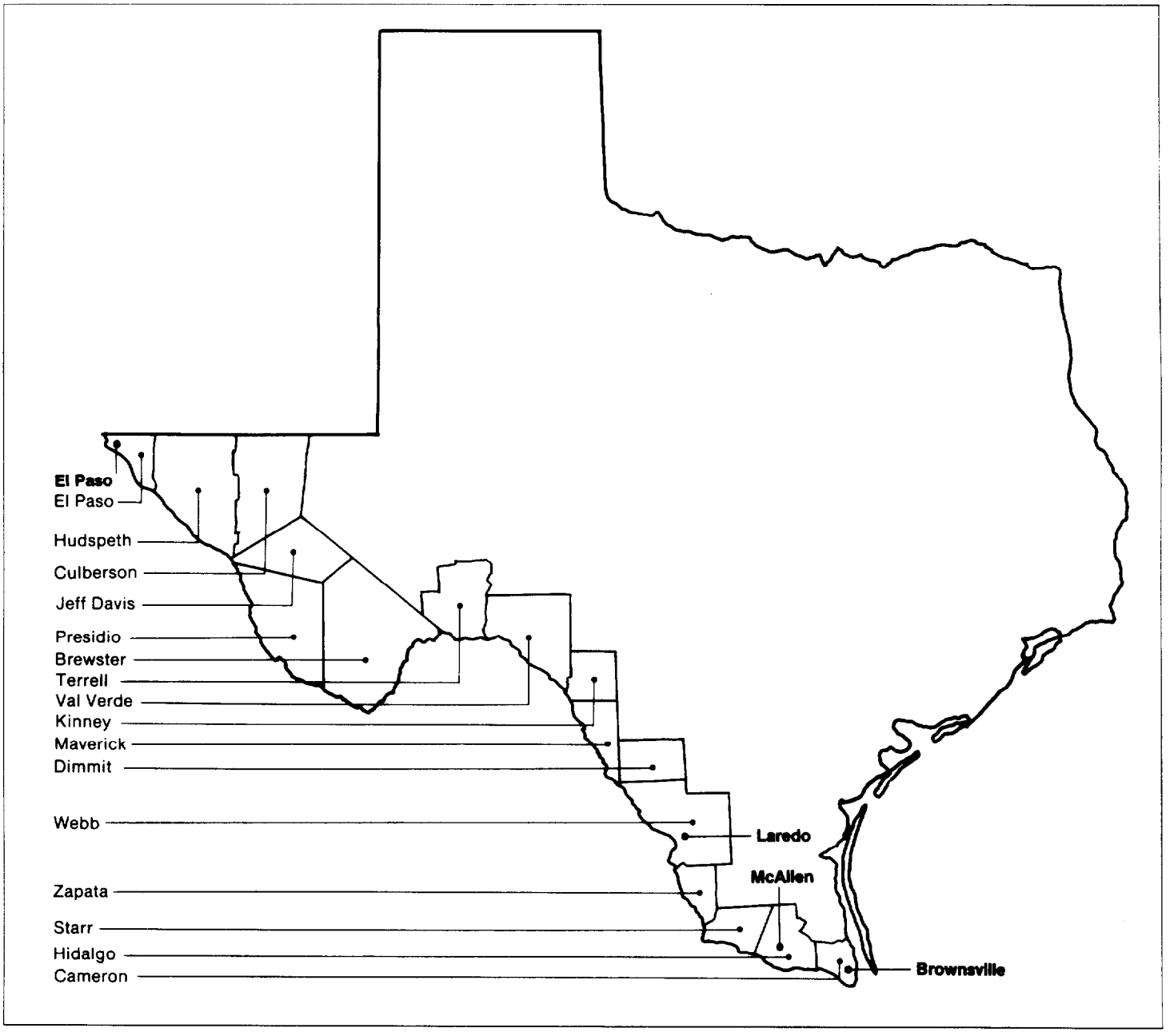

Table I.1: Population Estimates for All Ethnic and Racial Groups Combined and for Hispanics in Texas and the Border Area, 1988

	All ethnic and racial groups	Hispanics	
		Number	In percent
Texas	17,265,994	3,941,224	23
Border area counties	1,517,077	1,110,941	73
Brewster	8,835	3,198	36
Cameron	263,835	196,204	74
Culberson	3,777	2,676	71
Dimmit	12,881	8,932	69
El Paso	577,511	367,870	64
Hidalgo	373,705	296,422	79
Hudspeth	2,857	1,664	58
Jeff Davis	1,939	767	40
Kinney	2,564	1,396	54
Maverick	40,510	36,384	90
Presidio	5,828	4,370	75
Starr	36,251	33,472	92
Terrell	1,405	602	43
Val Verde	44,604	31,053	70
Webb	131,623	119,979	91
Zapata	8,952	5,952	66

Note: Data supplied by the Texas Department of Health.

Economy of Area

The major industries in the economy of the border area are trade, government, and services; these account for 69 percent of all jobs. Manufacturing also plays a significant role in the economy, particularly in El Paso County and the nearby vicinity. On the opposite tip of the border, the Brownsville-McAllen part of the lower Rio Grande Valley relies on a semi-tropical agricultural industry. Many migrant farm workers live here.

The border area has some of the state's highest unemployment rates. According to the U.S. Department of Labor, in 1987 the average unemployment rates in the area ranged from 2.0 percent in Hudspeth County to 36.3 percent in Starr County. The unemployment rate for the entire state of Texas was 8.4 percent (see table I.2).

Table I.2: Unemployment Rate for the United States, Texas, and the Border Area, 1987

In percent

	1987 unemployment rate
United States	6.2
Texas	8.4
Border area counties:	
Brewster	4.7
Cameron	14.3
Culberson	8.0
Dimmit	17.7
El Paso	10.7
Hidalgo	18.0
Hudspeth	2.0
Jeff Davis	5.3
Kinney	7.3
Maverick	28.4
Presidio	15.6
Starr	36.3
Terrell	5.2
Val Verde	16.1
Webb	15.4
Zapata	13.5

Note: Data obtained from the Department of Labor.

Because of their proximity, the economies of both the U.S. and Mexican sides of the border are interdependent. Throughout the 1980's, Mexico's economy has suffered from high unemployment, inflation, and a series of monetary devaluations of the peso. According to the 1987 Texas Almanac, this situation has been responsible for the loss of American retail sales to the Mexican market and for a consequent loss of jobs in Texas.

Conversely, the falling peso has reduced Mexican wages and lowered production costs, boosting the twin-plant industry. This refers to a pair of industrial plants, each of which is involved in different stages of the manufacturing process. For instance, plants in Mexico assemble products from parts made by nearby plants in Texas. Support and service facilities required by the twin-plant industry have become a source of employment for Texans. According to the Texas Economic Analysis Center, the number of twin plants is expected to grow during the next few years; although their growth will stimulate the job market, their overall effect on regional unemployment is uncertain.

Impact of Mexico's Economic Policies on the Border Area

The Mexican government has had a considerable impact on the economics of the border area. Since World War II, Mexico's policy towards its northern border has been one of encouraging economic development, notes a report on the health of Mexican-Americans.[1] Development programs have created new jobs and lured Mexicans from the rural regions, where unemployment was high. American tourism and investments have also broadened the job market in the area.

Unfortunately, the report points out, the population migrating to Mexico's northern border has greatly surpassed the number of available jobs. The situation is exacerbated by the natural increases that are taking place in this population. But the growth of Mexico's gross national product has not paralleled that of its population and, therefore, fewer resources, including health services, have been available; the result is a rapidly growing population with a low standard of living, which contributes to a host of health problems.

Socioeconomic Indicators in the Border Area

In the 1980 census (the most current data available), the median years of schooling completed for people 25 years of age or older was 10.5 years in the border area as compared with 12 for the entire state. In the border area, the percentage of high school graduates over 25 years of age ranged from 27 percent in Starr County to 68 percent in Brewster County. In comparison, 63 percent of Texans 25 years of age or older were high school graduates in 1980 (see table I.3).

[1] Lyndon B. Johnson School of Public Affairs, The Health of Mexican-Americans in South Texas (University of Texas at Austin).

Table I.3: Years of Schooling Completed in the United States, Texas, and the Border Area, 1980

Persons 25 years of age and over

	Median years of schooling completed	High school graduates (in percent)
United States[a]	13	67
Texas	12	63
Border area counties:		
Brewster	13	68
Cameron	10	44
Culberson	11	44
Dimmit	9	35
El Paso	12	60
Hidalgo	9	41
Hudspeth	11	46
Jeff Davis	12	55
Kinney	10	40
Maverick	8	32
Presidio	9	41
Starr	7	27
Terrell	12	60
Val Verde	12	51
Webb	10	42
Zapata	10	41

Note: Data obtained from the 1980 Census of Population, General Social and Economic Characteristics; the Texas and National Data Book and Guide to Sources; and the Statistical Abstract of the United States, 107th edition, U.S. Department of Commerce (Bureau of the Census, 1987).

[a]U.S. estimates are based on a 17-percent sample. This estimate excludes members of the Armed Forces (except members living off post or with families on post) and inmates of institutions.

The border population earns the lowest personal income in the state. According to the Texas Economic Analysis Center, this is partly due to high unemployment rates combined with low salaries and wages. U.S. Department of Commerce figures show that in 1986, the per capita income for Texas was $13,486 compared with $8,422 for the border area. From 1969 to 1986, the border area experienced an average growth rate in personal income, which ranged from 6.6 percent in Culberson County to 13.6 in Zapata County (see table I.4). The growth rate for the entire state was 11.2 percent in this time period.

Table I.4: Personal Income for the United States, Texas, and the Border Area, 1986

	1986 per capita personal income	National average, 1986 (in percent)	Average growth rate, 1969-86 (in percent)
United States	$14,639	100	9.4
Texas	13,486	92	11.2
Border area counties:			
Brewster	9,806	67	8.8
Cameron	7,205	49	11.8
Culberson	9,724	66	6.6
Dimmit	5,806	40	10.6
El Paso	9,177	63	10.0
Hidalgo	6,800	46	12.8
Hudspeth	9,535	65	9.0
Jeff Davis	10,665	73	9.4
Kinney	11,418	78	12.4
Maverick	5,063	35	12.5
Presidio	7,979	55	8.3
Starr	4,136	28	11.0
Terrell	15,595	107	7.6
Val Verde	8,239	56	9.9
Webb	6,850	47	10.6
Zapata	6,761	46	13.6

Note: Data obtained from the Bureau of Economic Analysis, Department of Commerce.

In 1987, the border population living below the poverty level ranged from 24.3 percent in Culberson County to 55.1 percent in Presidio County (see table I.5). The poverty level for the entire state in 1987 was 18.4 percent.

Table I.5: Poverty Rate Estimates for the Texas Border Area, 1987

In percent

	Estimated poverty rate
Texas	18.4
Border area counties:	
Brewster	28.3
Cameron	33.5
Culberson	24.3
Dimmit	41.3
El Paso	27.2
Hidalgo	37.1
Hudspeth	44.5
Jeff Davis	32.4
Kinney	47.8
Maverick	45.8
Presidio	55.1
Starr	51.5
Terrell	30.9
Val Verde	36.1
Webb	37.2
Zapata	32.3

Note: Data obtained from the Texas Department of Health for the most recent year available—1987.

Colonias: Shantytowns of the Area

Poverty and the scarcity of adequate, yet affordable, housing in the area have contributed to the growth of colonias. These substandard housing subdivisions in rural districts consist of small plots of land with few or no roads and polluted water and inadequate sewage facilities; colonias are in unincorporated parts of counties, adjacent to American cities and towns along the border.

The land for the colonias was usually acquired by migrant workers and other low-income groups of Mexican descent. Because colonias exist in unincorporated parts of counties, local jurisdictions have not been obligated to provide water and sewage services, and the new owners have lacked the financial means to acquire such services. These substandard living conditions pose a health problem to the colonias' residents as well as to the entire population of the border counties, according to the Texas Water Development Board.

Reports by the Congressional Research Service and the Texas Water Development Board noted that at least 110,691 people live in a minimum of 566 colonias in the Texas border area (see table I.6). These estimates may be conservative for several reasons. First, there are no comprehensive surveys of colonias in the border area. Second, colonias can be difficult to locate, as they are often absorbed by nearby towns and cities. Third, a settlement may not be classified as a colonia even if it has substandard living conditions.

Table I.6: Colonias in the Texas Border Area

Border area counties	Estimate of colonias	Estimate of persons in colonias
Brewster	2	400
Cameron	65	17,037
Culberson	8[a]	500
Dimmit	[b]	[b]
El Paso	80	15,000
Hidalgo	366	51,804
Hudspeth	8	1,000
Jeff Davis	3	500
Kinney	1	150
Maverick	1[a]	3,650[a]
Presidio	[b]	[b]
Starr	1[a]	8,000[a]
Terrell	2[a]	150
Val Verde	10	2,000
Webb	4	9,500
Zapata	15	1,000
Total	**566**	**110,691**

Note: Data obtained from Border State "Colonias": Background and Options for Federal Assistance (Oct. 30, 1987) and A Reconnaissance Level of Study of Water Supply and Wastewater Disposal Needs of the Colonias of the Lower Rio Grande, Texas Water Development Board (Jan. 1987). In counties for which a range was provided, the most conservative figure was used to estimate the total number of colonias and colonia residents.

[a]A conservative estimate from the available information.

[b]Number not available.

Vital Statistics in the Border Area—Population, Births, and Deaths

The border area population was younger and had a higher birth rate than the United States in general; death rates for infants and the general population were lower. This may be due, in part, to the higher death rate for blacks, who made up a much larger proportion of the United States than the border area population. The leading causes of death were the same for the border area, Texas, and the United States—(in order) heart disease, malignant neoplasms, cerebrovascular diseases, accidents, chronic obstructive pulmonary disease, and pneumonia and influenza (classified as one category).

Age Distribution of the Population in the United States, Texas, and the Border Area

In 1985, 48 percent of the people living in the border area were under 25 years of age as compared with 41 percent in Texas and 38 percent in the United States; 15 percent of the border area population was 55 years or older, compared with 18 percent in Texas and 21 percent in the United States (see table II.1).

Table II.1: Age Distribution of the Population in the United States, Texas, and the Border Area, 1985

In percent

	Age distribution			
	0-14 years	15-34 years	35-54 years	55 years and over
United States[a]	22	35	22	21
Texas[b]	24	35	23	18
Border area[b]	31	33	21	15

[a]Data from Census estimates for 1985 data.

[b]Data from Texas Department of Health.

The concentration of young people in the border area may be attributed to the influx of young immigrants from Mexico and other Central American countries, the high birth rate, and the relatively low death rate for infants.

General Birth Rates

The general birth rate is defined as the number of children born in a given year per 1,000 women of childbearing age, that is, between the ages of 15 and 44. In 1986, the general birth rate was higher in the border area than in Texas or the United States, as seen in table II.2.

Table II.2: General Birth Rates for the United States, Texas, and the Border Area, 1985-86

Live births per 1,000 women 15 to 44 years of age

	All racial and ethnic groups	Hispanic
United States[a]	66.2	[b]
Texas[c]	77.8	107.7
Border area[c]	92.1	98.1

[a]Data for the United States were collected for the year 1985, the last year for which fertility information was available on a national basis.

[b]Not available.

[c]The annual number of births in the border area has been small; thus, to insure a more reliable rate, data for the border area and Texas were combined for the years 1985 and 1986.

The birth rate for Hispanics in Texas and the border area was higher than for the general population, but the birth rate for Hispanics in Texas was higher than for Hispanics in the border area. Their birth rate, 98.1 live births per 1,000 women of childbearing age, was much higher than the non-Hispanic white rate, 72.9. The number of blacks and black births in the border area was too small to make reliable estimates of a birth rate (black births represented 1.9 percent of all births in 1985 and 1986 combined).

Infant Death Rates

The infant death rate, that is, the number of infant deaths per 1,000 live births, was lower in the border area than in Texas or in the United States, as shown in table II.3. In part, the difference between the border area and the United States, when all racial groups are combined, may be because (1) the percentage of blacks in the general population is much higher than in the border area and (2) blacks have a high infant death rate. In the border area, there was little difference between the infant death rate for Hispanics and all racial groups combined compared with that for non-Hispanic whites. For Texas, the infant death rate for Hispanics was slightly higher than that for non-Hispanic whites.

Table II.3: Infant Death Rates for the United States, Texas, and the Border Area, 1985-86

Infant deaths per 1,000 live births

	All racial and ethnic groups	Hispanics	Non-hispanic whites	Blacks
United States[a]	10.6	[b]	9.3	18.2
Texas	9.6	9.1	8.4	15.8
Border area[c]	8.6	8.3	8.4	[d]

[a]Data for the United States were collected for the year 1985, the last year for which infant death rates were available on a national basis.

[b]Not available.

[c]The annual number of infant deaths in the border area is small. Thus, to insure a more reliable rate, data obtained for Texas and the border counties were combined for the years 1985-86.

[d]Not available because the number of black births and deaths was too small to calculate a reliable rate.

Although the lower rates for the border area may be partially attributed to the effect of combining racial groups for the United States, different studies have proposed several other hypotheses. First, women who migrate from Mexico to Texas may be in good health and, therefore, more likely to have healthier offspring. Second, underreporting of infant deaths can occur whenever any of the following take place: midwives fail to report infant deaths for fear of being reprimanded; illegal aliens are afraid of being discovered; and large numbers of births are at home, with "shoe box" (inexpensive home) burials taking place.

Even though the infant death rate was lower in the border area than in the United States, there are some concerns about prenatal and delivery care. Impoverished women in the border area often resort to lay midwives (some of whom may not have been trained for delivery assistance), who deliver babies at lower fees than those charged at local medical facilities, some local officials pointed out. In addition, poor women were more likely to wait until late in their pregnancies to obtain care.

Death Rates for the General Population

According to data provided by the Texas Department of Health and the National Center for Health Statistics, the border population had lower death rates across all age groups than Texas or the United States; in every age category, border area Hispanics had lower rates than whites (see table II.4). The lower death rates may be due, in part, to the higher death rate for blacks, who make up a much larger proportion of the United States than the border area population. Underreporting of deaths may also be partially responsible for the lower death rates in the border area. For example, according to one local health official we interviewed,

border residents who travel to Mexico to visit relatives or to seek less expensive medical care may die there, and these deaths may go unreported in the United States.

Table II.4: Death Rates by Age for the United States, Texas, and the Border Area, 1985-86

Death rates per 100,000 persons

	Age groups			
	1-14 years	15-44 years	45-64 years	65+ years and over
United States:[a]				
All races	33.8	137.3	897.3	5,153.3
White	31.2	123.9	847.4	5,151.6
Hispanic	[b]	[b]	[b]	[b]
Black	47.8	237.1	1,433.8	6,629.7
Texas:[c]				
All races	35.8	154.0	846.7	4,749.6
White	34.0	141.9	808.5	4,782.3
Hispanic	31.6	149.5	6,64.2	3,916.5
Black	53.2	231.4	1,450.6	5,477.4
Border area:[c]				
All races	30.6	119.0	705.4	4,094.7
White	42.3	147.9	873.3	4,282.0
Hispanic	27.9	109.5	606.6	3,901.9
Black	[d]	[d]	[d]	[d]

[a]Data for the United States were collected for the year 1985, the last year death rates were available on a national basis.

[b]Data not available.

[c]The annual number of deaths in the border area was small; thus, to insure a more reliable rate, 1985 and 1986 data obtained for Texas were combined and the 1985 and 1986 data for the border counties were combined.

[d]The number of blacks and black deaths were too small to calculate a reliable rate.

Besides age and race, factors such as sex, socioeconomic status, occupation, and environment influence death rates in a very complex manner, according to a National Center for Health Statistics report. Furthermore, death rates, in and of themselves, do not provide a complete picture of the health status of a population. The conditions that result in death are not necessarily the same conditions that afflict people during their lifetime. For example, one may suffer from gastrointestinal diseases, but not die from them. Nonetheless, when considered with disease data, death rates can be reliable health indicators.

Leading Causes of Death

The six leading causes of death in 1985 were the same for the United States, Texas, and the border area, as shown in table II.5. These included (in order) heart diseases, malignant neoplasms (cancer), cerebrovascular diseases (stroke), accidents and adverse effects, chronic obstructive pulmonary diseases, and pneumonia and influenza. In the United States, the six leading causes of death accounted for about 78 percent of all deaths; in Texas, about 74 percent, and in the border area, about 70 percent.

Table II.5: Six Leading Reported Causes of Deaths in the United States, Texas, and the Border Area, 1985

In percent

Cause of death	U.S.	Texas	Border area
Heart diseases	37.0	33.9	30.5
Malignant neoplasms	22.1	20.3	19.2
Cerebrovascular diseases	7.3	7.4	6.8
Accidents and adverse effects	4.5	6.0	6.6
Chronic obstructive pulmonary diseases	3.6	3.2	3.4
Pneumonia and influenza	3.2	3.0	3.0
Total	**77.7**	**73.8**	**69.5**

Note: The latest year that death rates were available was 1985.

Diseases and Other Health Problems in the Border Area

Gastrointestinal diseases, infectious hepatitis, tuberculosis, and syphilis were among communicable diseases with a relatively high incidence in the border area that were reported by local health authorities to state and federal health departments. In most cases, the incidence of these diseases in the border area was higher than in other parts of Texas or the United States. Among other communicable diseases reported for the border area were AIDS, gonorrhea, leprosy, and malaria. The reported incidence of both AIDS and gonorrhea was lower in the border area than in the United States; the reported incidence of leprosy and malaria, which are not common in most U.S. geographic areas, was low relative to other reported diseases in the border area.

Noncommunicable health problems that might be expected to be higher in the border area because of their possible genetic link to the Mexican-American community were obesity, diabetes mellitus, and gallbladder disease.

Communicable Diseases

Reporting and diagnostic practices vary from county to county, leading to fluctuations in rates and possible underreporting of communicable diseases.[1] In addition, an official of the Texas Department of Health pointed out, cases of communicable diseases may go unreported. As to reported cases, this official said, intensive investigations are not usually done because of a lack of resources; cities or counties with large, active health departments usually have the most consistent reporting from year to year.

Gastrointestinal Diseases

Compared with the United States and Texas, the border counties had a higher reported incidence of the following gastrointestinal diseases (see table III.1): amebiasis (an infestation with a protozoan parasite), shigellosis, and campylobacteriosis (both bacterial infections). These diseases are often caused by poor hygiene, polluted water (common in the colonias), and contaminated foods.

[1] Lyndon B. Johnson School of Public Affairs, The Health of Mexican-Americans in South Texas (University of Texas at Austin).

Table III.1: Reported Incidence Rates of Gastrointestinal Diseases in the United States, Texas, and the Border Area, 1985-86

Rate per 100,000 persons

Gastrointestinal disease	United States	Texas[a]	Border area[a]
Amebiasis	1.7	2.1	6.2
Campylobacteriosis	[b]	4.5	6.5
Salmonellosis	24.0	14.9	16.4
Shigellosis	7.1	12.8	17.6

Note: The latest years for which U.S. data were available from the Centers for Disease Control were 1985 and 1986. To ensure comparability and because of the low number of cases in the border area, 2 years of data were combined for each geographic entity.

[a]Data for Texas and the border were obtained from the Texas Department of Health.

[b]Rates were not available for 1985 and 1986.

Conversely, salmonellosis (a gastrointestinal disease generally transmitted through contaminated food) had a lower reported incidence rate in the border area and Texas than in the United States.

Hepatitis

In the border area, the reported incidence rate for type A hepatitis (a viral infection affecting the liver) was approximately twice that found in the United States (see table III.2). This disease, like the gastrointestinal diseases, is commonly contracted through contaminated food and polluted water. On the other hand, type B hepatitis (a disease transmitted through blood and body fluids and also affecting the liver) had a lower reported rate in the border area and Texas than in the United States. Hepatitis that was diagnosed by clinicians, but not specified as to type through laboratory examinations, was reported at a much higher rate than in the United States and at a higher rate than in Texas.

Table III.2: Reported Incidence Rates of Hepatitis in the United States, Texas, and the Border Area, 1985-86

Rate per 100,000 persons

	United States	Texas[a]	Border area[a]
Hepatitis A	9.7	14.4	18.3
Hepatitis B	11.0	9.2	9.8
Hepatitis (unspecified)	2.0	6.6	13.3

Note: The latest years for which U.S. data were available from the Centers for Disease Control were 1985 and 1986. To ensure comparability and because of the low number of cases in the border area, 2 years of data were combined for each geographic entity.

[a]Data for Texas and the border area were obtained from the Texas Department of Health.

Tuberculosis

According to figures for 1987 provided by the Texas Department of Health and the Centers for Disease Control, the incidence of tuberculosis was higher in the border area than in Texas or the United States. Of the reported cases, 92 percent were concentrated in Cameron, El Paso, Hidalgo, Val Verde, and Webb counties. No cases were reported in Brewster, Culberson, Dimmit, Jeff Davis, Kinney, Presidio, and Terrell counties (see table III.3).

Table III.3: Reported Tuberculosis Cases in the United States, Texas, and the Border Area, 1987

	Reported cases	Rate per 100,000 persons
United States	22,517	9.3
Texas	1,757	10.5
Border area counties	231	15.5
Brewster	0	0.0
Cameron	66	25.4
Culberson	0	0.0
Dimmit	0	0.0
El Paso	43	7.6
Hidalgo	59	16.1
Hudspeth	1	35.1
Jeff Davis	0	0.0
Kinney	0	0.0
Maverick	6	15.1
Presidio	0	0.0
Starr	6	16.9
Terrell	0	0.0
Val Verde	11	25.1
Webb	34	26.3
Zapata	5	57.0

Note: The most current year for which data were available from the Centers for Disease Control and the Texas Department of Health for the three geographic entities was 1987.

The high incidence of tuberculosis in the border area could be attributed to the influx of immigrants from Central and South America, particularly Mexicans.[2] The incidence of tuberculosis has been a concern of Mexican health authorities. In 1980, the rate for reported tuberculosis cases per 100,000 inhabitants was 34.8 in Mexico as compared with 12.3 in the United States. The incidence rate in Mexico could be even higher

[2]Health Conditions in the Americas, 1981-1984, Pan American Health Organization (Washington, D.C., 1986).

because before 1978, the recording system covered less than half of the patients detected and treated in Mexico.

Sexually Transmitted Diseases: Syphilis and Gonorrhea

According to 1986 figures obtained from the Texas Department of Health (see table III.4), 626 syphilis cases were reported in the border area. Of these cases, 93 percent were concentrated in the three most populated border counties: Cameron, El Paso, and Hidalgo. The border area experienced a lower incidence of syphilis than found in Texas, but a higher incidence than found in the United States.

Table III.4: Reported Syphilis and Gonorrhea Cases in the United States, Texas, and the Border Area, 1986

	All types of syphilis		All types of gonorrhea	
	Cases	Rates[a]	Cases	Rates[a]
United States	67,771	28.3	892,229	372.8
Texas	9,408	56.2	63,376	378.3
Border area	626	42.7	3,161	215.7

Note: The most current year for which data were available for the three geographic entities was 1986.
[a]The rates, provided by the Centers for Disease Control, are calculated as the number of cases reported per 100,000 persons.

Of the 3,161 cases of gonorrhea reported in the border area in 1986, the majority of the cases (97 percent), like syphilis cases, were concentrated in Cameron, El Paso, and Hidalgo counties. The border area experienced a lower incidence of gonorrhea than Texas or the United States. However, gonorrhea is usually more difficult to detect. Once the acute stage has passed, the symptoms are often not as evident as those of syphilis, and diagnostic tests can be unreliable if not performed in the acute stage. Therefore, gonorrhea is thought to be grossly underreported in all geographic locations, as stated in a report by the American Public Health Association.[3]

The reported rates of gonorrhea and syphilis were higher in Texas than the United States. According to the Centers for Disease Control, on a national basis, Texas ranked fifteenth among the 50 states for gonorrhea case rates and second for syphilis case rates.

[3]A.S. Benincon, ed., Control of Communicable Diseases in Man (Washington, D.C.: American Public Health Association, May 1981).

Acquired Immunodeficiency Syndrome

The reported incidence of acquired immunodeficiency syndrome (AIDS) has been low—57 border area residents had been reported to the Texas Department of Health from January 1980 through June 1988. These cases were reported in Cameron, El Paso, Kinney, and Webb counties, with more than half of the cases in El Paso County, a major urban area. From June 1981 to June 1988, the total for the United States was 65,023 cases (from the Centers for Disease Control); from January 1981 to June 1988, the total for Texas was 4,387 cases (from the Texas Department of Health). According to the Centers for Disease Control, Texas, which ranks third among the states in population, has the fifth highest state total in the country. The majority of these cases were in Dallas and Houston, and the border total makes up a very small percentage of the 4,387 cases.

Noncommunicable Health Problems

As discussed below, there are noncommunicable health problems—obesity, diabetes, and gallbladder disease—which are of particular concern in the border area. All have a high incidence among Mexican-Americans, who make up the majority in the border area, in comparison with the non-Hispanic white population. Data on the reported incidence of these problems were not available.

Obesity

Obesity is defined as an excess of fat tissue. It should not be confused with the term overweight, which refers to surplus weight for stature, resulting from either excess lean or fat tissue. It has been proposed that an inverse correlation has been found between socioeconomic status and obesity in women in the United States.[4]

A genetic link is also suspected in Mexican-American obesity, suggests a report on black and minority health.[5] It has been observed that the prevalence of obesity is greatest in Mexican Pima Indians (who are full-blooded American Indians) with Mexican-Americans next, and non-Hispanic whites last. The greater the American Indian genetic inheritance among Mexican-Americans, the greater their predisposition to obesity. But a genetic link cannot be the only explanation for the high levels of obesity among Mexican-Americans, given the association between lower socioeconomic status and obesity.

[4]A.K. Diehl and M.P. Stern, Special Health Problems of Mexican-Americans: Obesity, Gallbladder Disease, Diabetes Mellitus, and Cardiovascular Disease (San Antonio: University of Texas).

[5]Report of the Secretary's Task Force on Black and Minority Health, HHS (Washington, D.C.: Aug. 1985).

If the correlation with socioeconomic status and genetic heritage is valid, obesity could be expected among the border population, many of whom live below the poverty level and the majority of whom are Mexican-American; this group has been found to have greater central and upper body fat than non-Hispanic whites. Both obesity and this type of weight distribution have been associated with type II diabetes and gallbladder disease.

Diabetes Mellitus

Diabetes mellitus, a disease characterized by high levels of glucose in the blood, occurs when the body improperly metabolizes glucose. A 1987 report notes that 700,000 Texans suffer from the disease, about 300,000 of whom are Mexican-Americans.[6] Considerable evidence suggests that diabetes mellitus is much more prevalent in Mexican-Americans than in non-Hispanic whites, the report states.

Between 90 and 95 percent of all diabetics are thought to have type II diabetes. This noninsulin-dependent type of diabetes often develops in overweight people over 40 years of age; this is the type most frequently found in the Mexican-American diabetic population. At least three recent studies,[7] two of which were conducted in the border area, have concluded that diabetes type II is 2 to 5 times more prevalent among Mexican-Americans than among the general U.S. population. In data from a study centered in Starr County, the counties in the lower Rio Grande Valley had the highest diabetes-specific death rates in Texas.

Diabetes is a chronic disease that may develop slowly. According to an HHS study,[8] diabetes in people with multiple chronic diseases was often underreported on death certificates. People with diabetes most frequently die of kidney disease, cardiovascular disease, or stroke; these complications are more likely to develop in diabetics whose disease is not diagnosed and brought under proper control.

Genetic factors are thought to play a significant role in the development of type II diabetes. According to the report, American Indians were more

[6]American Diabetes Association (Texas affiliate), Texans At Risk (1987).

[7]C.L. Hanis and others, "Diabetes Among Mexican-Americans in Starr County, Texas," American Journal of Epidemiology, vol. 118 (1983), pp. 659-72; M.P. Stern and others, "Cardiovascular Risk Factors in Mexican-Americans in Laredo, Texas," American Journal of Epidemiology, vol. 113 (1981), pp. 546-55; C.L. Hanis, "Diabetes Alert Study: Weight History and Upper Body Obesity in Diabetic and Non-Diabetic Mexican-American Adults," Annals of Human Biology, vol. 11 (1984), pp. 167-71.

[8]Report on Black and Minority Health, HHS.

than 10 times as likely as whites to have diabetes; Hispanics were 3 times as likely as whites to have diabetes.

Although the precipitating cause of diabetes has not been determined, diet is thought to be linked to the development of type II diabetes. Another theory holds that diet is indirectly associated with diabetes through obesity. The sometimes devastating physical and economic impact of diabetes type II can be prevented or controlled through successful diagnostic and health education programs, suggests the HHS study.

Gallbladder Disease

The gallbladder, located within the lobes of the liver, stores hepatic bile, required for digestion of fatty foods. Basically, there are two types of gallstones that collect in the gallbladder: cholesterol and pigment stones. When the bile becomes supersaturated with cholesterol, cholesterol crystals form and aggregate, creating cholesterol stones; how pigment stones are formed is less well understood. Gallstones can block the bile duct, causing pain and jaundice, as well as leading to an accumulation of bacteria; this can lead to gallbladder inflammation. Another problem that appears to be closely linked to the presence of gallstones is gallbladder cancer, although it is rare.

Since 1980, there have been at least three studies on the prevalence of gallbladder disease among Mexican-Americans in Texas.[9] These studies concluded that Mexican-Americans, particularly women, have a higher incidence of gallbladder disease than non-Hispanic whites. The highest rates of gallbladder disease and cancer have been found among American-Indian groups, with intermediate rates in groups genetically mixed with American Indians, such as Mexican-Americans. Whites and blacks seem to have lower gallbladder disease rates. These rates parallel those for obesity and diabetes mellitus, which, as mentioned earlier, are also thought to have a genetic link. Factors other than genetics may also affect the development of gallbladder disease, such as dietary practices.

[9]Diehl and Stern, Special Health Problems of Mexican-Americans.

Availability of Health Care Providers in the Border Area

The majority of the 16 border area counties have physician shortages, according to the U.S. Public Health Service. Most of the physicians are located in the more populated counties. Half of the border counties have fewer than 10,000 people; half have fewer than five physicians, and half have dentist shortages. There were relatively fewer nurses and physician assistants in the border area than there were in Texas as a whole. Rural counties have few emergency care personnel, such as those who staff ambulances.

Primary Care Physicians

Primary care physicians are considered to be physicians who provide basic medical care to the general population—family and general practice, internal medicine, obstetrics and gynecology, and pediatrics. According to U.S. Public Health Service shortage criteria, much of the Texas border area currently suffers from a shortage of primary care physicians relative to the number of people in the area. The Public Health Service defines designated health manpower shortage areas as (1) areas with a population-to-primary care physician (full-time equivalent) ratio of 3,500:1 or higher, (2) areas with a population-to-primary care physician (full-time equivalent) ratio between 3,000:1 and 3,500:1, as well as a need for primary care providers, or (3) areas where primary care physicians in contiguous areas are overutilized, excessively distant, or inaccessible to the population.

Designated shortage areas are assigned a shortage group rating on the basis of the Public Health Service scale, which ranges from 1 to 4, with group 1 indicating the most severe shortage and group 4 the least severe. The designation can refer to an entire county, specific parts (or populations) within a county, or both an entire county and parts or populations.

As of May 1988, 9 of the 16 border counties were classified as health manpower shortage areas, as shown in table IV.1. Although Cameron, El Paso, Hidalgo, and Presidio counties have not been designated as shortage areas, parts or populations within these counties have been so designated; Brewster, Dimmit, and Kinney are not classified as shortage areas, even though they have few primary care physicians, probably because of the correspondingly low population in these counties (see app. II for population data).

Table IV.1: Designated Primary Care Health Manpower Shortage Areas for the Texas-Mexico Border Area, 1988

Border area county[a]	Degree of shortage
Brewster	N/S
Cameron subgroups:	[b]
Poverty population	4
Migrant and seasonal farm workers	4
Culberson	2
Dimmit	N/S
El Paso subgroups:	[b]
South El Paso	1
Southeast El Paso	2
Hidalgo subgroups:	[b]
Poverty population	3
Migrant population	3
Hudspeth	1
Jeff Davis	2
Kinney	N/S
Maverick	2
Presidio subgroups:	[b]
Presidio division	2
Marfa division	2
Starr	2
Terrell	1
Val Verde	2
Webb	4
Zapata	1

Legend

N/S = No shortage

Note: The U.S. Public Health Service assesses primary care physician manpower shortages within subgroups of a county.

[a]Shortage areas are defined on a scale from 1 to 4, with group 1 indicating the most severe shortage and group 4 indicating the least severe shortage.

[b]Entire county is not a shortage area, but subgroups within the county have a shortage of primary care health manpower.

Designated shortage areas are eligible to apply for special government assistance, such as National Health Service Corps personnel; they staff clinics for a period of time in return for government payment of school loans, certain scholarship and loan repayment programs for physicians, and other Public Health Service programs.

Physicians

The American Medical Association's 1986 Directory of Physicians lists 1,538 physicians in the border area. About three-quarters of them were engaged in direct patient care, with services supplemented by 152 medical residents and clinical fellows. The majority of direct care physicians, medical residents, and clinical fellows in the border area are located in the more populated counties of Cameron, El Paso, and Hidalgo, as seen in table IV.2. Eight of the border counties had fewer than five direct care physicians, and three counties, all with populations under 4,000—Culberson, Hudspeth, and Terrell—had no physicians.

Table IV.2: Physicians in the Texas Border Area by Type of Practice, 1986

			Type of practice	
Border area county	**Population**	**All physicians**	**Direct patient care[a]**	**Resident or fellow**
Brewster	8,835	17	12	0
Cameron	263,835	275	216	15
Culberson	3,777	0	0	0
Dimmit	12,881	4	2	0
El Paso	577,511	786	541	112
Hidalgo	373,705	308	230	19
Hudspeth	2,857	0	0	0
Jeff Davis	1,939	1	1	0
Kinney	2,564	1	0	0
Maverick	40,510	21	17	1
Presidio	5,828	3	3	0
Starr	36,251	7	6	0
Terrell	1,405	0	0	0
Val Verde	44,604	19	16	1
Webb	131,623	94	79	4
Zapata	8,952	2	2	0
Total	**1,517,007**	**1,538**	**1,125**	**152**

Note: Includes allopathic and osteopathic physicians for 1986, the latest year in which data were available in the American Medical Association Directory.

[a]Includes those physicians who actually provide care directly to patients.

According to data from the American Medical Association's 1986 Directory of Physicians, there were 553 primary care physicians in the border area. The majority of these physicians (87 percent) were in Cameron, El Paso, and Hidalgo counties, which have the largest concentration of population (see table IV.3).

Table IV.3: Primary Care Physicians in the Texas Border Area, 1986

Border area county	Family practice and general practice	Internal medicine	Obstetrics and Gynecology	Pediatrics	Total
Brewster	5	1	1	1	**8**
Cameron	37	23	18	21	**99**
Culberson	0	0	0	0	**0**
Dimmit	1	0	0	0	**1**
El Paso	91	67	54	35	**247**
Hidalgo	82	23	15	14	**134**
Hudspeth	0	0	0	0	**0**
Jeff Davis	0	0	0	0	**0**
Kinney	0	0	0	0	**0**
Maverick	3	2	2	2	**9**
Presidio	2	0	0	0	**2**
Starr	6	0	0	0	**6**
Terrell	0	0	0	0	**0**
Val Verde	6	1	1	0	**8**
Webb	18	5	5	9	**37**
Zapata	2	0	0	0	**2**
Total	**253**	**122**	**96**	**82**	**553**

Note: Primary care physicians include residents, clinical fellows, and physicians providing direct care listed in the American Medical Association Directory. The most recent year for which data were available was 1986.

Of the four primary care physician categories, general practitioners practice in 11 of the 16 counties and make up 46 percent of all primary care physicians. Four counties—Dimmit, Presidio, Starr, and Zapata—have only general practitioners with no physicians in the other three categories.

Although the second largest group of primary care physicians are internists, there are no internists in 9 of the 16 counties. Internists often subspecialize and tend to practice in more populated communities in which more sophisticated equipment and facilities are available. This seems to be the case in Cameron, El Paso, and Hidalgo counties, where the majority of internists are concentrated.

Nine of 16 counties have no obstetricians or gynecologists. These nine counties have 15,364 women between the usual childbearing ages of 15 through 44. Pediatricians generally provide health care for children from birth through 14 years of age. There were 82 pediatricians in the border area, but there were no pediatricians in 10 counties, with 36,482 children.

Dentists

According to the Texas Board of Dental Examiners, there were a total of 340 licensed dentists in the border area. The majority of these dentists (89 percent) practiced in El Paso, Cameron, and Hidalgo counties, with the largest population concentrations in the border area. As shown in table IV.4, 9 of the 16 border counties had one or two dentists. Hudspeth and Terrell counties, which are sparsely populated, had no dentists.

As of June 1988, eight of the border counties (which include 16 percent of the border population) were designated as dentist shortage areas. The U.S. Public Health Service has defined a dentist shortage area as one with a population-to-dentist ratio of at least 5,000:1.

Table IV.4: Licensed Dentists in the Texas Border Area, June 1988

Border area county	Estimated population, 1988	Licensed dentists[a]	Population per 1 dentist ratio
Brewster	8,835	2	4,418
Cameron	263,835	58	4,549
Culberson	3,777	1	3,777
Dimmit	12,881	1	12,881[b]
El Paso	577,511	170	3,397
Hidalgo	373,705	76	4,917
Hudspeth	2,857	0	[c]
Jeff Davis	1,939	1	1,939
Kinney	2,564	1	2,564
Maverick	40,510	1	40,510[b]
Presidio	5,828	1	5,828[b]
Starr	36,251	1	36,251[b]
Terrell	1,405	0	[c]
Val Verde	44,604	11	4,055
Webb	131,623	15	8,775[b]
Zapata	8,952	1	8,952[b]
All counties	1,517,077	340	4,462

[a]Data obtained from the Texas Board of Dental Examiners.

[b]Dentist shortage area, according to the U.S. Public Health Service criterion.

[c]There were no dentists in this county.

Registered Nurses and Vocational Nurses

The border area has fewer registered nurses and vocational nurses, both licensed, relative to its population than has Texas. Registered nurses observe and record symptoms, administer medications, assist in convalescence and rehabilitation, and provide instruction in proper care to patients and their families. As of mid-1988, there were an estimated

96,298 registered nurses in Texas; 4,687 of these were in the border area, as shown in table IV.5; the population-to-nurse ratio in Texas was 179:1; the ratio for the border area was approximately 324:1. Licensure is not an indication of employment status because a licensed nurse may be working in another field or unemployed. Yet the number of licensed nurses residing in an area gives the reader an idea as to the supply of nurses in the state of Texas, in general, and in the border area, in particular. These data were provided by the Texas Board of Nurse Examiners, but similar data were not available for the United States.

Table IV.5: Licensed Nurses in Texas and the Border Area

	Licensed nurses	
	Registered	Vocational
Texas[a]	96,298	94,604
Border area counties	4,687	3,221
Brewster	28	49
Cameron	772	725
Culberson	8	5
Dimmit	17	40
El Paso	2,547	979
Hidalgo	855	949
Hudspeth	5	1
Jeff Davis	6	10
Kinney	4	5
Maverick	53	55
Presidio	8	10
Starr	32	51
Terrell	3	3
Val Verde	114	100
Webb	228	221
Zapata	7	18

Note: Data collected during the first half of 1988. U.S. data were not available.
[a]Data provided by the Texas Board of Nurse Examiners.

Under the supervision of physicians and registered nurses, licensed vocational nurses provide nursing care that requires technical nursing knowledge, but not the more extensive professional education and training of registered nurses. Outside the state of Texas, vocational nurses are also called practical nurses. There were an estimated 94,604 licensed vocational nurses in Texas as of mid-1988. Of these, 3,221 were in the border area. The population-to-vocational nurse ratio in Texas was 183:1; the border area ratio was 471:1.

The majority of the registered nurses (96 percent) and the vocational nurses (92 percent) work in Cameron, El Paso, Hidalgo, Val Verde, and Webb counties. These five make up 1,391,278 (92 percent) of the border population. Together, these counties have a population-to-registered nurse ratio of 308:1 and a population-to-vocational nurse ratio of 468:1. The remaining 11 counties make up 125,799 (8 percent) of the border population. Their combined population-to-registered nurse ratio is 736:1 and population-to-vocational nurse ratio, 509:1. The last nationwide counts of registered nurses was made in 1983 and of vocational nurses in 1984.

To determine whether a shortage of nurses exists in a designated area, criteria are needed. None are provided, however, by the American Nurses Association or federal or state governments. According to the majority of health experts and officials we interviewed, the supply of nurses was inadequate in 10 of the 12 counties.

Physician Assistants

Under a physician's supervision, physician assistants provide diagnostic and therapeutic services. They may take patient histories, do physical examinations, provide follow-up care, give emergency medical services, and assist in surgery.

According to HHS,[1] physician assistants could help alleviate the health care problems caused by physician shortages. Trained physician assistants can increase the availability of primary care services, promote cost savings, and improve physicians' productivity by relieving them of time-consuming, yet essential, patient care duties.

As of May 1988, data from the Texas Board of Health Examiners listed 11 physician assistants in Cameron, El Paso, Hidalgo, and Maverick counties (as shown in table IV.6), a population-to-physician assistant ratio of 137,916:1. A total of 273 physician assistants were in Texas, a population-to-physician assistant ratio of 63,245:1. There is no established criterion to determine the need for physician assistants in designated populations.

[1] Fifth Report to the President and Congress on the Status of Health Personnel in the United States, HHS (Washington, D.C.: 1986)

Table IV.6: Physician Assistant Supply in Texas and the Border Area, May 1988

	Physician assistants
Texas	273
Border area counties:	
Brewster	0
Cameron	1
Culberson	0
Dimmit	0
El Paso	6
Hidalgo	3
Hudspeth	0
Jeff Davis	0
Kinney	0
Maverick	1
Presidio	0
Starr	0
Terrell	0
Val Verde	0
Webb	0
Zapata	0
Total	**11**

Note: Data obtained from the Texas Board of Health Examiners.

Prehospital Emergency Care Personnel

Several types of personnel are qualified to provide prehospital emergency care. The care provided depends on the degree of training received. The types (in order, from the maximum to the minimum amount of training received) are paramedics, special skill emergency care technicians, basic emergency care technicians, and emergency care attendants.

Under medical supervision, both paramedics and special skill emergency technicians can administer advanced life support, but only paramedics can perform more sophisticated medical interventions. Basic emergency care technicians provide only basic life support, including the control of hemorrhaging and resuscitation. Emergency care attendants offer comfort and prevent the aggravation of an injury or an illness.

According to information provided by the Texas Bureau of Emergency Management (shown in table IV.7), the availability of emergency care technicians varies widely from county to county, with the more skilled concentrated in counties with urban centers. Some rural counties, such

as Dimmit, have only 9 such personnel, but a highly populated county like El Paso has over 1,000.

Table IV.7: Prehospital Emergency Care Personnel in the Border Area, May 1988

Border area county	Paramedics	Special skill emergency care technicians	Basic emergency care technicians	Emergency care attendants	Total
Brewster	3	3	31	50	**87**
Cameron	48	13	116	14	**191**
Culberson	1	2	15	6	**24**
Dimmit	0	0	7	2	**9**
El Paso	57	64	473	511	**1,105**
Hidalgo	14	6	130	109	**259**
Hudspeth	0	6	21	16	**43**
Jeff Davis	2	2	5	16	**25**
Kinney	1	1	4	12	**18**
Maverick	0	0	26	4	**30**
Presidio	1	2	8	24	**35**
Starr	2	1	7	1	**11**
Terrell	0	0	12	0	**12**
Val Verde	21	4	22	19	**66**
Webb	30	8	87	13	**138**
Zapata	0	1	13	13	**27**
Total	**180**	**113**	**965**	**810**	**2,068**

Note: Data obtained from the Texas Bureau of Emergency Management, Texas Department of Health.

Emergency care services were less than adequate, noted the majority of the officials we interviewed about 12 of the counties. The reasons most frequently cited included (1) shortage of vehicles and communications equipment, (2) lack of trained personnel and deficient training, and (3) little access to emergency care services in rural areas and colonias. As for the colonias, according to one of the officials we interviewed, few health care providers (for example, ambulance companies) are willing to service them because of the impoverished residents' inability to pay for emergency care.

Availability of Health Care Facilities in the Border Area

The majority of hospitals are in border area counties with the largest populations. Some border counties do not have a hospital or clinic facilities and emergency care equipment; however, each of these counties has a population under 9,000. There are nine community and migrant health centers (clinics) with federal funding in the border area. We did not catalog the state-funded and locally funded clinics. There are six ambulatory surgical centers in three counties. Most emergency care vehicles were concentrated in the most populated counties, leaving rural counties with little coverage. Few emergency care vehicles were available to cover the vast geographic distances of these counties.

Hospitals

According to the Texas Department of Health, there were 28 hospitals in the border area in 1986, the most recent year for which data were available. Over two-thirds of the hospitals were in Cameron, El Paso, and Hidalgo. Together, these counties are the most populated ones in the border area. There were no hospitals in Hudspeth, Jeff Davis, Kinney, Presidio, Terrell, and Zapata counties (as shown in table V.1).

Table V.1: Hospitals in the Border Area, 1986

Border area county	State and local hospitals	Private nonprofit hospitals	Private for-profit hospitals	Beds	Beds-to-population ratio[a]
Brewster	1	0	0	34	260
Cameron	1	2	2	794	332
Culberson	1	0	0	25	151
Dimmit	1	0	0	49	263
El Paso	1	2	7	1,711	337
Hidalgo	1	2	2	841	444
Hudspeth	0	0	0	0	[b]
Jeff Davis	0	0	0	0	[b]
Kinney	0	0	0	0	[b]
Maverick	1	0	0	77	526
Presidio	0	0	0	0	[b]
Starr	1	0	0	44	824
Terrell	0	0	0	0	[b]
Val Verde	1	0	0	84	531
Webb	0	1	1	383	344
Zapata	0	0	0	0	[b]
Total	**9**	**7**	**12**	**4,042**	**375**

Note: The year for which the latest data were available from the Texas Department of Health was 1986.

[a]Ratios based on 1988 population estimates shown in table I.1.

[b]No hospitals in the county.

The largest number of hospitals in the border area are for profit, followed by government and nonprofit hospitals. All of the hospitals provide general medical and surgical services to the majority of their admissions.

Private for-profit hospitals in the border area have the largest number of discharges as well as outpatient visits, followed by nonprofit and government hospitals. However, a larger percentage of hospital discharges are covered by Medicaid in government hospitals (22 percent) than in nonprofit (16 percent) and private profit-making (18 percent) hospitals (see table V.2). Officials from Cameron County, noting the lower Rio Grande Valley lacks a general purpose public hospital, said that hospitals in the area would not accept some indigent patients, particularly those in need of special care. As a result, many in need of special care are required to travel more than 300 miles to Houston, where there are facilities that serve them.

There were a total of 4,042 hospital beds in the border area in 1986. This amounts to a ratio of 1 bed per 375 persons, ranging from 1 bed per 151 persons in Culberson County to 1 bed per 824 persons in Starr County. According to the American Hospital Association, there is no established criterion on the need for hospital facilities in relation to the population. However, in 1985 there was an average of 1 short-stay hospital bed per 219 persons in the United States.

Table V.2: Hospital Utilization and Medicaid Coverage in the Border Area, 1986

Type of hospitals	Outpatient visits per hospital	Discharge per hospital	Hospital discharge covered by Medicaid (in percent)
State and local	13,382	3,183	22
Private nonprofit	27,436	8,689	16
Private for profit	15,108	4,867	18

Community Health Centers and Migrant Health Centers

There are virtually no differences in the types of services provided by federally funded community health centers and migrant health centers. Both types of centers provide primary care services (generally, outpatient services that do not require overnight hospitalization) in areas where people do not have access to adequate health care because of geographic constraints, limited income, or a shortage of health care providers.

In all of Texas in 1986, there were 27 community and migrant health centers, with 46 satellites serving approximately 310,000 patients in 43 counties; in 8 of the 16 border area counties, there were 9 health centers with 21 satellites serving an estimated 134,346 patients in 1986 (see table V.3). Statewide, approximately 5 percent of center patients became hospitalized in 1986.[1]

Table V.3: Federal Community and Migrant Health Centers in the Border Area, 1987

Border area county	Centers	Satellite clinics	Hispanic clients (in percent)	Most widely used services in ranked order
Cameron	Brownsville Community Health Center	2	99.9	PED OB/GYN GM
Cameron	Su Clinica Familiar	4	95.5	GM PED Maternity/ birth centers
Dimmit	South Texas Rural Health Services	3	94.5	GM PED OB/GYN
El Paso	Centro de Salud Familiar La Fe, Inc.	0	98.4	PED GER GYN
El Paso	Centro Medico del Valle	1	95.0	GM/FP PED POD
Hidalgo	Hidalgo County Health Care Corporation	4	98.0	GM/FP OB/GYN PED
Maverick	United Medical Centers	2	90.0	PED GM
Webb	Laredo Migrant Health	3	99.0	GM OB/GYN Well baby
Starr Zapata	Community Action Council of South Texas	2	98.0	OB/GYN GM FPL NUT

Legend

FP = Family
FPL = Family Planning
GM = General Medicine
GER = Geriatrics
GYN = Gynecology
OB = Obstetrics
PED = Pediatrics
POD = Podiatry
NUT = Nutritional Counseling

Note: The most recent year for which data were available from the Texas Association of Community Health Centers was 1986.

[1]The information covering the community and migrant health centers in Texas is based on a survey conducted by the Texas Association of Community Health Centers in 1987. Twenty-two of the 27 health centers (or 81 percent) in the state completed the survey.

Most patients, both in Texas as a whole and in the border area, were Hispanic. Of the Texas center users, women accounted for 62 percent; pediatric patients, ranging from infants to adolescents, accounted for approximately one-third; and migrants, approximately 15 percent. Similar data on the sex, age, and migrant status of the border area centers were not available.

The majority of the Texas center patients—74 percent—lacked medical insurance. Of these patients, Medicaid recipients accounted for 5 percent; Medicare recipients, for 4 percent. On average, the cost to the centers was $151.66 per patient per year, with $33.65 for every medical or dental visit. Each patient made approximately four visits annually.

All centers have a schedule of fees for the services provided. However, a sliding fee schedule is applied depending on a patient's income. Patients with income at or below the federally determined poverty level (which varies according to marital status and family size) are charged a nominal fee of $1 to $5 for services and receive some services free of cost. No discounts are given to people at or above 200 percent of the poverty level. Although patients are expected to pay for services provided to them, the centers cannot deny services because of a patient's inability to pay.

In both Texas and the border area, the three most widely used center services are general medicine, pediatrics, and obstetrics and gynecology. In Texas centers, the two most frequently treated chronic conditions were diabetes mellitus and hypertension; upper respiratory and ear infections are the most frequently seen acute conditions.

Ambulatory Surgical Centers

Ambulatory surgical centers are out-patient surgery centers, with some hospital based. The centers in the border area are independent (that is, not hospital based). As of June 1988, there were six ambulatory surgical centers in the border area with a total of 16 operating rooms, as shown in table V.4. The centers were located in three counties—Cameron, El Paso, and Maverick; the other 13 counties did not have centers. Except for the centers in Cameron County that specialize in ophthalmology, the centers offer a fairly large variety of services.

Table V.4: Ambulatory Surgical Centers in the Border Area, June 1988

Border area county	Centers	Operating rooms	Surgical services covered
Cameron	3	6	OPH
El Paso	2	8	CV, DEN, G, N, OBG, OPH, ORA, ORS, OTO, P, POD, T, U
Maverick	1	2	G, OBG, OPH, ORS, OTO, U
Total	**6**	**16**	

Legend

CV = Cardiovascular
DEN = Dental
G = General
N = Neurological
OBG = Obstetrics and Gynecology
OPH = Ophthalmology
ORA = Oral
ORS = Orthopedic
OTO = Otorhinolaryngology
P = Plastic
POD = Podiatry
T = Thoracic
U = Urology

Note: Data obtained from the Texas Department of Health. Physician, dentist, and podiatrist offices that perform out-patient surgery are not included.

Emergency Care Units

According to the Texas Bureau of Emergency Management, there were 57 emergency care units in the border area; the units were equipped with 127 ambulances or other vehicles for emergency use (see table V.5).

Table V.5: Emergency Care Services in the Border Area, May 1988

Border area county	Provider units	Basic life-support vehicles	Advanced life-support vehicles	Mobile intensive care units	Total vehicles
Brewster	5	8	0	0	8
Cameron	6	5	2	8	15
Culberson	2	3	0	0	3
Dimmit	1	2	0	0	2
El Paso	5	29	0	0	29
Hidalgo	15	24	4	2	30
Hudspeth	4	8	0	0	8
Jeff Davis	2	1	0	0	1
Kinney	1	2	0	0	2
Maverick	2	4	0	0	4
Presidio	2	3	0	0	3
Starr	1	3	0	0	3
Terrell	1	2	0	0	2
Val Verde	2	2	1	2	5
Webb	7	6	4	0	10
Zapata	1	2	0	0	2
Total	**57**	**104**	**11**	**12**	**127**

Note: Data obtained from the Texas Department of Health.

Emergency care in the border area is mostly administered by county agencies, hospitals, volunteer groups, and privately owned businesses. A few of the providers have trained personnel but lack emergency care vehicles.

There are two types of emergency care: basic life support and advanced life support. Basic life support care is prehospital care with noninvasive medical procedures that can be provided by an emergency care attendant or basic emergency care technician, under supervision of a licensed physician. The emergency vehicles used for this care are designed to transport the sick and injured.

Advanced life-support care refers to prehospital emergency care, with sophisticated medical procedures, provided by a specially skilled emergency medical technician or a paramedic emergency medical care technician under the supervision of a physician. The vehicles used for this care meet the requirements of a basic vehicle, but are also equipped to provide more advanced health care and contain communications equipment.

Some of the providers are equipped with intensive care vehicles. These vehicles meet the requirements of the advanced vehicle, but are also equipped to apply more sophisticated medical techniques and drug therapy. The vehicles are equipped with two-way radio communication, which allows more highly trained personnel to consult with physicians in providing sophisticated emergency care.

Although all of the border counties have basic life-support vehicles, only 4 of the 16 have advanced life-support vehicles; 11 counties have five basic vehicles or fewer. Rural counties are equipped with few vehicles to cover the large distances.

Federal, State, and Local Health-Related Programs in the Border Area

A number of federal, state, and local health-related programs benefit the border area population. We have classified these programs into the following four categories:

- maternal and child health programs, which include the federal Special Supplemental Food Program for Women, Infants, and Children (WIC) and several state and local programs;
- disease-specific programs, which include diabetes, cancer, and kidney disease;
- general prevention and treatment programs, offered at the state or local level, such as dental care, immunization, and adult health programs; and
- general assistance programs, such as Medicaid, as well as state and local programs targeted for the indigent.

Maternal and Child Health Programs

WIC, a federal program administered by the U.S. Department of Agriculture, provides services to low-income women who are pregnant, postpartum, or breast-feeding; infants; and children up to 5 years of age. Program participants must be at nutritional risk, determined by a medical examination, and reside in a WIC-approved location. The program provides nutrition education and supplemental foods that include key nutrients for development, such as milk and eggs.

In 1987, WIC services were available in all 16 counties; participants made up to 758,016 visits to obtain food and education services. According to the Texas Department of Health, in 1987, an estimated 209,194 border residents were eligible for the WIC program; its expenditures in the 16 border counties were $28,642,779.

In addition to WIC, the following state and local programs were available to provide maternal and child health care services:

Maternal and Infant Health Improvement Act Program

This program provides services to (1) pregnant women at high risk due to complicated pregnancies or difficult deliveries and (2) infants vulnerable to severe medical problems. Program services, available in all border counties, include prenatal care, referrals, intrapartum (delivery) care, neonatal intensive care, follow-up services, laboratory tests, and emergency transportation. Between June 1, 1986, and August 31, 1987, 2,326 patients were served. Estimated program funding for fiscal year 1988 was $5,352,383.

Maternity Services Program	This program provides prenatal, postpartum, and family planning services to low-income women who are pregnant or have just given birth. Program services include pregnancy tests, risk assessments based on health histories, physical examinations, laboratory tests, intrapartum care for high-risk cases, immunizations, postpartum tubal ligations, health education, and referrals. In 1987, services were available in all border counties, and 10,310 patients were served. Estimated program funding for 1987 was $1,974,661.
Family Planning Services Program	This program provides services to low-income women of childbearing age and to their partners. Program services include pregnancy tests, physical examinations, laboratory tests, health education and counseling, referrals, and contraceptive supplies. In 1987, services were available in all 16 counties, and 61,655 persons were served. Estimated program funding for 1987 was $1,751,716.
Child Health Services Program	This program provides services from a child's birth to 21 years of age. Priority is given to children 3 years of age and under. Services include developmental screening and nutritional assessments, physical examinations, immunizations, treatment for minor illnesses, and health education. In 1987, services were available in all 16 counties, and 14,295 persons were served. Estimated program funding for 1987 was $2,643,498.
Early Childhood Intervention Program	This program provides intervention services to children from birth to 6 years of age who (1) are at risk of developmental delays or (2) already exhibit delays in cognitive, motor, language, social, emotional, or self-help skills. Children in this program cannot be eligible for similar public school programs. In 1987, program services were available in 6 border counties, and 458 children were served; in the remaining 10 border counties, services were provided through a special funding mechanism, called purchase of service, and 3 children were served. In 1987, expenditures for Early Childhood Intervention services were $1,256,844. No estimate was available for the cost of services acquired through purchase of service.

Chronically Ill and Disabled Children's Service Program

This program provides services to chronically ill, disabled children and their families, with priority given to those in rural communities. Program services include the provision of social caseworkers, early identification of children with potentially handicapping conditions, diagnosis and evaluation to determine treatment, direct medical care, and related services (which are paid for through reimbursements or financial agreements). In 1987, services were available in all 16 counties, and 2,564 children were served. In 1987, program expenditures were $3,292,923.

Disease-Specific Programs

The Diabetes Control Project is a federal program that serves adult diabetics who have not had sensitive eye examinations in the previous year and diabetics with hypertension. Through the provision of educational services, screening, diagnosis, and medical treatment for diabetics, the project's goal is to reduce blindness and complications resulting from hypertension. In 1987, the only such project active in the border area was implemented in the Laredo-Webb County Health Department. Between March and December 1987, this project served 318 clients. Project funding information was not available.

In addition to the federal Diabetes Control Project, the following state and local disease-specific programs were available in the border area.

Cancer Awareness and Prevention Program in South Texas

This program was designed to increase cancer prevention awareness and knowledge among the Mexican-American population in South Texas; mass media campaigns, educational presentations, and nutrition and exercise plans were used. The program was implemented by the Texas Cancer Council in seven Texas counties, including five in the border area. Information on the number of clients served was not available. Between September 1986 and August 1988, program funds committed to the seven counties amounted to $336,024.

Transportation of Indigent Cancer Patients Program

The program serves cancer patients at or below 100 percent of the federal poverty level who (1) do not qualify for Medicaid, (2) have been accepted for treatment by a regional or distant cancer treatment center, and (3) reside in a community covered by the program. For indigent cancer patients, the program provides transportation services to and from cancer treatment facilities. The program was implemented by the Texas Cancer Council in eight Texas counties, including five in the border area. Between January 1986 and August 1987, 226 clients and their attendants were provided a total of 2,132 round trips from the eight counties.

Between January 1986 and August 1988, program funds committed to the eight counties amounted to $413,248.

Kidney Health Program

This program provides financial assistance to help defray medical costs for victims of end-stage renal disease. In 1987, a total of 734 patients were assisted by the program in the 16 border counties. In 1987, program service expenditures for the 16 border counties amounted to $720,546.

Tuberculosis Control Program

The program, available to all age groups, is intended to help control tuberculosis through identification, therapy, and strict case supervision. The program provides for infected people to be examined and treated by personal or clinic physicians. In 1987, the program identified 231 tuberculosis cases in the 16 border counties. Program funding information was not available, but free services are provided to clients who cannot pay.

General Prevention and Treatment Programs

State and local programs include dental care, immunization, and health screening programs.

Dental Care Prevention Program

This program provides emergency dental treatment to indigent children from birth to 18 years of age. Minimal program services are offered at fixed clinics, mobile units, and through contractual agreements with private dentists. Specialized dental services, such as orthodontics and oral surgery, are not provided through the program. In 1987, 5,934 children were served in 11 border counties; the remaining 5 counties did not receive services. Funding data were not available.

Immunization Program

The program provides immunizations to infants, children, and susceptible adults. This program also investigates reported cases of certain communicable diseases. In 1987, a total of 133,106 persons were served in the 16 border counties. In 1987, program expenditures were $2,967,073.

Adult Health Program

The program provides screening and education for people 16 years of age and over who are at risk of developing selected chronic diseases such as anemia, obesity, diabetes, hypertension, and specific types of cancer. The program monitors selected chronic diseases, such as diabetes and hypertension, and provides counseling and referral services when needed. In 1987, 9,976 patients were served in five border counties by three local health departments. The program was offered in the remaining 11 border counties through Texas regional health offices, but the number of clients served was not available. In the three health departments, combined 1987 expenditures were $111,000. Figures for the counties covered by the Texas regional health offices were not available.

Local Health Department Grants Program

This program serves participants through five local health departments, including three in the border area. The program provides comprehensive risk reduction and early detection services for selected chronic diseases. It also provides education, counseling services, and, if necessary, referrals. Between January and August 1986, through this program, the local health departments provided 10,484 clients with risk-assessment services. Between January and August 1986, a total of $489,121 was committed to the program. For the three border departments, the number of clients served and program funding information were not available.

General Assistance Programs

The federally funded Medicaid program is operated at the state level, providing financial assistance for the medical treatment of people who are aged, blind, disabled, or members of families with dependent children. For people under 21 years of age, all state Medicaid programs are required to cover certain basic services, such as hospitalization, laboratory tests, X-rays, family planning, screening, diagnosis, and treatment. States administer the program and establish eligibility requirements. In 1987, Medicaid served 160,372 people in all 16 of the border counties, but 67 percent of those living below the federal poverty level did not qualify for Medicaid benefits, according to the Texas Department of Health. In 1987, total Medicaid expenditures for the 16 border counties were $173,776,083.

In addition to the Medicaid program, the following state and local programs were available in the border area to provide general assistance.

County Indigent Health Program

Under this program, counties provide health care to residents who (1) meet financial eligibility standards, (2) do not qualify for Medicaid, (3) lack private insurance, and (4) do not live in an area served by a public hospital or a hospital district. The program is available in eight of the border counties; it is not available in the remaining eight counties because they have hospital districts or county public hospitals, which are required to serve the indigent. Counties that spend more than 10 percent of their general revenues on the indigent become eligible for state reimbursement under this program. In 1987, of the eight border counties with the program, only Hudspeth County reported no activity. The other seven counties handled 2,153 cases. In 1987, the combined state and county expenditures amounted to $3,195,994.

Primary Health Care Program

This program provides preventive and primary health care to indigent county residents. In 1987, there were six primary care projects serving 7,962 clients in eight border counties. In 1987, the total amount of money allocated to these projects was $1,904,002.

Partners for Self Sufficiency: Colonias in the Rio Grande Valley

This program serves colonia residents in three counties, including two in the border area. The program (1) informs colonia residents of available health and social services and how to qualify for them and (2) organizes community partnerships with civic and business leaders in order to deal with education, employment, health, and infrastructure issues. In 1988, the total program funding for the three counties was $258,457.

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