

# **Cameron County/Matamoros at the Crossroads: Assets and Challenges for Accelerated Regional and Binational Development**

**By: David V. Gibson, Pablo Rhi-Perez, Margaret Cotrofeld, Oralia De Los Reyes, and Mark Gipson**

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## **Abstract:**

Study of assets and challenges for knowledge-based economic development in the Lower Rio Grande Valley. Includes demographic, economic, and education data for the region, as well as results of a survey of government and business leaders concerning economic development strategy.

Keywords: economic development; Cameron County, Texas; Hidalgo County, Texas; Matamoros, Mexico; Mexico; Texas



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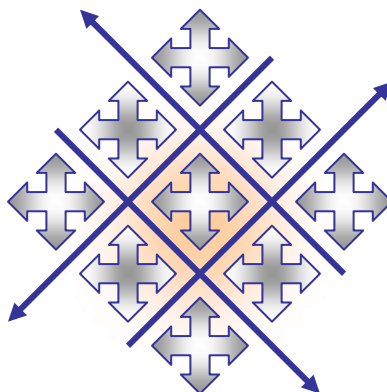
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# CAMERON COUNTY/MATAMOROS

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## AT THE CROSSROADS

### ASSETS AND CHALLENGES FOR ACCELERATED REGIONAL & BINATIONAL DEVELOPMENT



A CBIRD (Cross Border Institute for Regional Development)  
The University of Texas at Brownsville/Texas Southmost College  
Report

By  
Dr. David V. Gibson and Dr. Pablo Rhi-Perez  
And  
Margaret Cotrofeld, Oralia De Los Reyes, Mark Gipson,  
Richard J. Rodarte, and Ignacio Rodriguez  
With  
Alan Cox, Matt Cunningham, and Dan Houston  
CivicEconomics, Austin, Texas



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[<http://unix.utb.edu/~vpea/utbtscbird.htm>]

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CivicEconomics, Austin, Texas [[www.CivicEconomics.com](http://www.CivicEconomics.com)]

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\*IC<sup>2</sup> Institute, The University of Texas at Austin

\*\*Cross-Border Institute for Regional Development,  
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*For George and Ronya Kozmetsky*

Dedicated visionaries and entrepreneurial champions for an improved quality of life for all residents of the Lower Rio Grande Valley, of Texas, of the Nation, and of the world. Thank you for your valued insights and contributions that continue to grow and multiply.

The global to-do list has never been more daunting. New arteries for transport, trade, finance, and communications require constantly updated rules. Freer, faster movement across borders necessitates filters to separate terrorists from traders and levees to contain infectious disease, pollution, invasive species, and financial disruption. Technologies of literally world-shaking power... create a set of truly global issues... The information revolution has expanded the opportunities for citizens, experts, nongovernmental organizations, businesses, and foundations to work with governments and with each other to solve problems... Ignoring demands for transparency broader participation in today's world is a sure recipe for eventual failure.

**P.J. Simmons**  
*Carnegie Endowment for  
International Peace  
August 17, 2002*

Explaining South Texas has always been a challenge: Where others see lines on a map, we see a limitless horizon of opportunity. Where others see two cultures, side-by-side, we recognize our home: bicultural, bilingual, a combination of the best, transformed into one.

**Mary Rose Cardenas, Chairman**  
*Texas Southmost College  
Board of Trustees  
2002*

There is no choice in whether this region will grow or not. If we closed the border tomorrow - every bridge in South Texas and all the way to El Paso, and if we stopped migration from the North – we would still have 230% growth in 30 years. That is the nature of the current demographics. The only choice we have is whether we will be proactive or reactive to these changes. The Coordinating Board, The Texas Board of Regents, and the Governor’s Business Council have embraced the premise that *we need to do a better job of educating this population*. If we don’t, The Great State of Texas will be in a steady demise – economically, socially, and politically.

**Juliet Garcia, President**  
*The University of Texas at Brownsville/Texas Southmost College*  
*Interview, August 28, 2002*

Through technology-, civic-, and social-entrepreneurship, I envision a Binational Border Region that is dedicated to utilizing 21<sup>st</sup> century know-how, technology, policies, and initiatives for tomorrow’s knowledge society. A region that is dedicated to wealth and opportunity creation for all its citizens, making the Valley a better place to live, work, play, and raise families in harmony, peace, and prosperity.

**George Kozmetsky**  
*Co-Chair CBIRD Advisory Board and*  
*Chairman of the Board, IC<sup>2</sup> Institute,*  
*The University of Texas at Austin*  
*Interview, January 2003*

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CBIRD-TRAC's Binational Advisory Board and Founding Members including Brownsville Chamber of Commerce; Brownsville Economic Development Council; Harlingen Area Chamber of Commerce; IC<sup>2</sup> Institute, University of Texas at Austin; Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM); RGK

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**CAMERON COUNTY/MATAMOROS**  
**"At the Crossroads"**  
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# SECTION 1

## ⇒ INTRODUCTION

Texas stands at a crossroads. In one direction lies a future that follows the current course of action...enrollments in colleges and universities do not keep pace with booming population growth...regional workers are not able to support a growing and globally competitive economy that is necessary for a sustainable quality of life....

In the other direction lies a future which follows a new path...Texas accepts the challenge...college and university enrollments and graduations increase...Educational institutions excel through programs of excellence and advancements in research...the economy is advanced by a highly trained and capable workforce and by innovations created through R&D...individuals are challenged, their minds are expanded, and they develop a growing interest in the world around them.

*Adapted from "Closing The Gaps"  
Texas Higher Education Plan, 2002*

This report provides select quantitative and qualitative data on Cameron County, U.S. and Matamoros, Mexico, to assess assets and challenges for accelerated regional and binational development. A key organizing principle is that the border region in general and Cameron County/Matamoros in particular, is at a crossroads in terms of regional leadership; business and industry development; education and workforce training; and quality of life. One direction leads to regional decline; the other direction results in enhanced regional prosperity, Figure 1.1.

**Figure 1. 1. Lower Rio Grande Valley: Crossroads for the New Millennium**



Source: IC<sup>2</sup> Institute, The University of Texas at Austin

- ⇒ In one direction community leaders follow the current course of action and continue to compete for limited resources to benefit individual cities and institutions
- ⇒ In the other direction community leaders work together regionally and binationally to leverage limited resources to build a better future for all: One Region – Un Futuro

While benefiting from a strong binational economic and cultural heritage, established and growing educational assets, and a rapidly growing young bilingual and bi-literate workforce, the border region is challenged as never before:<sup>1</sup>

**Business and Industry** – is challenged by the existence of two societies – traditional and technological – each maintains different values and visions for the Valley. The former emphasizes the importance of land and physical assets; the latter emphasizes education and knowledge assets. One direction sees Cameron County’s service industries and tourism as the most important avenue for regional job creation in the coming decade. The other direction emphasizes the importance of knowledge-based industries (e.g., life sciences, transportation & logistics, value-added Maquiladoras) and binational entrepreneurship for 21<sup>st</sup> Century wealth creation.

**Education and Workforce Training** – One direction sees continued high rates of school dropouts, dead-end careers, and low rates of post-secondary education. The other direction sees enhanced access to post-secondary education, growing graduate programs, and the establishment of regionally based centers of research excellence.

**Leadership** – In one direction community leaders tend to position themselves to compete rather than cooperate with their neighbors, encourage win-lose scenarios on a city-by-city basis, and advocate a colonialism mentality where the contributions of “outsiders” is resisted. In the other direction, community leaders work to leverage intellectual, physical, and cultural assets regionally and binationally.

**Quality of Life** – One direction sees continued population growth that strains regional infrastructure, continued high unemployment and low median income, increased healthcare challenges, and increased crime. These negative trends are exacerbated with a “brain drain” as many of the most capable and educated workers and professionals leave the Valley to pursue their careers and to earn higher salaries. The other direction sees the Lower Rio Grande Valley being “branded” as a region that is able to grow, recruit, and retain “the best and the brightest” and as a region that works to achieve a better life for all citizens.

It is important to emphasize that these border challenges are being confronted at a time when the states of Tamaulipas and Texas face:

- ⇒ Increased competition in a global economy where low value-added manufacturing jobs are moving to Latin America and offshore to China and India, chasing the world’s lowest wages
- ⇒ Education and workforce needs of the 21<sup>st</sup> Century that require more highly skilled workers and more advanced degrees from all the regions’ citizens,

**While the Lower Rio Grande Valley faces entrenched challenges that have stood for generations, 21<sup>st</sup> Century technologies offer new methods and processes to accelerate change. But more than new technologies, it takes a new vision and belief that change is possible. It will take new public/private and binational partnerships to be successful in the global economy.**

<sup>1</sup> The observations listed here are based on interviews and focus group meetings in the Lower Rio Grande Valley during 2000-2002 including a Binational Knowledge-Base Benchmarking Workshop held at UTB/TSC, October 12-13, 2000. Special recognition is also due a group of community leaders that was convened on February 15, 2001, by Professor Pablo Rhi-Perez, UTB/TSC and which included Dr. Tony Knopp, Colonel William H. Card, and Andres Cuellar among others.

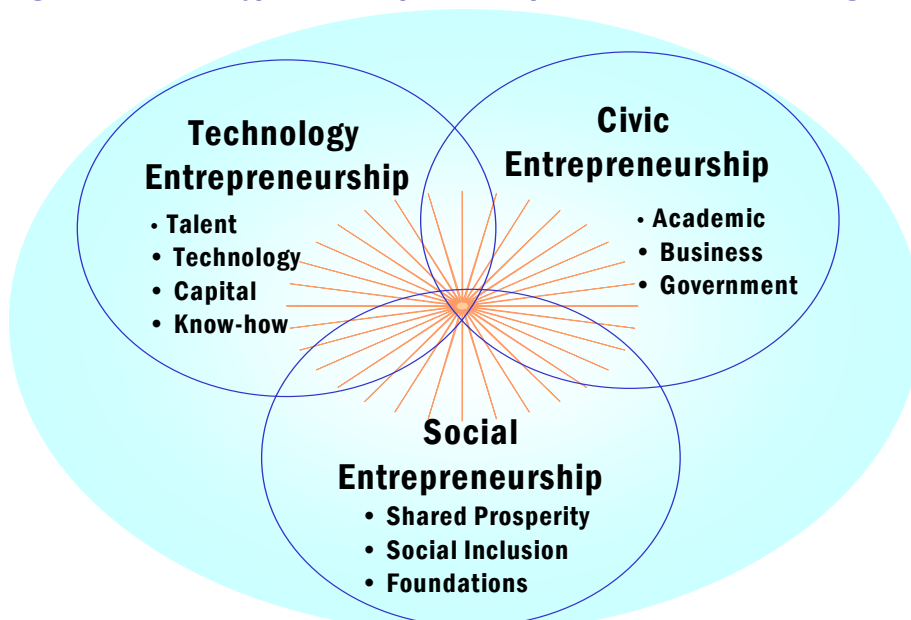
but especially Hispanics as the emerging majority minority population in the state of Texas

- ⇒ A prolonged global recession where wealth-producing technology industries and financial markets are stagnant (at best), and unemployment is increasing
- ⇒ Massive state budget deficits that necessitate decreased spending across a range of important and needed programs
- ⇒ Environmental and natural resource limitations that are global in scope and that challenge traditional modes of operation
- ⇒ Enhanced binational cooperation being challenged by the need for enhanced homeland security and ongoing threats of global terrorism

### Creating Regional Opportunities

It has been demonstrated in the U.S. and worldwide, that entrepreneurship is key to accelerating technology-based growth. This report extends the concept of entrepreneurship to emphasize the importance of regional and binational technology, civic, and social entrepreneurship, Figure 1.2.

**Figure 1. 2. Three Types of Entrepreneurship Needed in the Border Region**



**Regional & binational entrepreneurship, and leveraging of resources & assets is key – through technology, civic, and social entrepreneurship – to improve the region’s overall quality of life.**

Source: IC<sup>2</sup> Institute, The University of Texas at Austin

**Technology entrepreneurship** centers on linking talent, technology, capital, and business know-how at the regional-level for the creation of wealth from new business processes and products. Talent refers to special individuals or champions who make things happen and who facilitate the development and application of new technology products and processes. Capital, whether venture, angle, or grants, provides the fuel for development of the business idea. Business know-how includes management, legal, marketing, and sales and distribution. Entrepreneurship is required for building a regionally based “smart infrastructure” for commercialization of science and technology and new businesses processes for new industries (such as life sciences, nano-technology, and multi-media) as well as for enhanced competitiveness of established industries (such as agriculture, healthcare, and tourism).



**Civic entrepreneurship** is most concerned with the networking regional academic, government, and business leaders to identify and solve community challenges. Civic Entrepreneurship utilizes innovative approaches and partnerships in the pursuit of institutional excellence as well as for leveraging regional, national, and global resources to solve challenges and to create new infrastructures for accelerated and sustainable development.

**Social entrepreneurship** focuses on finding creative and innovative ways to improve society through shared prosperity and social inclusion. Social entrepreneurs network and link public and private sectors including non-profit and non-government organizations (NGOs) and foundations to solve challenges and to provide new opportunities for an accessible and improved quality of life for all residents.

### Knowledge-Base Benchmarking

The foundation for a new economic world order has been laid – one based upon knowledge, innovation and international collaboration. This is a new landscape where ...the world is experiencing unprecedented change in applications of knowledge in every dimension of development, growth, revitalization, and organization. The demands and opportunities of an interdependent global economy have implications for private and public decision making by enterprises and communities...

Debra M. Amidon,  
The Innovation SuperHighway:  
*Harnessing Intellectual Capital for Collaborative Advantage*, 2002

This report uses Knowledge-Base Benchmarking at the regional level to provide an assessment of key assets and challenges to:

- ⇒ Foster the development of technology entrepreneurship and globally competitive industry clusters for 21<sup>st</sup> century wealth creation and increased availability of well-funded, career oriented jobs to grow, retain, and attract talent
- ⇒ Increase regionally-based financial, social, and intellectual capital (civic and social entrepreneurship) for meeting regional challenges including improving the quality and availability education and training (K-12, college, and university) for the 21<sup>st</sup> Century
- ⇒ Develop the Lower Rio Grande Valley border region as a model of binational collaboration and cooperation for an enhanced quality of life

This report focuses on Cameron County (including the cities of Brownsville, Harlingen, San Benito, Los Fresnos, Port Isabel, and South Padre Island) and the border city of Matamoros, Mexico.<sup>1</sup> Key assets and challenges are assessed in terms of:

- ⇒ Regional demographics
- ⇒ Binational Community leaders’ opinions on the importance of regional industries, factors and strategies for economic development
- ⇒ Education and training

**Regional Knowledge-Base Benchmarking entails a comparison of actuals to possibles... to articulate how specific assets may be leveraged to overcome specific challenges for accelerated growth in the knowledge economy of the 21<sup>st</sup> Century.**

<sup>1</sup> For another Lower Rio Grande Valley regional assessment please refer to Assets and Challenges for Accelerated Technology-Based Growth in Hidalgo County: Knowledge-Based Benchmarking, by Gerald D. Brazier, The University of Texas Pan American and David Gibson, IC<sup>2</sup> Institute, The University of Texas at Austin. A CBIRD (Cross Border Institute for Regional Development) Core Program Report, implemented under a partnership agreement between CBIRD and the University of Texas Pan-American and funded by The Economic Development Administration, Texas - see [www.cbird.org](http://www.cbird.org).



- ⇒ Regionally-based established and emerging industry clusters

This assessment was conducted during 2001-2002 and is based on qualitative data (interviews, discussion sessions, focus groups), a binational survey of regional business leaders, and quantitative data (published documents, databases).

## REPORT OVERVIEW

**Section 1:** Emphasizes that the Cameron County/Matamoros Border Region is at a crossroads in terms of key challenges and opportunities for business and industry development; education and workforce training; regional leadership; and enhancing the region’s quality-of-life. The importance of technology, civic, and social entrepreneurship is emphasized. Knowledge-Base Benchmarking is presented as the reports’ methodology.

**Section 2:** Highlights historic and current demographic trends that set the stage for Cameron County and Matamoros being challenged by the 21<sup>st</sup> Century global economy. The border region is confronted with a rapidly growing young and largely Hispanic and bilingual workforce that is largely under-skilled and under-educated in terms of meeting the demands of the 21<sup>st</sup> Century workplace. The economic profile underscores this reality, as Cameron County ranks as having (of “all” counties in the U.S. with over 250,000) <sup>1</sup>:

- ⇒ The highest percentage of people living below the poverty level
- ⇒ The highest percentage of children under 18 living below the poverty level

**Section 3:** Discusses the results of a binational survey of Cameron County and Matamoros community leaders on (1) the importance of established and emerging industries for job creation, economic development, and wealth creation in the next 5-to-10 years, (2) key economic development factors and strategies, and (3) key economic development assets and challenges on both sides of the border. National, city, and institutional borders become transparent in the face regional education, economic, and healthcare challenges and opportunities as leaders on both sides of the Rio Grande River voice similar concerns and priorities for the region’s future economic development. The similarity of the binational responses underscores the reality and importance of “Una Region – One Future.”

**Section 4:** Provides an overview of Cameron County’s education system as it faces regional challenges with limited resources. Ranking second lowest of all U.S. counties<sup>2</sup> in education attainment, education is rightly perceived by regional leaders as one of their most crucial challenges (Section 3).

- ⇒ The South Texas Independent school district (drawing enrollment across three counties to their magnet schools) and Tech Prep Rio Grande Valley demonstrates the positive impact of a regional and targeted approach to secondary education and life-long career training.
- ⇒ Texas State Technical College (TSTC), characterized by value-added industry partnerships, is tailoring its education and training programs to meet current and future workforce needs and to provide state-of-the-art computer and information technology (CIT) support.

**Academic, business & community leaders are usually aware of their main challenges. What they most often lack is a sense of regional cohesion and cooperation to overcome these challenges.**

**Regional knowledge-base benchmarking can springboard a community to leverage regional assets and to work for a synergistic vision.**

<sup>1</sup> U.S. National Rankings published by the U.S. Census Bureau in November 2002, of Counties in the U.S. with over 250,000 population.

<sup>2</sup> Ibid.

- ⇒ The University of Texas-Brownsville/Texas Southmost College (UTB/TSC) has demonstrated the positive regional impact of a unique partnership between a growing university and an established community college. UTB/TSC highlights the key role Texas border Universities need to play in “Closing the Gaps” in participation, success, excellence and research.

**Section 5:** Discusses Cameron County and Matamoros regional and binational industry as defined by cluster analyses, workforce, wage rates, and worker migration. Three industry clusters are targeted because of their unique challenges and opportunities for the border region: (1) Manufacturing & Maquiladoras, (2) Transportation Services and Logistics & Distribution, and (3) Health Services and Life Sciences. As labor intensive Maquiladoras lose ground to the global search for the lowest wage, it is suggested that the Lower Rio Grande Valley is uniquely situated to build entrepreneurial, globally competitive industry clusters in areas targeted to the challenges and assets unique to the border region.

- ⇒ Advanced value-added Manufacturing and Binational Supply Chain Management
- ⇒ Transportation Services and Logistics & Distribution
- ⇒ Cross border security: rapid and secure commerce with expansion of trade
- ⇒ Health Services and Life Sciences

Section 5 ends with a discussion of digitally-based community networks and case profiles of regionally based technology entrepreneurship. New valley-based information technologies are helping to form the infrastructure needed for advanced technological growth in all industry sectors.

**Section 6:** Presents conclusions, observations, and recommendations for community leaders in Cameron County and Matamoros in terms of:

- ⇒ Regional and binational cluster-based economic development centered on Manufacturing & Maquiladoras, Transportation Services and Logistics & Distribution, Health Services & Life Sciences, and cross border security
- ⇒ Education and training targeted to “closing the gaps” in participation, success, excellence, and research
- ⇒ Fostering binational technology, civic, and social entrepreneurship
- ⇒ Regional, national, and international partnerships for accelerated and smart development

Institution-based excellence – whether it be academic, business or government – is NOT sufficient. What is required is visionary public-private leadership and leveraging of **regional assets** to overcome **regional challenges** to accelerate **regional development**. How effectively Cameron County and Matamoros and other border business, academic, and government sectors collaborate, coordinate and cooperate will, in large part, determine the region’s ability to build and sustain requisite levels of education and training needed to accelerate economic growth and create high value, career-oriented jobs while sustaining and enhancing an accessible quality-of-life for all: One Region – Un Futuro.

**The South Texas/Northern Mexico Border region has a unique opportunity to build a binational model of wealth creation and prosperity sharing that other international binational and border regions will seek to emulate.**

# SECTION 2

## ⇒ DEMOGRAPHICS

“...Our analysis clearly shows that those U.S. counties located on the border are consistently worse off economically than our original numbers indicated. Unemployment is higher, birthrates are higher, the overall poverty rate is higher, population growth is higher and the number of children in poverty is higher... at the same time the border counties have lower per-capita income, lower annual pay, and a lower growth rate in annual pay.”

*Carole Keeton Rylander, Texas Comptroller  
Bordering on the Brink, March 27, 2001*

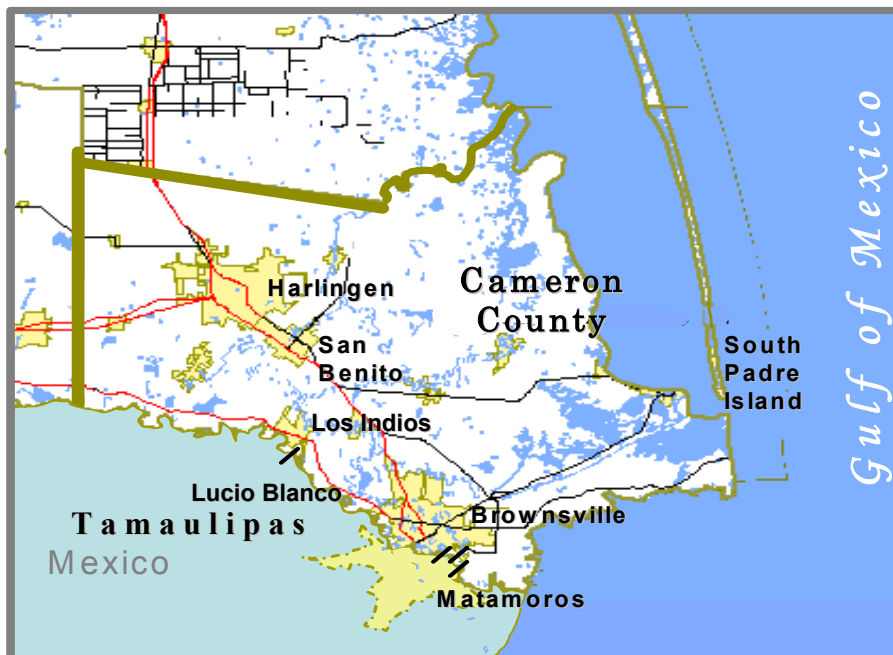
**Higher Unemployment  
Higher Birthrates  
Higher Population Growth  
Higher Poverty Levels  
More Children in Poverty**

### CAMERON COUNTY & MATAMOROS REGION

Cameron County, the south most tip of Texas, is located on the Gulf of Mexico, and includes the cities of Brownsville, Harlingen, San Benito, Los Fresnos, Port Isabel, and South Padre Island. The region is popular with tourists from Northern U.S. (Winter Texans), Texas, and Northern Mexico. Harlingen, home to a Texas State Technical College campus, has a population of 80,000, and is ten miles north of the Free Trade International Bridge at Los Indios: a border crossing to Tamaulipas, Mexico. Thirty-seven miles southeast of Harlingen is the city of Brownsville, Cameron County's largest metro area, with a population of 140,000. Brownsville is the location of The University of Texas at Brownsville/Texas Southmost College and has three border crossings (Figure 2.2) to its closest neighboring city, Matamoros, Mexico (estimated population of 418,000):

- ⇒ Gateway international Bridge (Cameron County)
- ⇒ Private B&M Bridge (Brownsville)
- ⇒ Veteran's International Bridge at Los Tomates (Cameron County, Brownsville)

**Figure 2. 1. Map of Cameron County (With International Bridges)**



**Lower Per Capita Income  
Lower Annual Pay  
Lower Growth Rate  
in Annual Pay**

The Lower Rio Grande Valley is a beautiful region. Its population is young and capable.

While the region faces huge challenges, its assets are rich and unique. Texas-Mexico border regions tend to exhibit an extreme of both assets and challenges.

In 2001, the number of pedestrians going north from Mexico to Texas through Brownsville’s border crossings reached 3,198,168. Some of these crossings represent people living in Matamoros and working in Cameron County; but the bulk of this number is composed of tourists. This high volume binational pedestrian and traffic flow, triggered by the passage of NAFTA and the rapid growth of Maquiladoras, interjects the Cameron-Matamoros border region with escalating challenges including transportation and logistics and healthcare with accompanying concerns of national security.

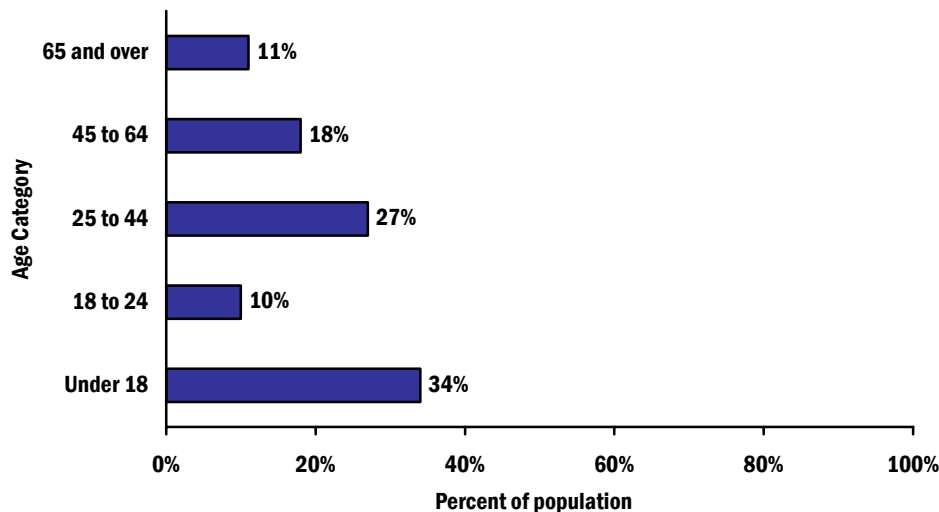
The following data on the demographics of the Cameron County/Matamoros area reviews population growth, racial composition, income, and employment statistics. These population and economic factors provide a benchmark to assess key challenges and opportunities as the region strives to become proactive to the demands of the in the 21<sup>st</sup> Century Global Knowledge Economy.

**Binational border security is a dominant concern that impacts healthcare, commerce, education, economic development, and quality of life.**

## POPULATION OVERVIEW

In 2001, Cameron County had a population of 341,000, 34% which was under 18 years, 55% was between 18 and 64, and 11% was 65 or older, Figure 2.2. Fifty-two percent was female and 48% male.

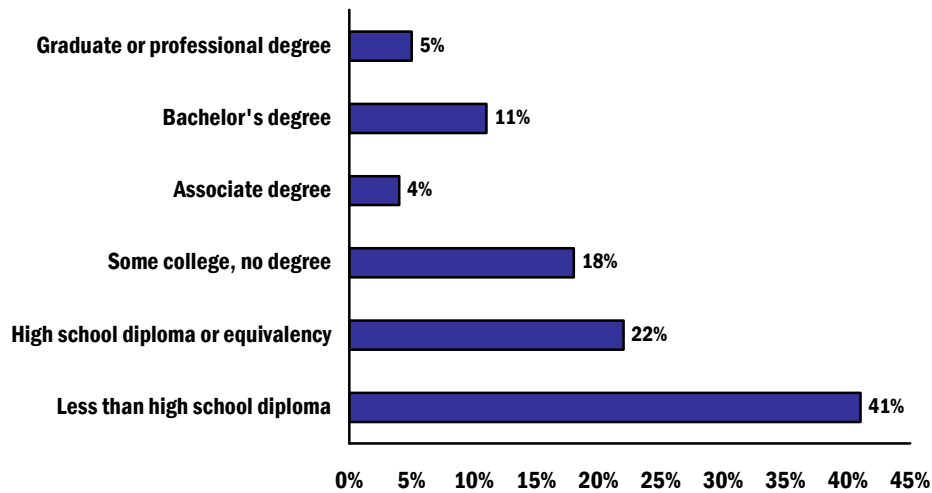
**Figure 2. 2. Cameron County Age Distribution, 2001**



Source: U.S. Census Bureau, 2001 Supplementary Survey

According to the U.S. Census Bureau, 85% of Cameron County’s 2001 population was of Hispanic origin, and 14% was White non-Hispanic; 1% was Asian; less than 0.5% was Black or African American; and less than 0.5% was American Indian and Alaska Native.<sup>1</sup>

<sup>1</sup> Cameron County’s Hispanic origin and racial data is adapted from Supplementary Survey 2001 Profile narrative, U.S. Census Bureau. According to the U.S. Census Bureau, people of Hispanic origin may be of any race and most of County’s Hispanic population is categorized as White (although 19% of Cameron County’s population claimed to be of “some other race” than White, Black, Asian, or Native American). People who live in the border region clearly consider Hispanic origin to be an important racial parameter, in spite of the differentiations recorded in U.S. Census Data.

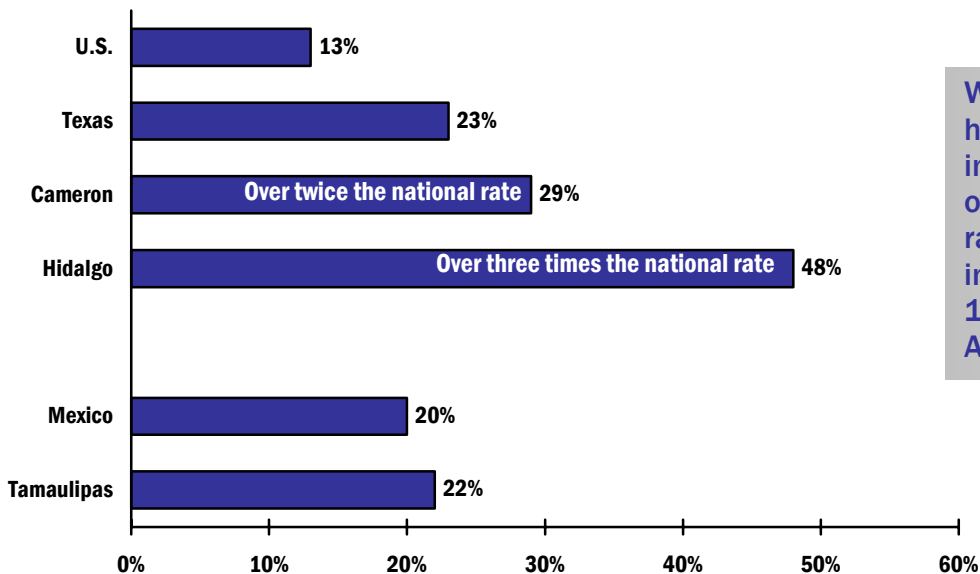
**Figure 2. 3. Cameron County Educational Attainment, 2001 (25 years and older)**

Source: U.S. Census Bureau, 2001 Supplementary Survey

Forty-one percent of Cameron County residents of 25 years and older, have less than a high school diploma; 22% have a high school diploma or equivalency, 18% have some college but no degree, 4% have an Associate degree, 11% have a Bachelor's degree, and 5% have a Graduate or professional degree, Figure 2.3.

According to the U.S. Census Bureau, between 1990 and 2000, the U.S. population increased by 13% and Texas increased by 23%. Cameron County's population increased 29% (over twice the national rate) to 335,227. Hidalgo County, Cameron County's neighbor, had an even larger increase of 48%. Mexico's population increased 20% and the state of Tamaulipas increased by 22%, Figure 2.4.<sup>2</sup>

**Hispanics make up 32% of Texas' residents in 2003 and the number is expected to be 59% by 2040.**

**Figure 2. 4. Population Growth Overview: 1990-2000**

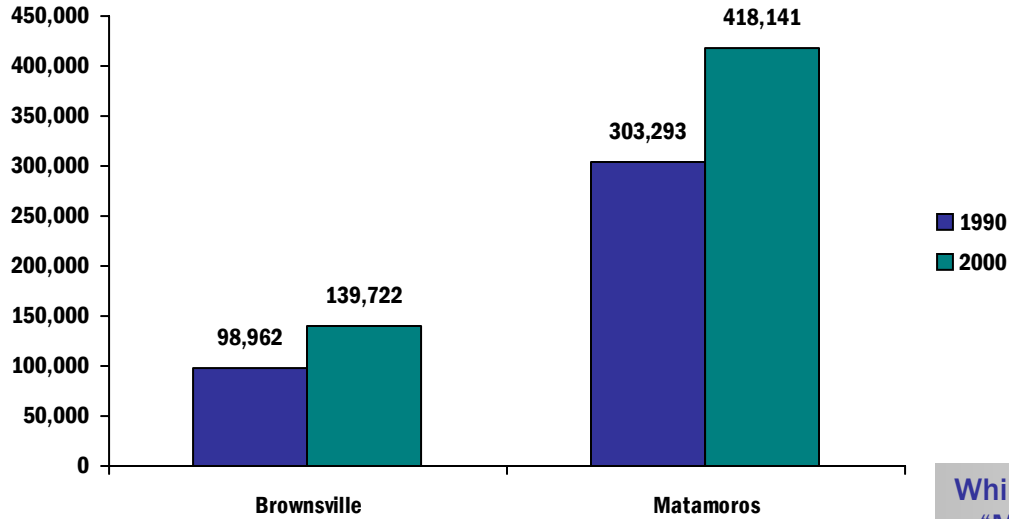
Source: U.S. Census Bureau, 2001 Supplementary Survey and Mexico 2000 Census INEGI

**While Cameron County had a 29% growth rate in the 1990's (which was over twice the national rate), the population increased by another 10% from April 2000 to April 2001.**

<sup>2</sup> An understood challenge of census-taking along the border region is the number of inhabitants who avoid being counted for a variety of reasons. Consequently, for both sides of the border, these are considered low population estimates.

Brownsville, Cameron County's largest city, grew from 98,962 in 1990, to 139,722 in 2000: a 41% increase. Matamoros' population grew from 303,293 in 1990 to 418,141 in 2000, a 38% increase (Figure 2.5).

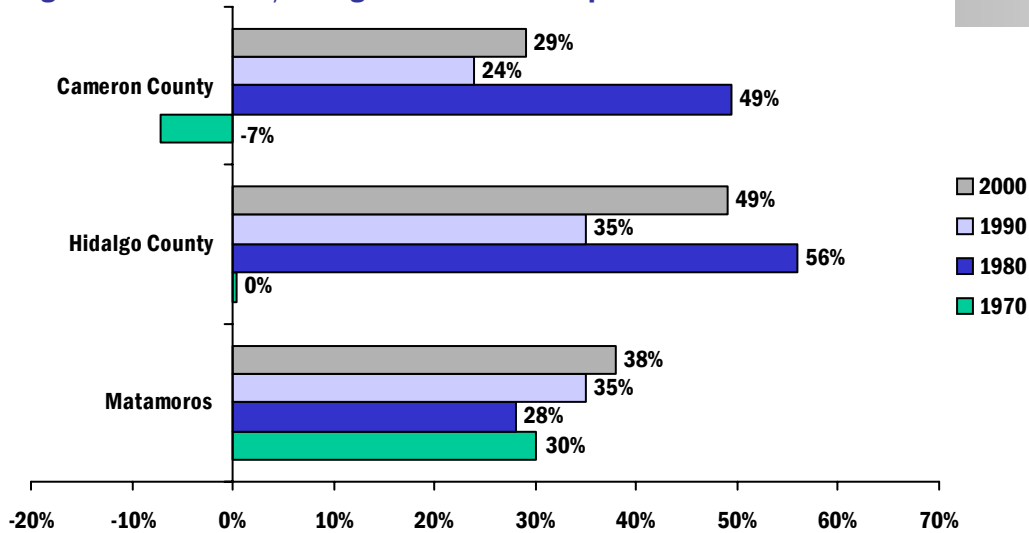
**Figure 2. 5 Growth of Brownsville and Matamoros Populations**



Source: U.S. Census Bureau; INEGI 1990 and 2000 Mexico-U.S. Border Demographics

Figure 2.6 shows growth patterns of Cameron County, Hidalgo County, and Matamoros. In 1970, Cameron showed a population "decrease" of 7% from the previous decade; Hidalgo stayed close to no growth; and Matamoros showed growth of 30%. By 1980, Cameron and Hidalgo counties had increased their populations by 49% and 56% and Matamoros by 28%. In 1990, Cameron County grew at 24%, Hidalgo at 35%; and Matamoros at 35%. In 2000, Cameron's growth rate was 29%, Hidalgo's 49%, and Matamoros 38%.

**Figure 2. 6. Cameron, Hidalgo & Matamoros Population Growth 1970-2000**

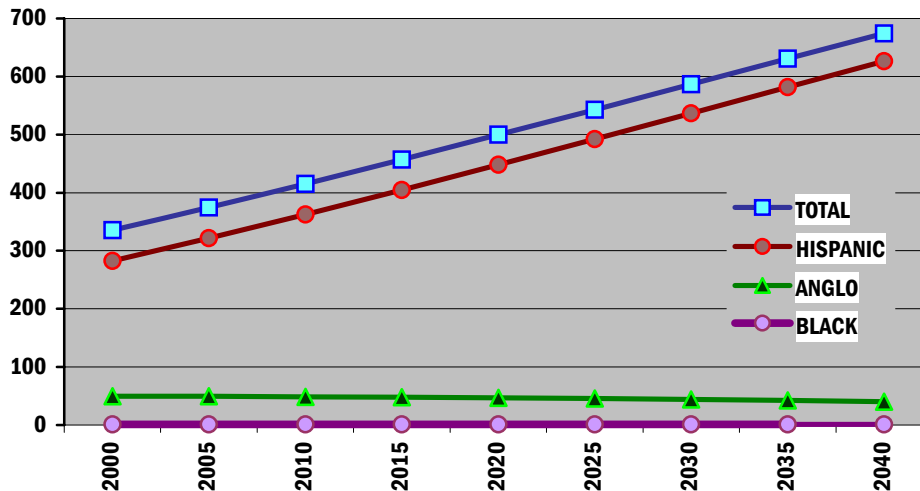


Sources: U.S. Census Bureau, Mexico 2000 Census INEGI

While Texas will become a "Minority Majority" state by 2005, this is already a reality on the border. The future of Texas will in large part depend on how well the Hispanic population is integrated into the knowledge economy of the 21<sup>st</sup> Century.

Figure 2.7 shows that Cameron County’s minority Anglo and Black populations are projected to have zero growth, while there is expectation for dramatic growth in the Hispanic population to 400,000 by 2015, and above 600,000 by 2040, figure 2.7.

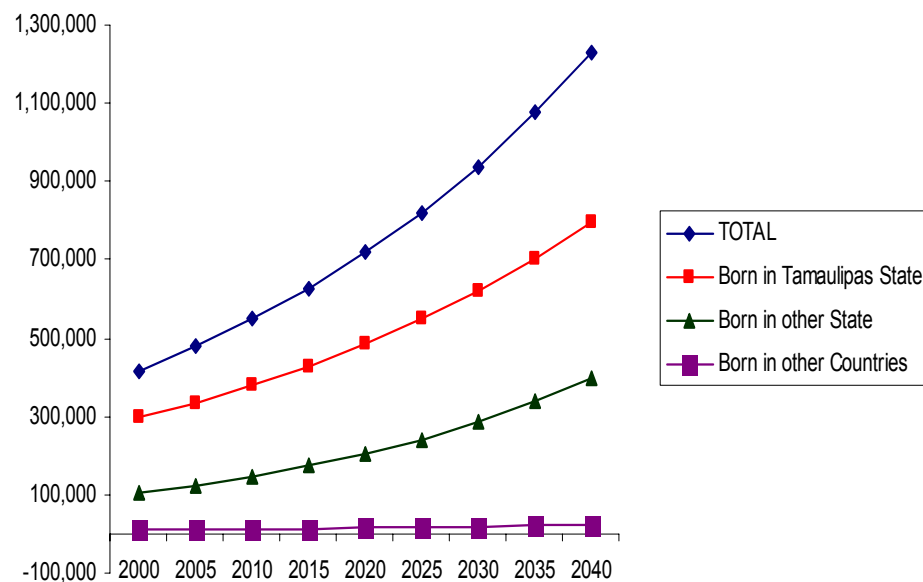
**Figure 2. 7. Cameron County Population Growth Projections**



Source: TAMU-Projected population 2000-2040

Figure 2.8 shows that Matamoros’ current immigrant and native populations are projected to more than double by 2040, producing a dramatic population growth to 650,000 by 2015, and above 1,200,000 by 2040.

**Figure 2. 8. State of Tamaulipas Population Growth Projections**



Source: Matamoros-IMPLAN 2000 projected WAGE STATISTICS & EMPLOYMENT

The great “promise” of the border’s demographic profile is its large, capable binational population under the age of 20.

If we can place the “entrepreneurial baton” for regional development into the hands of the coming generation, they will provide the needed talent and energy.

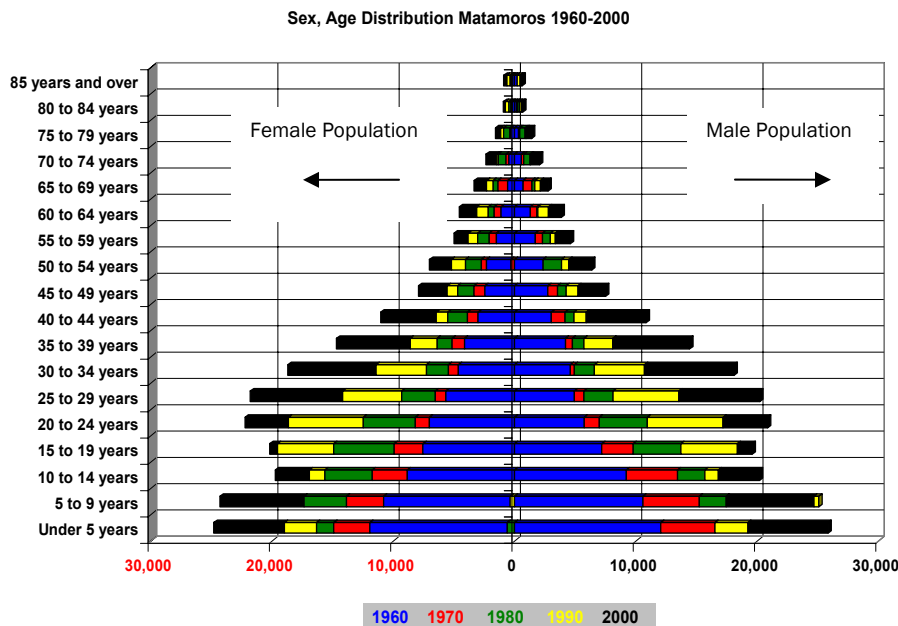
But to do that, Texas must address the fact that, for the most part, this is a generation growing up under-educated, under-employed and in poverty.

If quality education can be paired to local opportunity, the region’s economy could turn around this decade and the border region would be the world’s icon for binational economic opportunity.



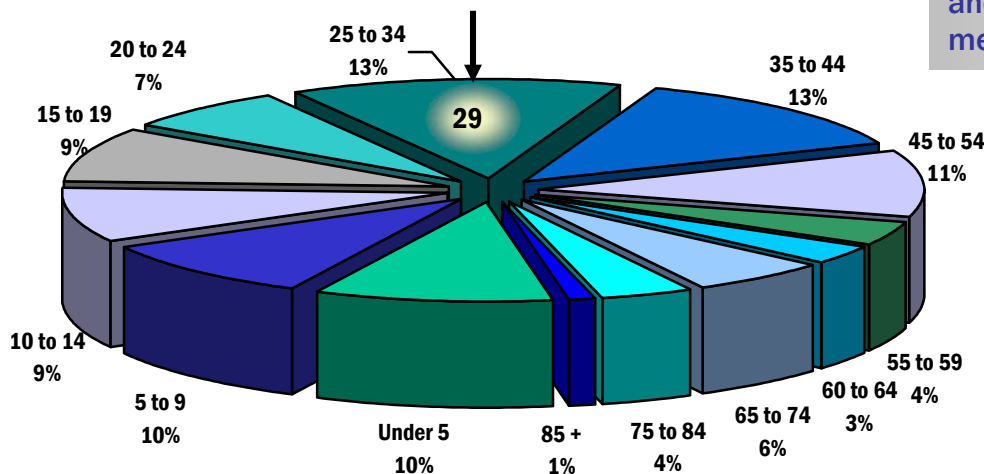
In 1990, the highest growing age bracket in Matamoros was 15-to-30 years old, perhaps a reflection of the maquiladoras' impact in attracting a young child-bearing population from outside Matamoros, Figure 2.9. This situation is reflected longitudinally in the 2000 census by growth in the 25-to-40 age bracket, and the corresponding age brackets of children Under 5 years old and 5-to-9 years old.

**Figure 2. 9. Population Age & Sex Distribution, Matamoros 1960-2000**



Cameron County's population has a median age of 29, Figure 2.10. Sixty-nine percent of the population falls into the U.S. workforce ages of 15 to 64.

**Figure 2.10. Cameron County Population by Age (Median Age = 29)**

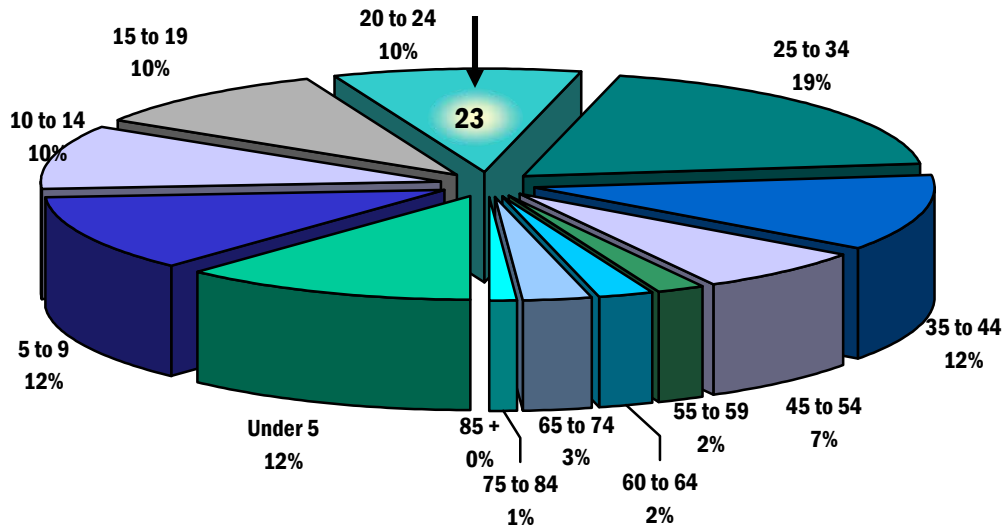


The border population is young... the median age of the U.S. population is 35. The median age of the Texas population is 32. The median age of Cameron County is 29 and Matamoros has a median age of 23.



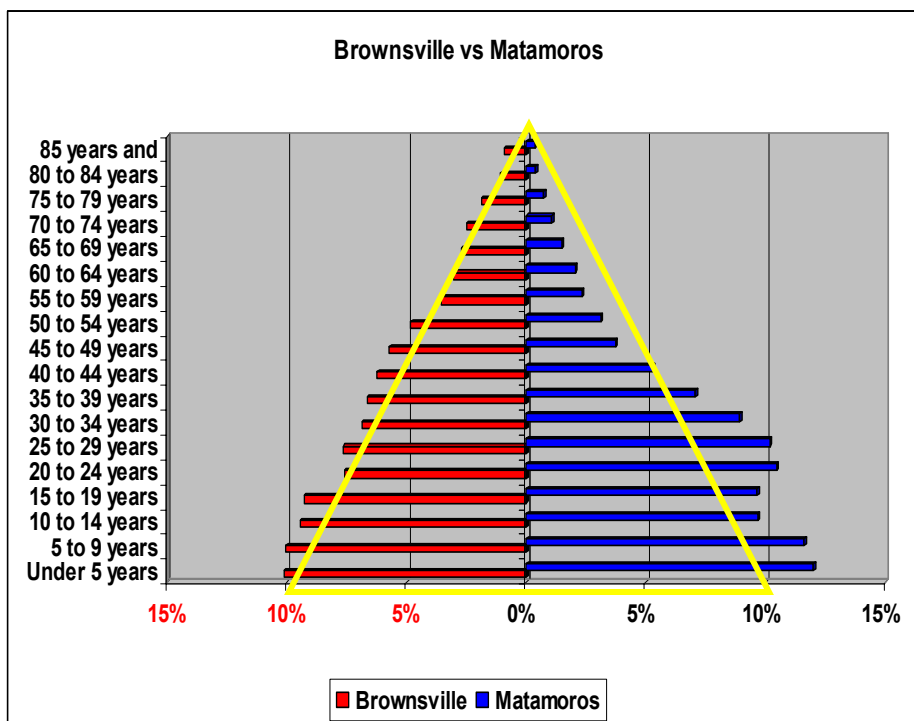
Matamoros has a younger population than Cameron County with a median age of 23, Figure 2.11. Fifty-eight percent of the population falls within the Mexican workforce ages of 15 to 55.

**Figure 2.11. Matamoros Population by Age (Median Age = 23)**



Matamoros population under 35 years bulges in comparison to Brownsville's, Figure 2.12.

**Figure 2.12. Population by Age: Brownsville v. Matamoros**



Matamoros has more children age 14 and under than Brownsville has in its entire population.

Sources: U.S. Census Bureau, Mexico 2000 Census INEGI

**Table 2. 1. Brownsville & Matamoros: General Population Characteristics**

Population Group	Brownsville	Matamoros
Female	52%	51%
Male	48%	49%
Under 20	37%	42%
65 and Over	11%	4%

Source: U.S. Census 2000; Mexico Census 2000

Thirty-seven percent of Cameron County’s population is under 20, and 11% is 65 and over, Table 2.1. Females represent a slightly larger portion of the population, with 52% versus the 48% male population. In Matamoros’ metro area 42% percent of the population is under 20, and 4% is 65 and over. Females represent a slightly larger portion of the population, with 51% versus the 49% male population.

## ECONOMIC PROFILE

While large segments of Cameron County’s population are economically challenged, many professionals and skilled workers elect to move north for increased career opportunities. During the 1990s, Matamoros attracted workers and their families from Southern Mexico to work in Maquiladoras that offered reliable and relatively well-paid employment. While Matamoros provides employment opportunities for Mexicans, salaries remain significantly below the U.S. minimum wage causing many to seek employment on the U.S. side of the border, Figure 2.13.

**Figure 2.13. Map of Starr, Hidalgo, Willacy and Cameron Counties**

Mexican labor moves from southern Mexico to Matamoros, from Matamoros to Brownsville, and from Brownsville north into the U.S.

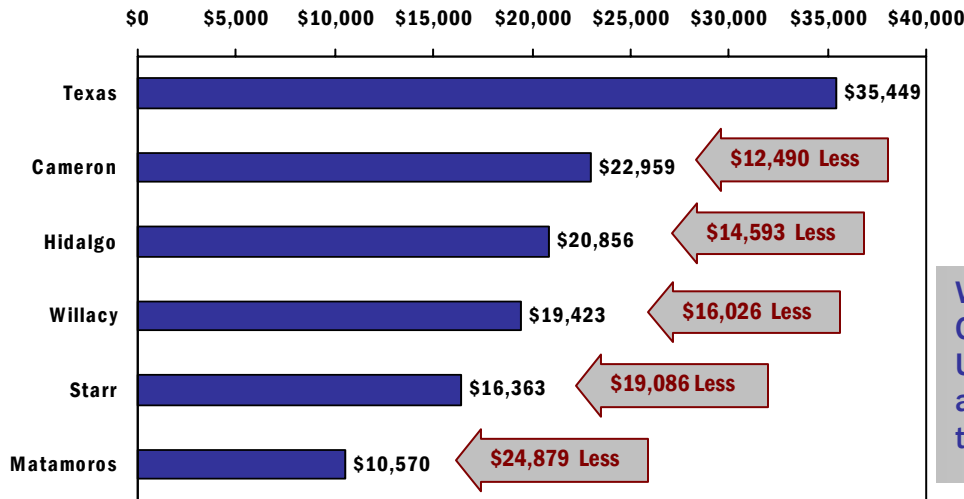
The region’s demographics present significant challenges and opportunities – they are the trigger for the decision points at the millennial crossroads.

The needs are staggering, but they also pinpoint targets for implementing solutions.

Cameron County’s annual median household income of \$22,959 falls \$12,490 short of the state’s \$35,449, but is higher than that of Hidalgo, Willacy, and Starr Counties, Figure 2.14. Matamoros’ annual median household income of

\$10,570 is considerably less than the Texas counties to the north and \$24,897 less than the state of Texas in general.

**Figure 2.14. Median Household Income: Regional Comparisons**



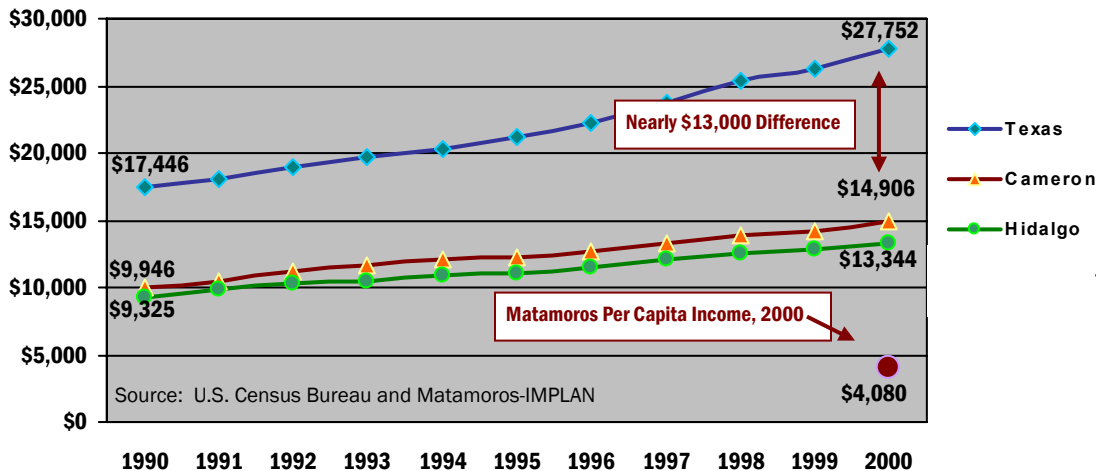
Wage rates in Cameron County are quite low by U.S. standards but they are high when compared to Matamoros...

Source: U.S. Census Bureau and Matamoros-IMPLAN

If nothing is done to change current trends, it is projected that the average household income in Texas will decline by \$4,000 (in constant dollars) by 2030. This figure multiplied by the number of households estimates a \$30 - \$40 billion/year loss of annual household income (Steve Murdock, Chief Demographer, Texas State Data Center, Texas A&M University, 2001).

In the State of Texas, the Per Capita Income rose from \$17,446 in 1990 to \$27,752 in 2000: a net gain of over \$10,000, Figure 2.15. Cameron County's Per Capita Income rose from \$9,946 to \$14,906 in the same time period: a net gain of less than \$5,000. In the year 2000, the Per Capita Income difference between the State of Texas and Cameron County was nearly \$13,000. Per Capita Income for Hidalgo County is below that of Cameron County and for Matamoros in 2000, per capita income was \$4,080 less than Cameron and Hidalgo Counties.

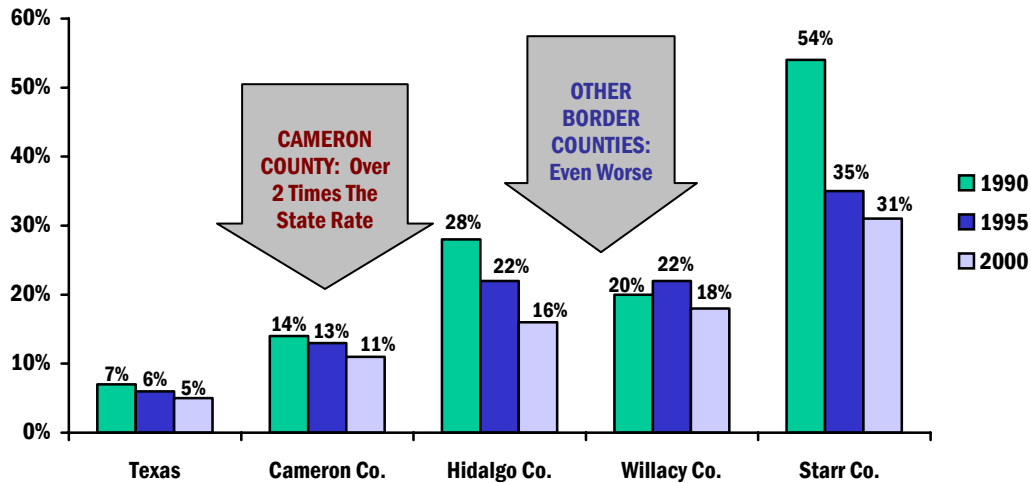
**Figure 2.15. Cameron County Per Capita Income 1990-2000**



Source: U.S. Census Bureau and Matamoros-IMPLAN

While Cameron County’s unemployment rate compares well with other border regions, it is *over twice the rate for the State of Texas*. And while it is “good news” that unemployment has decreased since 1990, the “bad news” is that it is still more than double the state’s average. Unemployment numbers are increasingly worse for Hidalgo, Willacy and Starr Counties, Figure 2.16.

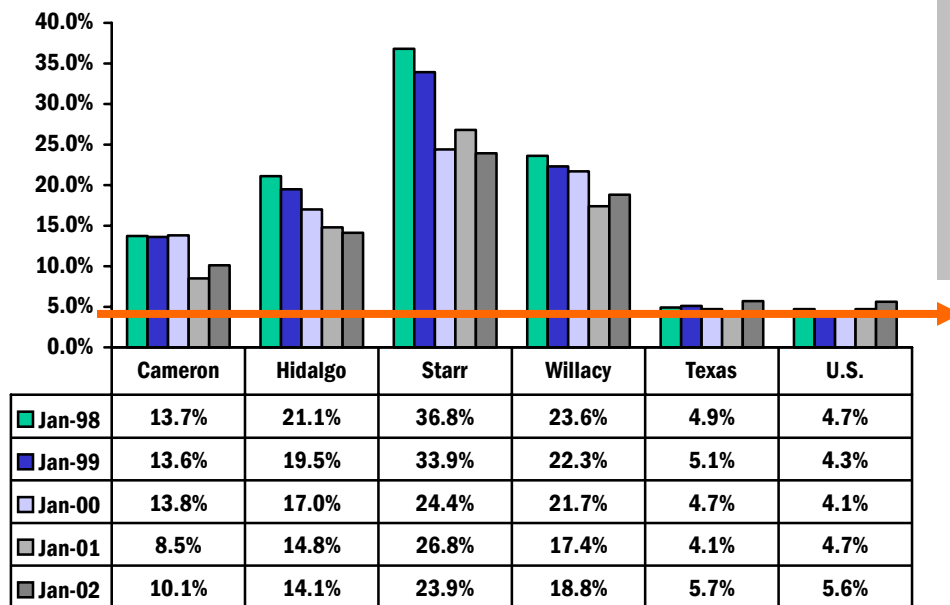
**Figure 2.16. Unemployment Rates: 1990, 1995, 2000**



Source: Labor Market Information Dept. of Texas Workforce Commission with the Bureau of Labor Statistics, U.S. Dept. of Labor

While Texas has been comparable to the U.S. in unemployment for the past decade, the border counties shoulder the largest burden of this unemployment. Figure 2.17, which shows the yearly unemployment breakdown since 1998, indicates that while unemployment seems to have hit a low point in 2001, it is again “on the rise” for Cameron County.

**Figure 2.17. Unemployment Rates by Year, 1998 - 2002**



Source: Texas Workforce Commission

Current employment statistics show the South Texas' border region has consistently higher unemployment than the State of Texas. Hidalgo and Willacy Counties have well over twice the state rate, while Starr County has over three times the state employment rate, with 21.8%, Table 2.2.

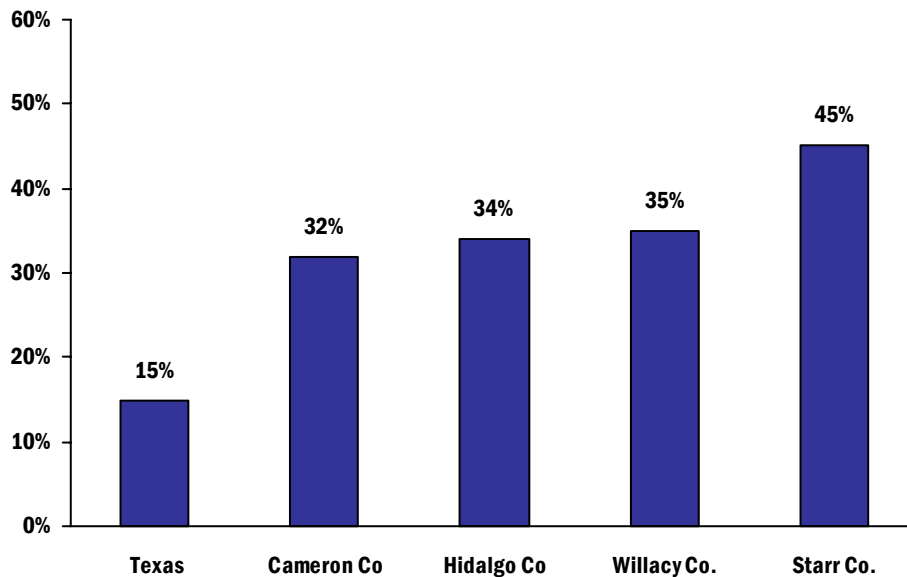
**Table 2. 2. Unemployment Statistics December 2002**

	Labor Force	Employment	Unemployment	Percentage
<b>Texas</b>	<b>10,715,009</b>	<b>10,103,679</b>	<b>611,330</b>	<b>5.7%</b>
<b>Cameron County</b>	<b>135,879</b>	<b>121,955</b>	<b>13,924</b>	<b>10.2%</b>
<b>Hidalgo County</b>	<b>223,438</b>	<b>193,815</b>	<b>29,623</b>	<b>13.3%</b>
<b>Willacy County</b>	<b>5,919</b>	<b>5,006</b>	<b>913</b>	<b>15.4%</b>
<b>Starr County</b>	<b>22,856</b>	<b>17,874</b>	<b>4,982</b>	<b>21.8%</b>

Source: Texas Workforce Commission

The disparities in income and employment rates are linked to the corresponding statistics of poverty, Figure 2.18. 1999 U.S. census data shows that the poverty level in Cameron County is 33%, over twice the state rate of 15%; and the poverty rate increases for Hidalgo, Willacy, and Starr Counties.

**Figure 2.18. Population in Poverty Estimate, 1999<sup>1</sup>**



Source: U.S. Census Bureau

<sup>1</sup>The 1999 poverty estimates were released in September 2002. This is the most recent data published for U.S. population in poverty by county which includes those with population under 250,000. The poverty rankings published in November 2002 referenced 2001 census data for counties with population 250,000 or more. This data shows that Hidalgo's population living in poverty has fallen to 32% while Cameron's has risen to 33%. The fact that these two counties consistently run neck-and-neck for "last place" overshadows the smaller cross-county differentials.

National rankings show Cameron and Hidalgo counties are not merely "lagging" statewide. They rank worst and second-worst in the nation for a range of key indicators.

In poverty-related questions, these counties rank worse than "inner city" counties such as Bronx County, New York; Orleans Parish, Louisiana; Los Angeles County, California.

Furthermore, "inner city" counties are surrounded by more prosperous counties in their direct vicinity while Cameron and Hidalgo are side by side and share borders with rural counties that are statistically worse than they are.

The U.S. Census Bureau recently published national rankings of critical statistics (November 2002) for counties with populations of over 250,000. Out of these 220 counties, Cameron and Hidalgo Counties repeatedly ranked, side-by-side, as **the worst AND second worst nationwide** in ten poverty-related issues, indicated in blue in Table 2.3. In another five criteria, they both ranked in the worst ten.

**Table 2.3. National Rankings: U.S. Counties (Population 250,000 or more – 220 Total)**

Poverty Rankings	Cameron	Hidalgo
Percent of People Below Poverty Level	1	2
Percent under 18 below Poverty Level	1	3
Percent 65+ Below Poverty Level	2	1
Education Rankings		
Less Than a High School Diploma	2	1
Percent of High School Graduate or Higher	219	220
Percent of People with a Bachelor's Degree or More	212	217
Economy Rankings		
Percent in Labor Force	219	220
Median Household Income	220	218
Median Family Income	220	219
Median Value	218	219
Other Related Issues		
Fertility of Unmarried Women: All women with Birth	134	182
Fertility: Rate per 1,000 Women 15 to 19 Years Old	44	1
Percent of Children Under 6 with All Parents in Work Force	220	219
Speaking a Language Other than English	2	1
Speaking Spanish at Home	2	1
Percent Owner-Occupied Housing Units	114	179
Median Monthly Housing Cost for Renters	219	220
Median Monthly Housing Cost for Mortgaged Owners	219	217

Source: U.S. Census Bureau, Demographic Surveys Division, Continuous Measurement Office

The future of Texas is tied to its minority population. How well they do is how well Texas will do. We have a demographic window of opportunity that we need to take advantage of now to face these challenges. If we don't, that window will remain closed for several decades.

Steve Murdock  
Chief Demographer  
Texas State Data Center  
Texas A&M University  
“Minorities Might Become State's  
Majority by 2005,”  
Amarillo Globe News web site

#### IF CURRENT TRENDS CONTINUE, WHAT'S AHEAD FOR CAMERON COUNTY AND THE SOUTH TEXAS BORDER REGION

- ⇒ A growing unskilled, under-educated population that cannot meet the demands of a technology-based workplace
- ⇒ Lost ground in the highly competitive global marketplace
- ⇒ Average household income will decline by \$4,000 in constant dollars by 2030
- ⇒ More public spending on prisons, welfare, Medicaid

Adapted from Steve Murdock, Chief Demographer  
Texas State Data Center, Texas A&M University  
2001

# SECTION 3

## ⇒ SURVEY of Community Leaders

### BINATIONAL DATA

During 2001-2002, a questionnaire on the importance of technology-based regional economic development was mailed to 4,500 potential respondents in Cameron County (See Appendices A and B). The same survey was also administered in Spanish during face-to-face interviews with 100 Matamoros respondents.<sup>1</sup> While this is not a scientific survey and response rates are very low, useful insights on regional and binational economic development are gained by comparing respondents' answers from cross-border areas of Cameron County and Matamoros. [For an additional point of comparison this section also provides footnotes that contain the responses of Hidalgo County community leaders to the same survey questions.]<sup>2</sup>

**Table 3. 1. Respondents' Professional Profiles**

CAMERON COUNTY			MATAMOROS		
Respondents	#	%	Respondents	#	%
President/V Pres/Director	50	27%	President/ V Pres/Director	55	68%
Prof'l Service Provider	38	21%	C.E.O./ Gen Manager	7	9%
C.E.O./ Gen Manager	26	14%	HR Manager	8	10%
Business Owner	23	12%	Stockholder	2	2%
Teacher / Professor	17	10%	Other	9	11%
Administrator	13	7%			
Other	16	9%			
TOTAL	183		TOTAL	81	

Source: UTB-CBIRD 2002

Of the 183 useable surveys from Cameron County's community leaders, 27% of the respondents are company presidents, vice-presidents or directors; over 50% are from the business sector and over 30% represent professional services and

<sup>1</sup> The results of the UTB/TSC Cameron County survey need to be qualified as the response rate was just over 4%; however, the same survey was also administered by UT-Pan Am in Hidalgo County with a similar response rate. Indeed, very low survey response rates are common for the frequently surveyed border population (LBJ School of Public Affairs, UT-Austin). Furthermore, out of necessity, a different methodology – face-to-face-interviews – was used to collect the survey data from Matamoros residents.

Cameron County's respondents' sample came from member lists of the county's chambers of commerce, economic development corporations, a business telephone book, and a list of community leaders. Out of 245 returned surveys, 183 usable responses were received. A list of 350 Matamoros community leaders from the private sector, including Maquiladoras, was created by ten long-term Matamoros residents. From this list a random sample of 100 was selected to be interviewed. Out of 100 interviews there were 81 useable surveys. Please refer to Appendix A for a copy of the survey.

<sup>2</sup> In early 2001 four Border Universities: The University of Texas-Brownsville/Texas Southmost College (UTB/TSC), The University of Texas-Pan American, The University of Texas-El Paso and Texas A&M International in Laredo, formed a Border Development Alliance to facilitate cooperation and research on border issues. One aspect of this partnership was a HUD funded research effort that included the design and administration of the "Border Development Alliance 2001 Survey" on regional economic development. UTB/TSC CBIRD (Cross Border Institute for Regional Development) translated, adapted, and pre-tested this survey for use in Cameron County and Matamoros, Mexico. We include only brief summaries of the Hidalgo County survey that was also administered in 2001 to a random sample of 3,000 community business leaders who returned 118 completed surveys for a response rate of about 4%. For a more complete review of these results please refer to Assets and Challenges for Accelerated Technology-Based Growth in Hidalgo County: Knowledge-Based Benchmarking, by G. Brazier and D. Gibson, a CBIRD Core Program, UT-Pan American, 2001. [www.cbird.org]

educational sectors, Table 3.1. Eighty-five percent of the respondents have lived more than five years in Cameron County and 60% of the businesses represented have been operating more than 15 years in the region. Fifty-five percent of the respondent’s businesses are non-minority owned, 26% are Hispanic owned, and other minorities own 10% of the businesses included in the survey. Of the 81 useable surveys from Matamoros 68% are company presidents, vice-presidents, or directors and 19% are C.E.O.s or managers. Ninety-three percent of the respondents have lived more than five years in Matamoros.

The questionnaire focuses on four main issues concerning job creation, economic development, and wealth creation in Cameron County and Matamoros in the next five-to-ten years as follows:

- ⇒ **The importance of regional industries: established and emerging**
- ⇒ **The importance and effectiveness of regional economic development factors**
- ⇒ **The importance and effectiveness of regional economic development strategies**
- ⇒ **Open ended questions for written responses on key accelerators or inhibitors to regional economic development**



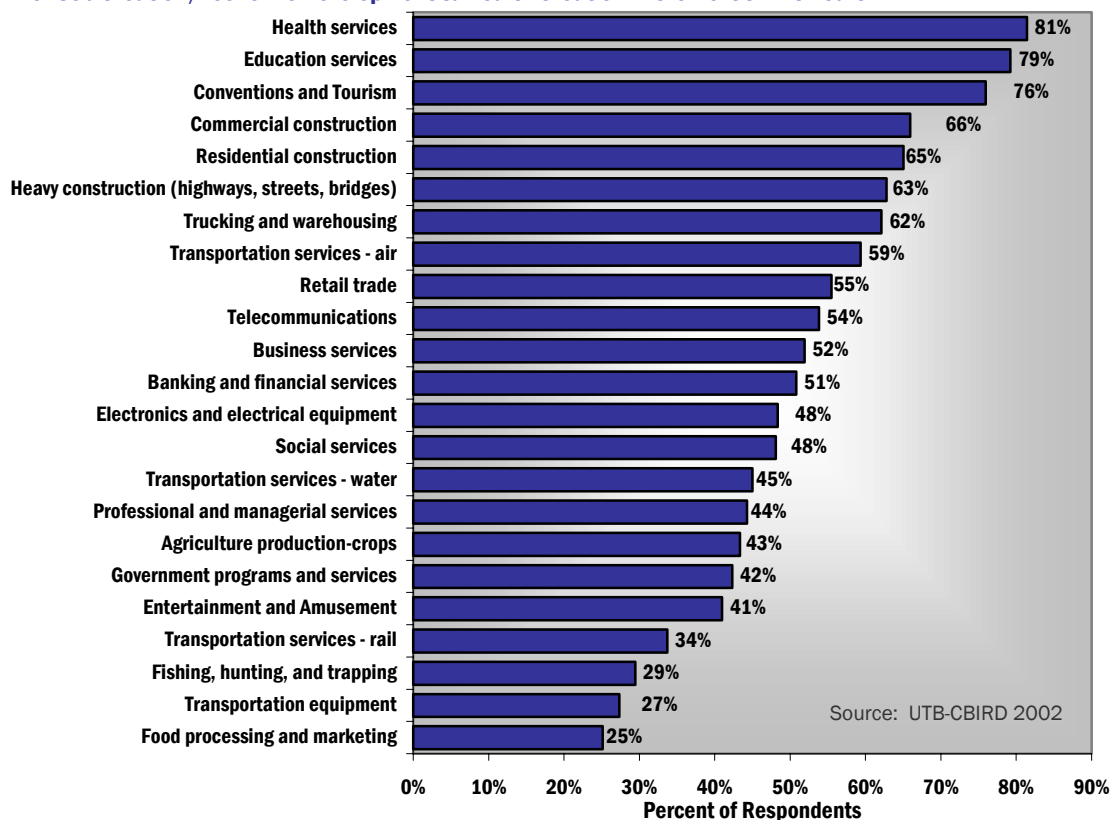
## SURVEY RESULTS

### ⇒ LEADING REGIONAL INDUSTRIES

**QUESTION 1A:** For the coming five-to-ten years, please indicate the importance of the listed **ESTABLISHED INDUSTRIES** in your community for job creation, economic development, and wealth creation (please circle your best answer for each item: important, somewhat important, not important, don't know).

A list of 40 industries was constructed to reflect the current industry structure of the border region. The highest percentage of Cameron County respondents consider Health Services as an important industry (81%), followed by Education Services (79%), and Conventions & Tourism (76%), Figure 3.1. These three service industries are followed by Commercial, Residential & Heavy (highways, bridges) Construction, Trucking & Warehousing, Air Transportation, Retail Trade, Telecommunications, Business Services, and Banking & Financial Services by over 50% of the respondents.

**Figure 3. 1. Cameron County: Important Established Industries**  
For Job Creation, Economic Development & Wealth Creation in the Next 5 – 10 Years

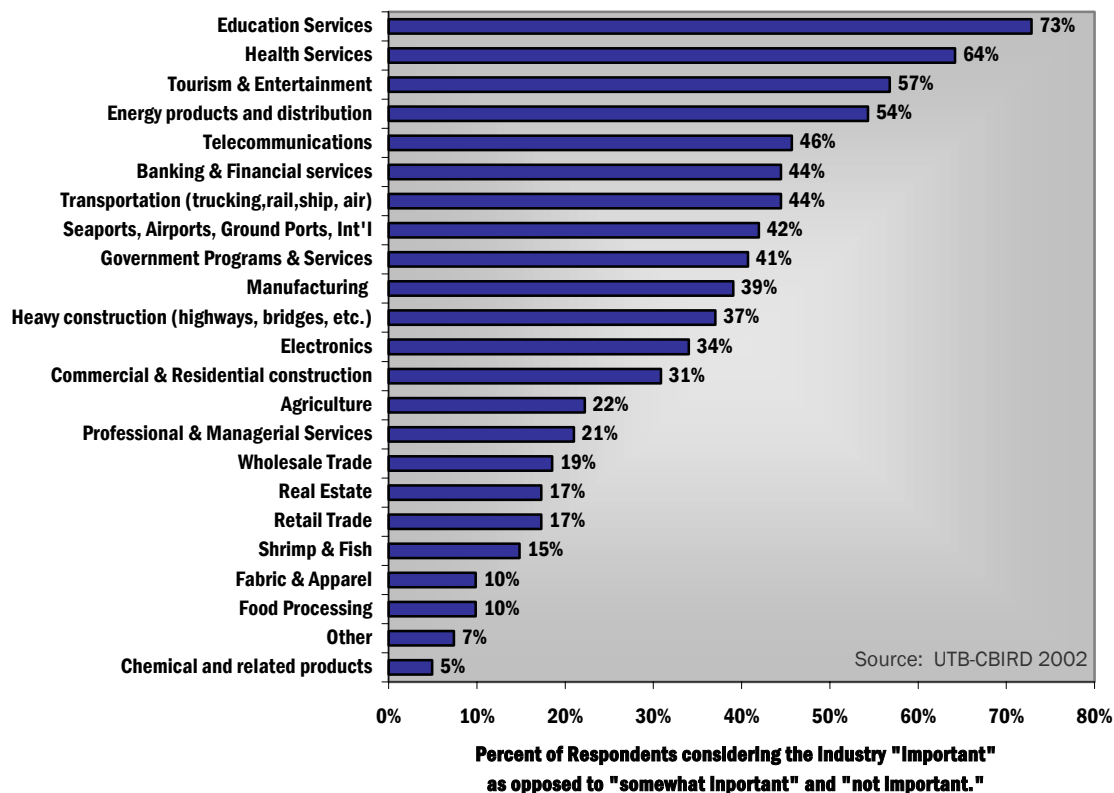


In short, in terms of economic development, most Cameron County respondents stress the importance of service industries. The highest ranking technology-based industry is Electronics & Electrical Equipment with a 48% respondent rate.

Seventy-three percent of Matamoros respondents consider Education Services an important industry for job creation, economic development and wealth creation in the next five-to-ten years, followed by Health Services (64%), and

Tourism, Entertainment & Amusement (57%), Figure 3.2. These three service industries are followed by other service industries including Energy Products & Distribution (54%); Telecommunications (46%); Banking & Financing Services (44%); Transportation (trucking, rail, ship, air) (44%); Seaports, Airports, Ground Ports, International Bridges (42%); and Government Programs & Services (41%). The highest ranking technology-based industries are manufacturing (39%) and electronics (34%).

**Figure 3. 2. Matamoros: Important Established Industries**  
For Job Creation, Economic Development & Wealth Creation in the Next 5 - 10 Years



In summary, the highest percentage of both Cameron County and Matamoros respondents consider Health Services, Education Services, and Tourism as important established industries for job creation and economic development in the next five-to-ten years. Commercial, residential and heavy Construction are considered important established industries by more Cameron County respondents, whereas Energy Products & Distribution is considered important by more Matamoros respondents.<sup>1</sup>

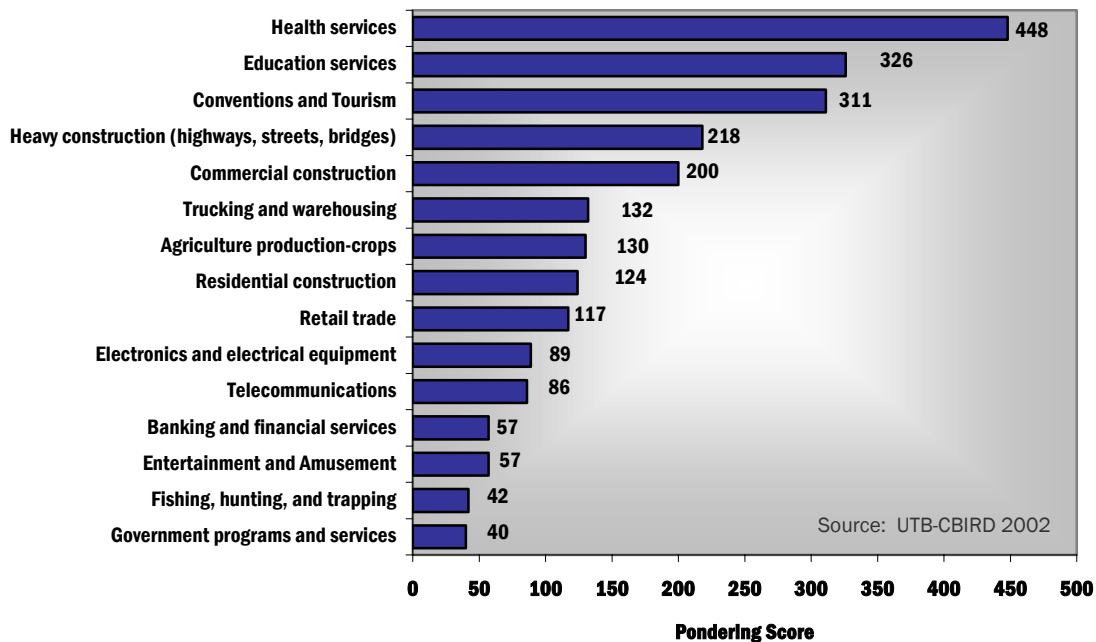
<sup>1</sup> Hidalgo County respondents also consider established service industries as important for job growth and economic development in the next 5-10 years in the following order: Health services, education services, heavy construction, retail trade, commercial & residential construction, trucking & warehousing, banking & business services, and conventions & tourism.

## ⇒ TOP FIVE INDUSTRIES

**QUESTION 1B: Please RANK the “Top Five” of the ESTABLISHED INDUSTRIES in your community for the next 5 – 10 years from the lowest rank (1) to the highest rank (5).**

When asked to rank the top five established regional industries for the next five-to-ten years, Cameron County respondents put Health Services, Education Services, Conventions & Tourism, and Heavy & Commercial Construction, at the top of the list followed by Trucking & Warehousing, Agriculture Production, Residential Construction, and Retail Trade, Figure 3.3.<sup>1</sup> The highest ranking technology-based industry is Electronics & Electrical Equipment, which only ranks tenth on the list.

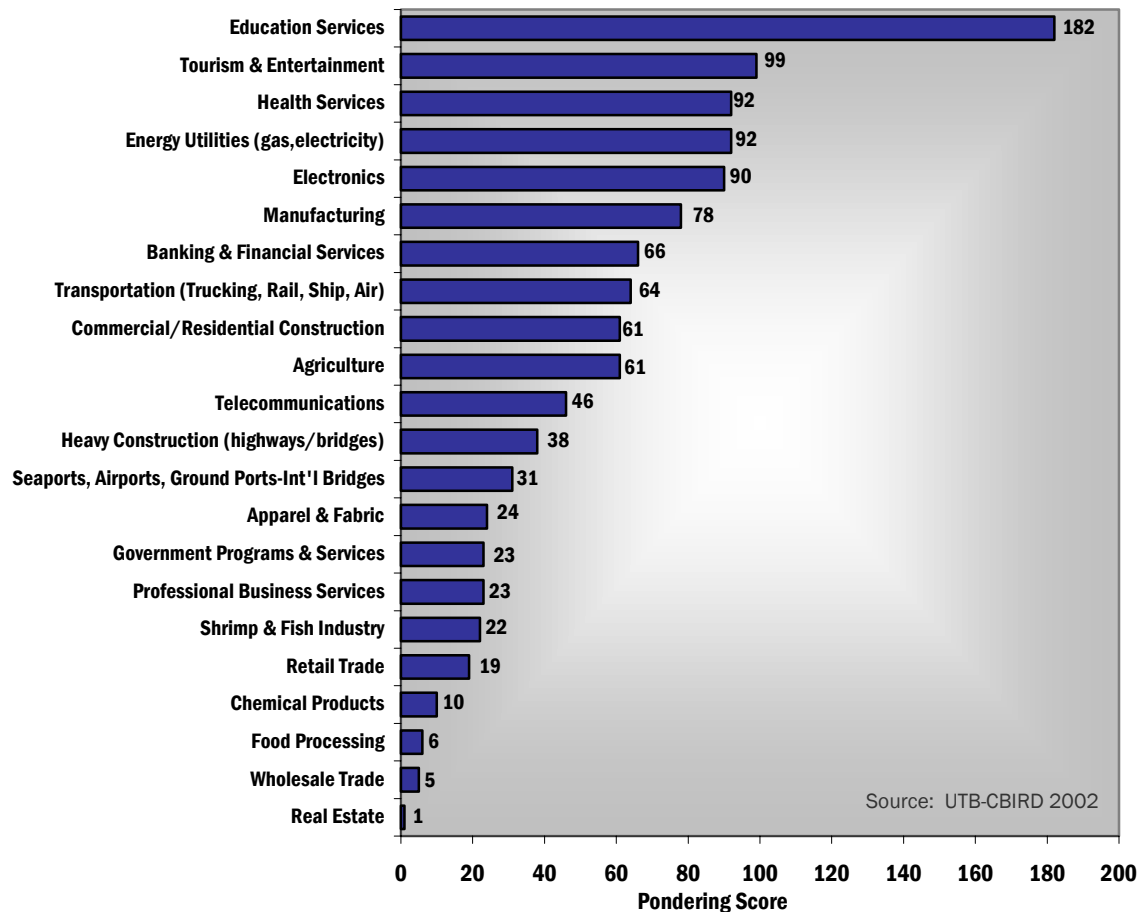
**Figure 3. 3. Cameron County: Rankings of Established Industries**  
For Job Creation, Economic Development & Wealth Creation in the Next 5 - 10 years



<sup>1</sup>The Pondering Score was attained by multiplying by 5 (five) the number of persons that selected rank 1, by 4 the number that selected rank 2 and so on. This means more points (five) to first rank (rank 1) and less (one point) to the last rank (rank5). These results gave a pondered value to each of the five ranks.

When Matamoros respondents rank the top five established regional industries for the next five-to-ten years, they pick Education Services at roughly twice the rate of the four following industries: Tourism & Entertainment, Health Services, and Energy Utilities, and Electronics & Manufacturing (the highest ranking technology-based industry), Figure 3.4.

**Figure 3. 4. Matamoros: Rankings of Established Industries**  
For Job Creation, Economic Development & Wealth Creation in the Next 5 - 10 Years



In summary, there is general agreement between Cameron County and Matamoros respondents when asked to rank the top established industries for economic development. For both groups the top three industries are Health Services, Education Services, and Tourism (conventions & entertainment). Cameron County ranked heavy construction, commercial construction, and trucking and warehousing next, while Matamoros respondents followed the top three rankings with Energy Utilities, Electronics, and Manufacturing.<sup>1</sup>

<sup>1</sup> Hidalgo County respondents rank the most important industries for economic development in the coming 5-10 years in the following order: Agriculture production, heavy construction, education services, commercial construction, health services, trucking & warehousing, retail trade, and conventions & tourism.

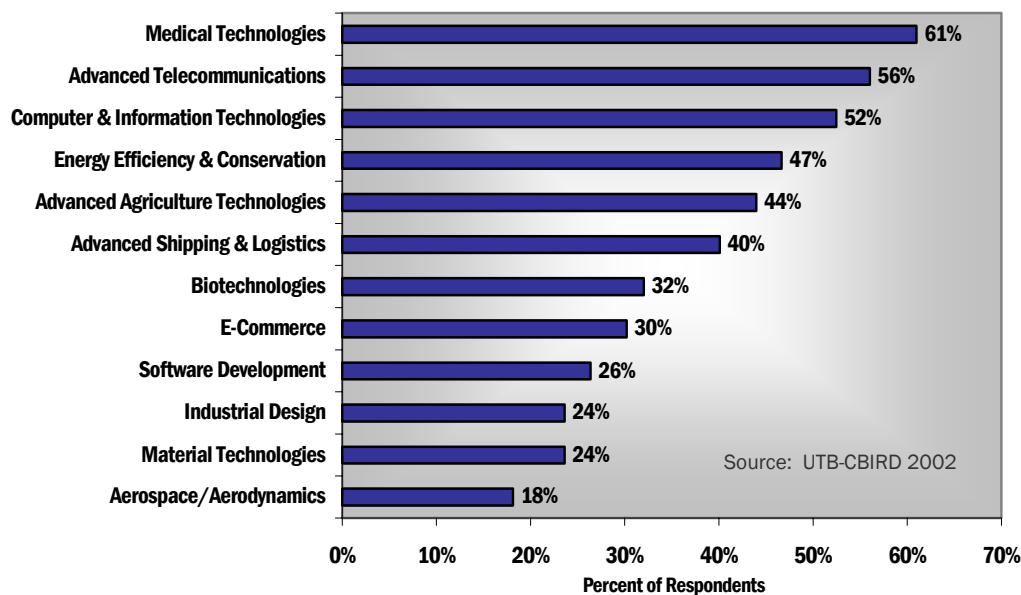
## ⇒ NEW AND EMERGING TECHNOLOGY INDUSTRIES

**QUESTION 2A:** For the coming five-to-ten years, please indicate the importance of the listed **NEW & EMERGING INDUSTRIES** in your community for job creation, economic development, and wealth creation.<sup>1</sup>

Cameron County respondents list the following emerging industries as being important to regional job creation and economic development (Figure 3.5):

- ⇒ Medical Technologies (61% of respondents)
- ⇒ Advanced Telecommunications (56%)
- ⇒ Computer & Information Technologies (52%)
- ⇒ Energy Efficiency & Conservation (47%)
- ⇒ Agriculture Technologies (44%)
- ⇒ Advanced Shipping & Logistics Technologies (40%)
- ⇒ Biotechnologies (32%)

**Figure 3. 5. Cameron County: Important New and Emerging Industries**  
For Job Creation, Economic Development & Wealth Creation in the Next 5-10 Years

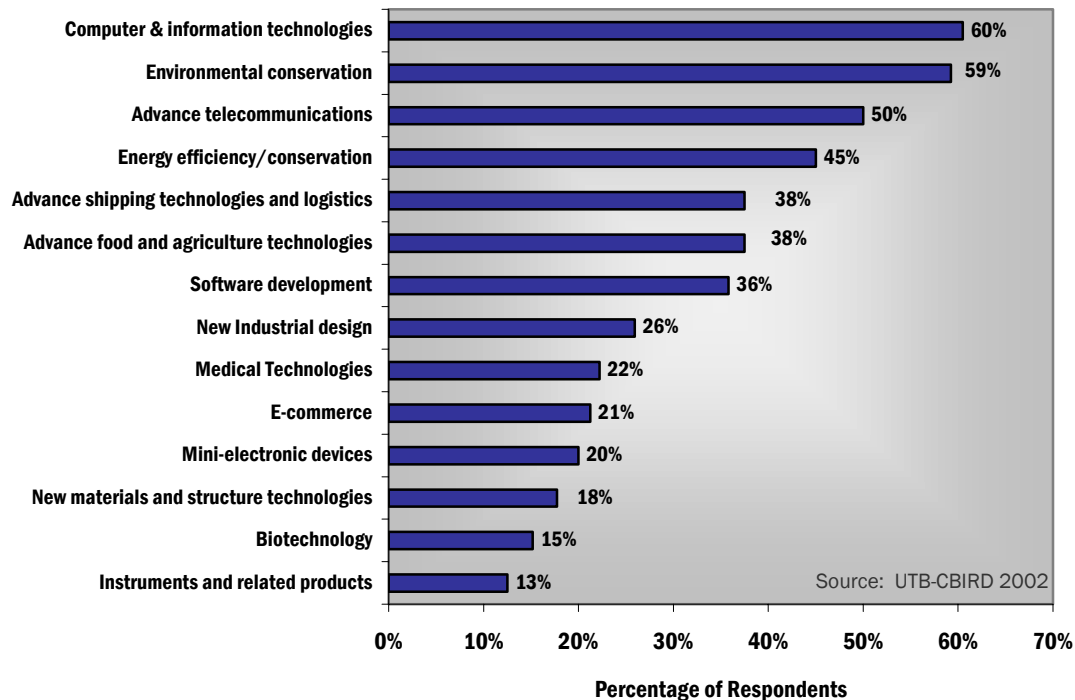


<sup>1</sup>A list of 12 important *emerging* industries was constructed based on the Federal Government’s Critical Technologies list. This list is re-evaluated and updated every two years by the U.S. Office of Science and Technology Policy. The list emphasizes technologies that are significant, either for reasons of economic prosperity or national security.

Matamoros community leaders list the following *new and emerging technology industries* as being important (Figure 3.6):

- ⇒ Computer & Information Technologies (60%)
- ⇒ Environmental Conservation (59%)
- ⇒ Advanced Telecommunications (50%)
- ⇒ Energy Efficiency & Conservation (45%)
- ⇒ Advanced Shipping & Logistics Technologies (38%)
- ⇒ Advanced Food & Agriculture Technologies (38%)
- ⇒ Software Development (36%)

**Figure 3. 6. Matamoros: Important New and Emerging Industries**  
For Job Creation, Economic Development & Wealth Creation in the Next 5 - 10 Years



In summary, respondents on both sides of the border select Computer & Information Technologies, Advanced Telecommunications, Energy Efficiency & Conservation, Advanced Agriculture Technologies, and Advanced Shipping Technologies & Logistics as important emerging technology-based industries. The cross-border respondents differ most as more Cameron County respondents select Medical Technologies (61%) as an important emerging industry and more Matamoros respondents consider Environmental Conservation as being important (59%).<sup>1</sup>

<sup>1</sup> Hidalgo County respondents consider the following as being important emerging industries for job creation and economic development in the coming 5-10 years: Medical technologies, telecommunications, energy efficiency & conservation, computer & information technologies, agriculture technologies, software development, advanced shipping & logistics, and E Commerce.

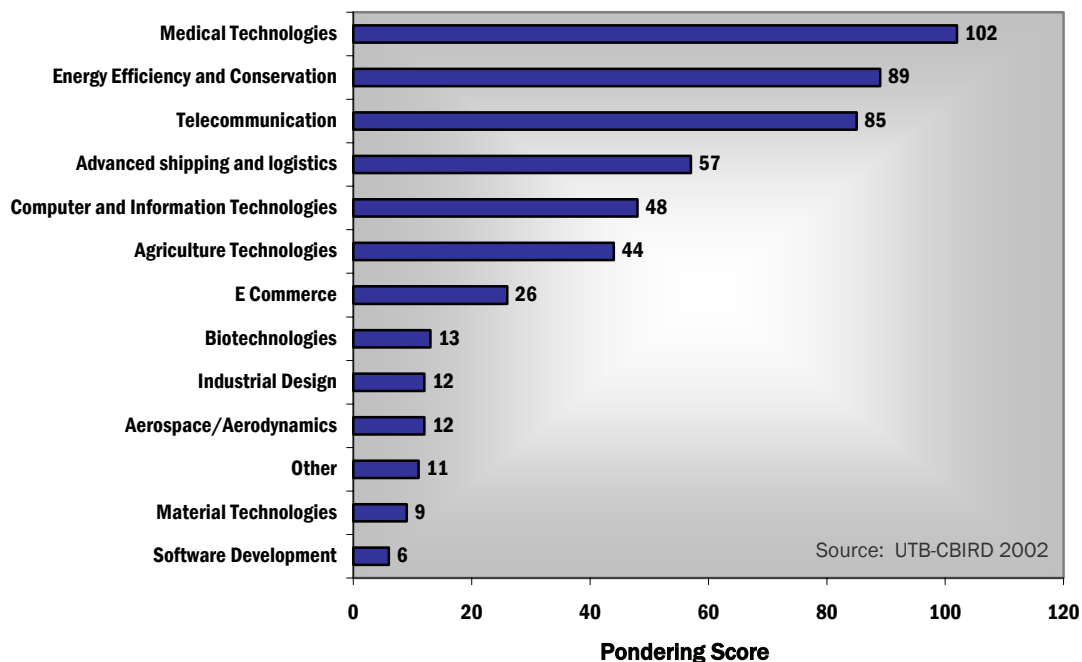
## ⇒ TOP FIVE NEW AND EMERGING TECHNOLOGY INDUSTRIES

**QUESTION 2B: Please RANK the “Top Five” of these New and Emerging industries from the lowest rank (1) to the highest rank (5).**

For Cameron County community leaders the most important regional new and emerging industries are (Figure 3.7):

- ⇒ Medical Technologies (102)<sup>1</sup>
- ⇒ Energy Efficiency & Conservation (89)
- ⇒ Telecommunications (85)
- ⇒ Advanced Shipping & Logistics (57)
- ⇒ Computer & Information Technologies (48)
- ⇒ Agriculture Technologies (44)

**Figure 3. 7. Cameron County: Ranking of New and Emerging Industries For Job Creation, Economic Development & Wealth Creation in the Next 5 - 10 Years**

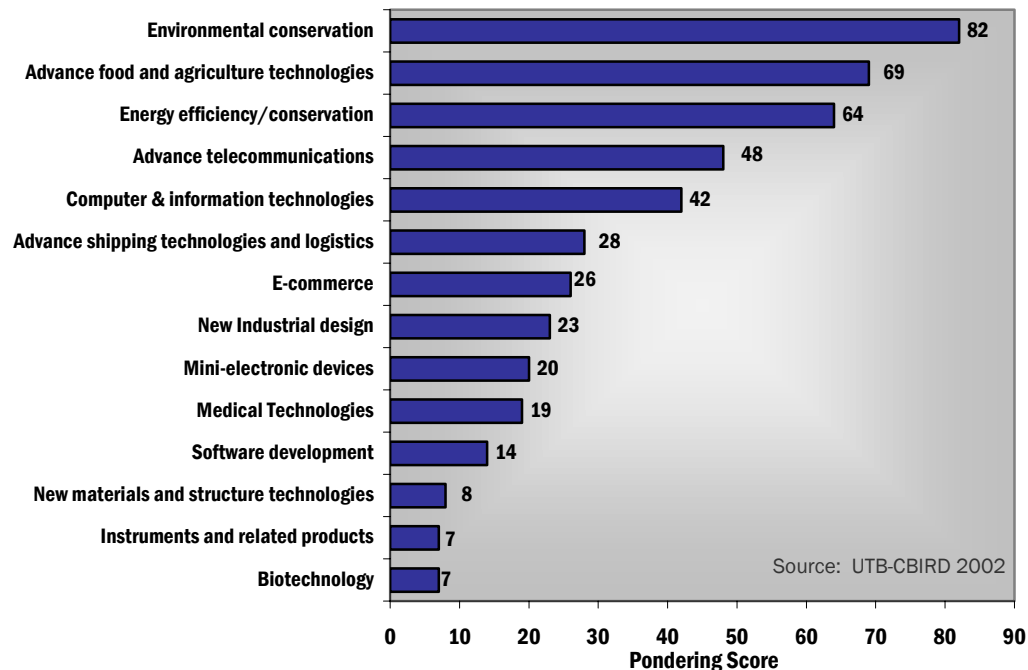


<sup>1</sup> The Pondering Score was attained by multiplying by 5 (five) the number of persons that selected rank 1, by 4 the number that selected rank 2 and so on. This means more points (five) to first rank (rank 1) and less (one point) to the last rank (rank5). These results gave a pondered value to each of the five ranks.

For Matamoros community leaders, the most important new and *emerging industries* are (Figure 3.8):

- ⇒ Environmental Conservation (82)
- ⇒ Advanced Food & Agriculture (69)
- ⇒ Energy Efficiency & Conservation (64)
- ⇒ Advanced Telecommunications (48)
- ⇒ Computer & Information Technologies (42)

**Figure 3. 8. Matamoros: Ranking of New and Emerging Industries**  
For Job Creation, Economic Development & Wealth Creation in the Next 5 - 10 Years



In summary, when asked to rank the top five emerging technology industries, Cameron County and Matamoros respondents agree on the high ranking of Advanced Food & Agricultural Technologies, Energy Efficiency & Conservation, Advanced Telecommunications, and Computer & Information Technologies. The major difference is Cameron County respondents rank Medical Technologies highest and rank Advanced Shipping & Logistics considerably higher than Matamoros respondents, while Matamoros respondents rank Environmental Conservation Technologies highest.<sup>1</sup>

<sup>1</sup> Hidalgo County respondents consider the following as the most important new and emerging technology industries: Medical technologies, energy efficiency & conservation, telecommunications, agriculture technologies, computer & information technologies, and advanced shipping & logistics.



## ⇒ KEY FACTORS FOR ECONOMIC DEVELOPMENT

⇒ **QUESTION 3A:** Please indicate the importance of each **FACTOR** for economic development in your community.

Cameron County and Matamoros community leaders were asked their opinions about the degree of importance of 24 key factors in terms of job creation and economic development in the next five-to-ten years and they were also asked to rate the region’s effectiveness in providing each factor. This ranking follows:

### *Cameron County Ranking*

1. Quality of K-12 education
2. Quality of college & university education
3. Affordable & available water supplies
4. Quality of technical & vocational education
5. Skill of entry-level workforce
6. Utilities
7. Skill of managerial & professional workers
8. Affordable & Available Energy
9. Telecommunications

### *Matamoros Ranking*

1. Quality of college & university education
2. Affordable & available energy
3. Quality of K-12 education
4. Affordable & available water supplies
5. Health Services
6. Quality of technical & vocational education
7. Tax Incentives
8. Skill of entry-level workforce
9. Industrial Parks

**Table 3. 2. Key Factors For Economic Development over the Next 5 – 10 years**

Factor	Cameron	Matamoros
Quality of K through 12 education	91%	75%
Quality of college and university education	87%	87%
Affordable and available water supplies	87%	74%
Quality of technical and vocational education	87%	70%
Skill of entry level workforce	79%	66%
Utilities	78%	-----
Skill of managerial and professional workforce	73%	63%
Affordable and available energy	73%	84%
Telecommunications	72%	63%
Health Services	-----	71%
Industrial Parks	-----	66%
Cross border infrastructure to handle growing flow of people & goods	65%	-----
Quality of life (cultural and recreational activities)	64%	44%
Environmental Quality	63%	66%
Affordable and available housing	62%	66%
Transportation services	62%	69%
Financing and capital access	61%	54%
Public Services (police, fire, etc)	57%	65%
Cross border cooperation (general)	53%	-----
Internet	48%	50%
Industrial and university research and development	45%	57%
Tax incentives	45%	70%
Business Incubators	-----	44%
Free Trade Zones	-----	41%
Empowerment & Enterprise Zones	-----	33%
Office Spaces	-----	20%

Source: UTB-CBIRD 2002

In summary, both Cameron County and Matamoros community leaders consider education (University, College, and K-12) and Affordable & Available Water Supplies, as *most important factors* for regional economic development in the coming 5 – 10 years, Table 3.2. This finding is corroborated by the responses to the open ended questions in the survey, which emphasize that the growth, retention, and relocation of new industries will be severely restricted

without a properly educated and trained workforce as well as affordable and available water supplies.

Both groups of respondents also highly rate the Quality of Technical & Vocational Education as well as the Skill of the Entry Level Workforce. Matamoros community leaders give a higher rating to the Importance of Affordable & Available Energy, Health Services, Telecommunications, and Tax incentives.<sup>1</sup>

**QUESTION 3B: Please rate the EFFECTIVENESS of each FACTOR in your community as of TODAY.**

### Effectiveness: Cameron County

Cameron County respondents were asked to rank the effectiveness of their community in providing each factor. Table 3.3 shows Cameron County respondents give the top two effectiveness ranks to Utilities (60%) and Public Services (57%), while 54% consider Affordable & Available Energy, and Affordable & Available Housing as being provided at an effective level. At the bottom of the effectiveness list is Cross-Border Infrastructure, Skill of Managerial & Professional Workforce, Industrial & University Research & Development, and Skill of Entry-Level Workforce.<sup>2</sup>

**Table 3. 3. Cameron County Effectiveness: Key Factors**

Key Factor	Percent
Utilities	60%
Public Services (police, fire, etc)	57%
Affordable and available energy	54%
Affordable and available housing	54%
Quality of technical and vocational education	49%
Financing and capital access	48%
Cross border cooperation (general)	46%
Environmental Quality	46%
Telecommunications	46%
Transportation services	44%
Quality of life (cultural and recreational activities)	41%
Affordable and available water supplies	37%
Tax incentives	37%
Quality of K through 12 education	36%
Quality of college and university education	35%
Internet	35%
Cross border infrastructure to effectively handle growing flow of people & goods	31%
Skill of managerial and professional workforce	28%
Industrial and university research and development	21%
Skill of entry level workforce	17%

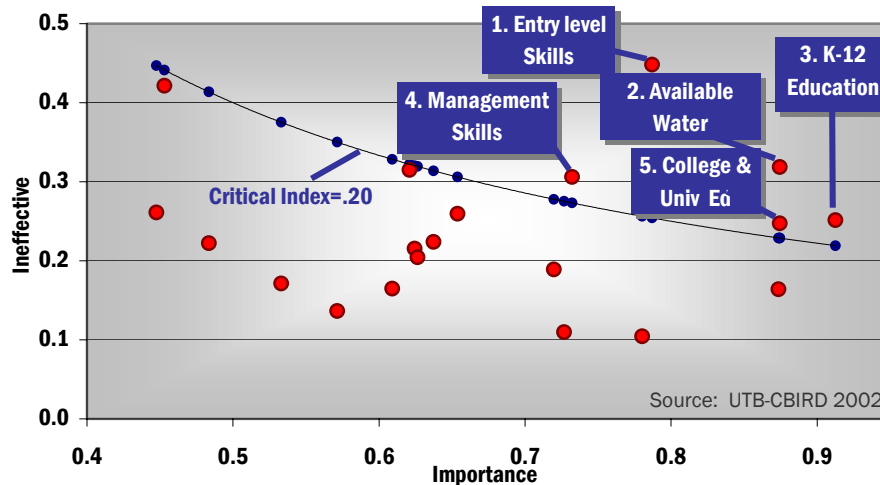
Source: UTB-CBIRD 2002

<sup>1</sup> Hidalgo County survey respondents consider the following as being the most important factors for job creation and economic development in the next 5-10 years: Quality of education (K-12), affordable & available water, quality college & university education, quality technical & vocational education, skill of entry level workforce, utilities, and skill of managerial and professional workforce. All eight of these factors appear on Cameron County's ranking while utilities and skill of managerial and professional workers are the only two missing from the Matamoros ranking.

<sup>2</sup> Hidalgo County respondents consider their community as most effective in providing utilities, affordable & available energy, telecommunications, affordable & available housing, and public services. At the bottom of the list were cross border cooperation, and skill of managerial & professional workforce, tax incentives, cross-border infrastructure, skill of entry level workforce, and industrial and university R&D.

Figure 3.9 represents the combination of perceived importance and effectiveness of each of the factors. Important factors with a low rank of effectiveness (high ineffectiveness) are the focus of attention especially if they are located above the “critical index” curve.<sup>1</sup>

**Figure 3. 9. Cameron County: Critical Index of Factors** (Importance v. Effectiveness)



This analysis illustrates that while Cameron County respondents consider “Skill of Entry-level Workforce” as one of the most important factors for economic development, providing such a workforce is considered the least effective attribute of the region. Other factors with high importance coupled with low regional effectiveness are:

- ⇒ Affordable & Available Water Supplies
- ⇒ Quality of K-12 Education
- ⇒ Skill of Managerial & Professional Workforce
- ⇒ Quality of College & University Education

In short, some of the factors ranking highest in importance for Cameron County's economic development also rank highest in terms of region's general lack of effectiveness in providing these same factors.<sup>2</sup>

### Effectiveness: Matamoros

Matamoros respondents were also asked to rank the *effectiveness* of their region in providing each factor. The factor considered most effectively provided is Industrial Parks (46%), followed by Telecommunications (34%), Quality of Life (32%), Internet (31%) and Quality of K-12 Education (30%), Table 3.4. In this instance however, more striking than “which” industries Matamoros ranks with high effectiveness – is the generally low level of “all responses” regarding Matamoros’ effectiveness in providing most of these key factors. (Industrial Parks at 46% is a low “high.”)

**“The most important factor will be the retention of all the educated and skilled people of our region. Many get educated here because of the low cost, but leave our region to work elsewhere.”**

*Cameron County Survey Respondent, Spring 2001*

<sup>1</sup> A single point on the graph represents the intersection of each of the factors’ importance and its regional effectiveness according to the respondents’ opinion. The “critical index” was calculated for each factor by multiplying the percentages of the “very important” responses by the percentages of the “not very effective” responses.

<sup>2</sup> Hidalgo County respondents list the same factors as high in importance but low in community effectiveness in the following order: Entry level workforce, affordable & available water, K-12 education, quality of college & university education, and quality of managerial & professional workforce.

**Table 3. 4. Matamoros Effectiveness: Key Factors**

<b>Factor</b>	<b>Effectiveness</b>
<b>Industrial Parks</b>	<b>46%</b>
<b>Telecommunications</b>	<b>34%</b>
<b>Quality of life (cultural and recreational activities)</b>	<b>32%</b>
<b>Internet</b>	<b>31%</b>
<b>Quality of K through 12 education</b>	<b>30%</b>
<b>Transportation Services (air, land, rail, water)</b>	<b>28%</b>
<b>Affordable and available housing</b>	<b>28%</b>
<b>Skill of entry level workforce</b>	<b>27%</b>
<b>Environmental Quality</b>	<b>26%</b>
<b>Quality of technical and vocational education</b>	<b>25%</b>
<b>R&amp;D from universities and Industry</b>	<b>23%</b>
<b>Quality of college and university education</b>	<b>22%</b>
<b>Skill of managerial and professional workforce</b>	<b>22%</b>
<b>Affordable and available water supplies</b>	<b>22%</b>
<b>Office Spaces</b>	<b>21%</b>
<b>Health Services</b>	<b>21%</b>
<b>Public Services (police, fire, etc) Rank</b>	<b>20%</b>
<b>Empowerment and enterprise zones</b>	<b>19%</b>
<b>Venture Capital for new firms</b>	<b>18%</b>
<b>Business Incubators</b>	<b>18%</b>
<b>Business Incentives (Tax, regulations)</b>	<b>16%</b>
<b>Financing and capital access</b>	<b>14%</b>
<b>Free Trade Zone</b>	<b>14%</b>
<b>Affordable and available energy</b>	<b>12%</b>

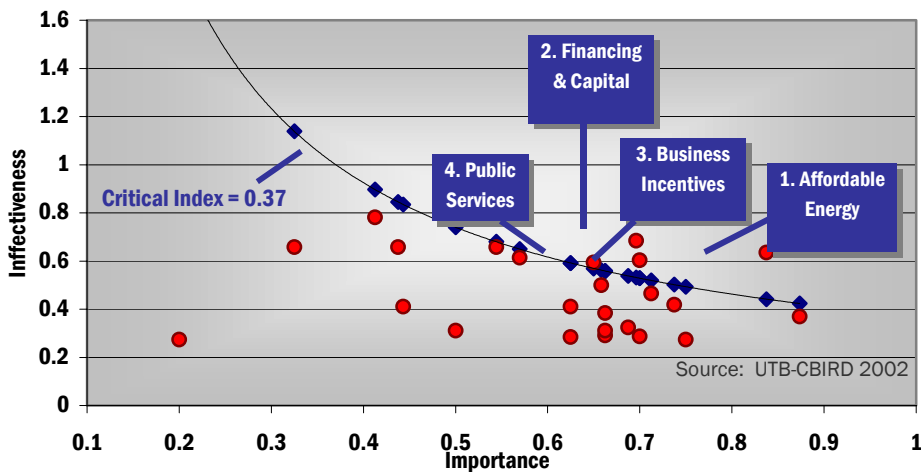
Source: UTB-CBIRD 2002

Using the same method for Matamoros as used for Cameron County, a Critical Index was calculated for each factor by multiplying the percentages of the “very important” responses by the percentages of the “not very effective” responses, Figure 3.10.

This analysis illustrates that survey respondents consider “Affordable & Available Energy” as the most important factor for economic development, yet providing such energy is one of the least effective attributes of the region. Other factors with high importance coupled with low regional effectiveness include:

- ⇒ Financing & Capital Access
- ⇒ Business Incentives
- ⇒ Public Services (police, fire, etc.)

**Figure 3.10. Matamoros: Critical Index of Factors**



### ⇒ STRATEGIES FOR ECONOMIC DEVELOPMENT

**QUESTION 4A:** Please indicate the importance of each STRATEGY for economic development in your community.

Cameron County and Matamoros community leaders were asked to consider the importance of 13 economic development strategies as well as the region’s ability to perform these activities. In general, both regions value similar strategies as being key to job growth and economic development:

#### *Cameron County Ranking*

1. Retention/expansion of existing industries/business
2. Promotion/support of local start-up industries/businesses
3. Regional economic development plans focusing on job creation
4. Promotion/support local entrepreneurs high-tech-value added industries
5. Relocation of industries/businesses from outside the region
6. Regional economic development collaborations on US side of the border

#### *Matamoros Ranking*

1. A “Can do” attitude for the region\*\*
2. Retention/expansion of existing industries/business
3. Promotion/support of local start-up industries/businesses
4. Promotion/support local entrepreneurs high-tech-value added industries
5. Regional economic development plans focusing on job creation
6. Cross-border economic development collaborations

Community leaders from both Cameron County and Matamoros stress the importance of the retention and expansion of existing firms as well as the promotion and support of local start-up industries and businesses and local technology-based entrepreneurs, Table 3.5. The main difference is that Matamoros respondents place greater emphasis on (1) cross-border economic development collaborations, and (2) the further development of maquiladoras.<sup>1</sup>

“Change and collaboration will be difficult to obtain, until economic development actually is defined in such a way that it becomes valuable to the community.”

*Cameron County Survey Respondent, Spring 2001*

<sup>1</sup> Hidalgo County and Cameron County respondents list the same important strategies for job creation and economic development in the next 5-10 years as follows: Retention and expansion of existing industries/businesses, relocation of industries/businesses from outside the region, promotion/support of local start-up industries/businesses, regional economic development collaborations of cities on the U.S. side of the border, and promotion of local entrepreneurs in technology-based industries.

**Table 3. 5. Key Strategies for Economic Development in the Next 5-10 Years**

Economic Development Strategy	Cameron	Matamoros
Retention/expansion of existing industries/business	84%	73%
A “Can Do” attitude for the border region	-----	78%**
Promotion/support of local start-up industries/businesses	71%	73%
Regional economic development plans focusing on job creation	69%	71%
Promotion/support local entrepreneurs high-tech-value added ind.	68%	73%
Relocation of industries/businesses from outside region	68%	42%
Regional economic development collaborations	58%	64%
Economic diversification	58%	53 %
Access to venture capital	56%	47%
Cross-border economic development collaborations	48%	70%
Promotion/support of new business incubators	47%	58%
Free trade zones	44%	-----
Leveraging of community assets	40%	60%
Further development of maquiladoras	36%	65%

Source: UTB-CBIRD 2002

\*\*A “CAN DO” attitude for the border region was not asked of the Cameron County

**QUESTION 4B: Please rate the EFFECTIVENESS of each economic development STRATEGY in your community as of TODAY.**

### Strategic Effectiveness: Cameron County

Fifty-eight percent of Cameron County respondents are pleased with the strategy for development of the maquila industry, followed by the effectiveness of Free Trade Zones (54%), Retention & Expansion of Existing Industry Businesses (43%), and Cross-border Economic Development Collaborations (40%), Table 3.6. Cameron County respondents list as least effective Promotion/Support of Local Startup Industries and Businesses (30%); Leveraging Community Assets (26%), Promotion/Support of Local Entrepreneurs in high-tech value added industries (24%), Access to Venture Capital (22%), and the Promotion & Support of New Business Incubators (16%).

**Table 3.6. Cameron County Effectiveness: Key Strategies**

Effectiveness in Dealing with Economic Development Strategies	Percent
Further development of maquiladoras	58%
Free trade zones	54%
Retention/expansion of existing industries/business	43%
Cross-border economic development collaborations	40%
Relocation of industries/businesses from outside region	39%
Regional economic development collaborations of cities/countries	36%
Regional economic development plans focusing on job creation	34%
Economic diversification	32%
Promotion/support of local start-up industries/businesses	30%
Leveraging of community assets	26%
Promotion/support local entrepreneurs high-tech-value added ind.	24%
Access to venture capital	22%
Promotion/support of new business incubators	16%

Source: UTB-CBIRD 2002

Figure 3.11 represents the combination of the perceived importance and effectiveness of strategies. A single point on the graph represents each strategy's importance and its regional effectiveness according to respondents' opinions. Strategies with high importance coupled with low community effectiveness include:

- ⇒ Promotion/support of Local Entrepreneurs in High-tech/high-value Added Industries/businesses
- ⇒ Access to Venture Capital
- ⇒ Promotion/support of Local Start-up Industries/businesses
- ⇒ Regional Economic Development Plans Focusing on Job Creation

**Figure 3.11 Cameron County: Critical Index of Strategies (Importance v. Effectiveness)**

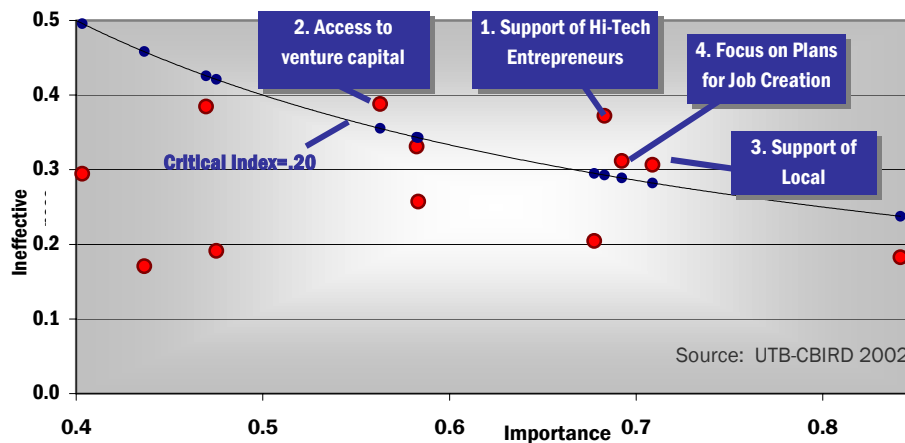


Table 3.7 indicates Cameron County respondents' views of the strategies that are considered most important but least effectively provided.<sup>1</sup>

**Table 3.7. Cameron County: Critical Rating of Development Strategies**

Strategy	Critical Index
Promotion/support local entrepreneurs high-tech-value added industries	0.254
Access to venture capital	0.218
Promotion/support of local start-up industries/businesses	0.217
Regional economic development plans focusing on job creation	0.216
Economic diversification	0.193
Promotion/support of new business incubators	0.181
Retention/expansion of existing industries/business	0.154
Regional economic development collaborations of cities/countries	0.150
Relocation of industries/businesses from outside region	0.138
Leveraging of community assets	0.119
Cross-border economic development collaborations	0.091
Free trade zones	0.074
Further development of maquiladoras	0.041

Source: UTB-CBIRD 2002

<sup>1</sup> Hidalgo County respondents consider the following as being most important but being least effectively provided by the community: Regional economic development plans, access to venture capital, regional economic development collaborations on the U.S. side of the border, free trade zones, cross-border economic development, collaborations, and promotion of local technology entrepreneurs.

### Strategic Effectiveness: Matamoros

Matamoros respondents are generally not impressed with their region's effectiveness in providing economic development strategies, Table 3.8. About 40% of respondents are pleased with the effectiveness of strategies for the development of the maquila industry; however, less than one third of the respondents think the region is effective in economic diversification and 25% or less believe the region is effective in all the other listed economic development strategies. At the bottom of the “effectiveness list” is:

- ⇒ A “can do” attitude for the border region (15%)
- ⇒ Leveraging of community assets (15%)
- ⇒ Cross border collaboration (15%)
- ⇒ A regional strategy targeting economic development for job and wealth creation (13%)

**Table 3.8. Matamoros Effectiveness: Key Strategies**

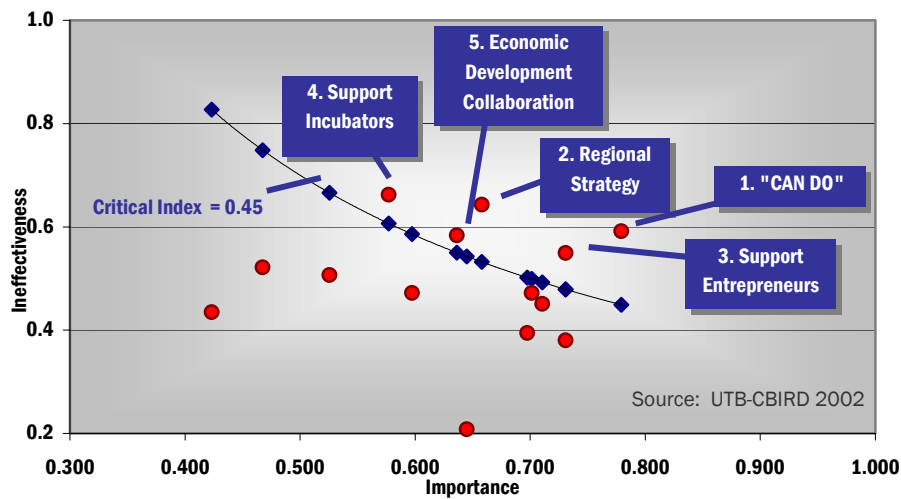
Economic Development Strategies	Effectiveness
Further development of maquiladoras	40%
Economic diversification	31%
Promotion/support of new business incubators	25%
Cross-border infrastructure to effectively handle transit and flow of people, cars and trucks	25%
Retention/expansion of existing industries/business	24%
Promotion/support of local entrepreneurs in high-tech/high-value added industries/businesses	24%
Economic Development collaboration of cities/counties on the US side of the border	24%
Relocation of industries/businesses from outside region	23%
More/Better use of foundations funds	19%
Economic Development collaboration of cities on the Mexican side of the border	17%
A "can do" attitude for the border region	15%
Leveraging of community assets	15%
Cross border collaboration	15%
A Regional strategy targeting eco dev. Job & Wealth creation	13%

Source: UTB-CBIRD 2002

Figure 3.12 presents Matamoros's most critical economic development strategies that are also considered least effectively provided as follows:

- ⇒ A “can do” attitude for the border region
- ⇒ Regional Strategy – Economic Development Plans Focusing on Job Creation
- ⇒ Promotion/support of Local Entrepreneurs in High-tech/high-value Added Industries/businesses Access to Venture Capital
- ⇒ Promotion/support of Local Start-up Industries/businesses
- ⇒ Economic development collaboration of cities on the Mexican side of the border (Municipios)



**Figure 3.12. Matamoros Critical Index of Strategies** (Importance v. Effectiveness)


A “critical index” is calculated for each strategy by multiplying the percentages of the “very important” responses by the percentages of the “not very effective” responses, Table 3.9.

**Table 3.9. Matamoros: Critical Rating of Development Strategies**

Strategies	Critical Index/%	
A "can do" attitude for the border region	0.461	40%
A Regional strategy targeting eco dev. Job & Wealth creation	0.423	31%
Promotion/support of local entrepreneurs in high-tech/high-value added industries/businesses	0.401	25%
Promotion/support of new business incubators	0.395	25%
Economic Development collaboration of cities on the Mexican side of the border	0.376	24%
Cross-border economic development collaborations	0.331	24%
Regional economic development collaborations of cities/countries on U.S. side of the border	0.329	24%
Leveraging of community assets	0.282	23%
Retention/expansion of existing industries/business	0.278	19%
Cross-border infrastructure to effectively handle transit and flow of people, cars and trucks	0.275	17%
Economic diversification	0.267	15%
More/Better use of foundations funds	0.244	15%
Relocation/Expansion	0.203	15%
Further development of maquiladoras	0.134	13%

Source: UTB-CBIRD 2002

## ⇒ WRITTEN RESPONSES

**Cameron County and Matamoros respondents were asked to write their opinions in answering the following questions:**

- ⇒ **What is the most important factor or condition that will accelerate the economic development of YOUR community in the coming five-to-ten years?**
- ⇒ **What is the most important factor or condition that will inhibit the economic development of YOUR community in the coming five-to-ten years?**
- ⇒ **What one “key idea” or project should your community undertake to significantly improve the area’s economy?**

According to Cameron County respondents written opinions quality education, is the most important factor for accelerating regional economic development, followed by:<sup>1</sup>

- ⇒ A regional approach for promoting and working together in the Valley
- ⇒ Improving K-12 Education
- ⇒ Having effective government & political leaders
- ⇒ Improving infrastructure

**Economic  
Development  
Facilitator:  
Retention of our  
educated youth and  
incentives to bring  
back the youth who  
leave to get an  
education.  
Cameron County  
Survey Respondent  
Spring 2001**

Both Cameron County and Matamoros community leaders report an overwhelming concern about the quality and availability of education in all relevant sections of the survey: K-12 and Workforce Training, Colleges and Universities, and Continuing Education. The written responses emphasize how discouraged many business owners and managers are about employees’ general lack of skills from entry level to managerial skills and professional capabilities. On the one hand, this may be in part the effect of the “brain drain” the area suffers as many of the most capable and talented employees leave the region for higher paying jobs and career opportunities in other Texas and U.S. cities. On the other hand, some of the region’s more skilled and higher paying positions are offered to recruits from outside the region.

Descriptions of regional economic inhibitors further reinforce these same concerns<sup>2</sup>:

- ⇒ Low-quality of K-12 education
- ⇒ Ineffective government & political leaders
- ⇒ Lack of Water availability
- ⇒ Lack of Infrastructure improvement
- ⇒ Lack of a Regional Approach for developing the Valley
- ⇒ Inadequate Education in General

**Economic  
Development  
Facilitator:  
“Better-educated and  
motivated elected  
officials. The one  
factor in having  
success is the ability  
of public officials to  
forecast and seize  
the initiative.**

*Cameron County  
Survey Respondent  
Spring 2001*

<sup>1</sup> Hidalgo County respondents written opinions emphasize the importance of: improved education, improved infrastructure, diversification of industry, and promotion of local business.

<sup>2</sup> Hidalgo County respondents written opinions emphasize factors that would restrict economic development in the next 5-10 years as: utilities, lack of training & education, poor quality of life, poor city/county government, and lack of a strategic plan.

Likewise, the most frequently replies to “key ideas” that might significantly improve the area’s economy are:<sup>1</sup>

- ⇒ Improve Education
- ⇒ Promote Valley’s Growth as a Unit
- ⇒ Promote Tourism

**Economic Development Inhibitor:**  
**“Too much focus on bringing in national chain stores, not enough attention on helping local businesses survive the intense competition of big business. We must make the local business infrastructure strong & enable them to grow and survive.”**  
*Cameron County Survey Respondent Spring 2001*

**Key Idea:** “We are at the crossroad of America. I believe time and place are everything. The RGV [Rio Grande Valley] provides a leisure/vacation type of atmosphere with all-year comfortable weather and opportunities in international tourism. Superior health care is at no better stage to become prominent, and fruitful than in the RGV. People are living longer, and traveling more, and doing all this traveling and spending money at comfortable and interesting places like the RGV.” (Survey Respondent, Spring 2001)

**Key Idea:** “Embrace RGV’s natural resources. It seems that people outside the region (and even the State) see and appreciate what makes this area magical. Conserving our natural habitat has proven very successful with little effort. Our climate is sought by “Winter Texans” and “Spring Breakers” alike. History will show that the biculturalism of our area is unique in the world & we would be foolish not to retrieve our history, praise it, and exploit its uniqueness for both cultural and economic development.” (Survey Respondent, Spring 2001)

**Economic Development Inhibitor:**  
**“Get over the "Friday night" syndrome of each city being looked at as a football enemy! Let's unite and work together and quit this "looking out only for one's own city" and not thinking as a unified area or metroplex.”**

*Cameron County Survey Respondent Spring 2001*



### **Cameron County/Matamoros Leaders: At the Crossroads**

Binational community leaders report that a major barrier for regional development is the tradition-bound, parochial behavior of political and other leaders. Promoting the Valley as a regional, binational economic unit, working together, through regional and cross-border collaboration, are slogans that need to pass to action initiatives that help move the region to increased global competitiveness.

<sup>1</sup> Hidalgo County respondents written opinions emphasized key ideas as: develop tourism, quality education, increased cooperation

# SECTION 4

## ⇒ EDUCATION & TRAINING

### INTRODUCTION: CLOSING THE GAPS

Every Texan educated to the level necessary to achieve his or her dreams; no one is left behind, and each can pursue higher education; colleges and universities focus on the recruitment and success of students while defining their own paths to excellence; education is of high quality throughout; and at all levels of education, the business community, and the public are constant partners in recruiting and preparing students and faculty who will meet the state's workforce and research needs.

*"Closing The Gaps"*

*Texas Higher Education Plan-2002*

Improving the quality and availability of education is targeted by Cameron County and Matamoros business and community leaders as the single most important task facing the region (Section 3). This section of the report presents data on the area's education attainment and graduation rates that underscores this concern. Compounding the region's education and training challenges are serious and growing demographic challenges that other regions in Texas or the U.S. do not face: such as a rapidly growing binational, bicultural, bilingual population that is undereducated, underemployed, and living in poverty (Section 2).

Texas demographic realities require creative solutions to sort out the related educational challenges in urban areas and along the Texas-Mexico Border ("Closing the Gaps," *Texas Higher Education Plan*, 2002). By 2008, Texas will become a minority-majority state. Hispanics will account for 40% of the state's population; blacks will represent 11%, Asian Americans 4%, and whites 45%. Currently the state's Hispanic and Black population enrollment in higher education is well below the White population. Increasingly Texas higher education needs to focus more on retention, graduation, and overall education quality. The Texas Higher Education Plan (2002) emphasizes that to reach these goals Texas must:

- ⇒ Close the gaps in participation
- ⇒ Close the gaps in success
- ⇒ Close the gaps in excellence
- ⇒ Close the gaps in research

In the Knowledge-Based Society of the 21<sup>st</sup> Century, quality and accessible education and training is THE CRITICAL ASSET for business success, job creation and career development, wealth creation, and an enhanced and sustainable quality of life. The fact that Cameron County and Matamoros community leaders recognize education as the key to future regional success is important; however, as the survey respondents also emphasize, providing quality education and training at all levels is also the region's greatest challenge.

To highlight these important issues this section of the report presents a review of the following educational institutions and programs:

- ⇒ Cameron County's public schools
- ⇒ Tech Prep, Rio Grande Valley
- ⇒ Texas State Technical College
- ⇒ The University of Texas at Brownsville/Texas Southmost College

**Sixteen percent of the U.S. adult population has not completed high school. Twenty-three percent of Texas' adult population has not completed high school. In Cameron County, 30% of the adult population has not completed middle school, and another 15% has not completed high school... that is 45% with less than a high school education.**

## CAMERON COUNTY EDUCATION ATTAINMENT

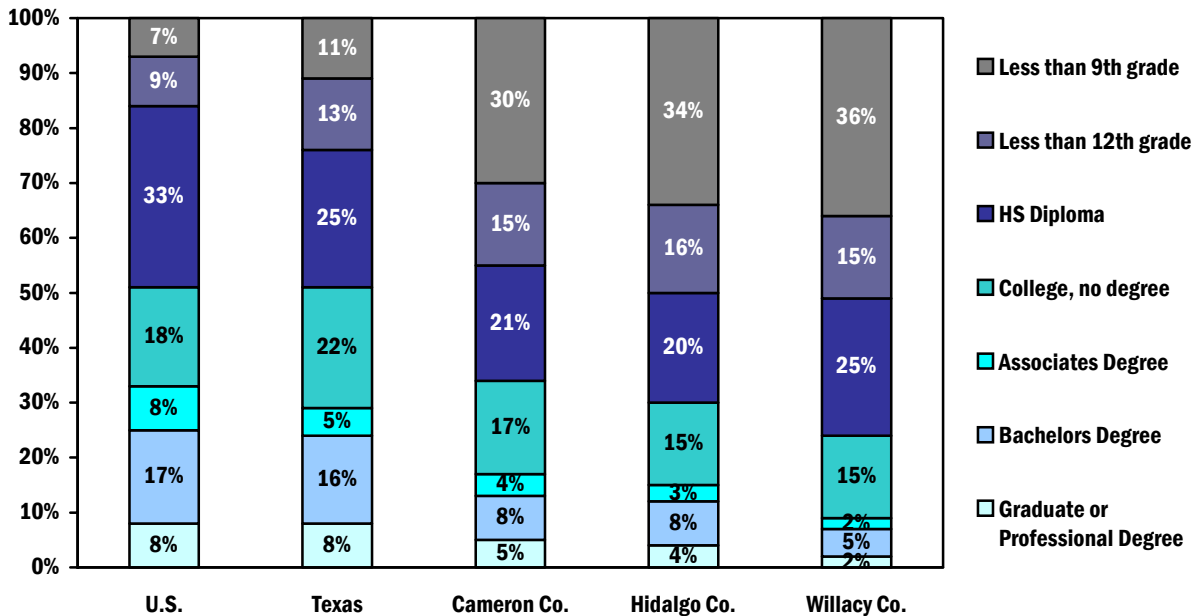
Only 4.9% of Texans enroll in higher education compared with 6.1% in California, 6% in Illinois, and 5.6% in New York and the Texas rate is dropping; by 2015 college enrollment for the state is expected to dip to 4.6% and ethnic groups with the lowest college-going and graduations rates – particularly Hispanics – are a growing proportion of Texas’ population.

If more Texans – especially members of minority groups – do not get college degrees by 2030 the state stands to lose up to \$40 billion in annual household income. One of the strongest predictors of socioeconomic success is education.

Steven H. Murdock, Chief Demographer  
Texas State Data Center, Texas A&M University  
Quoted by Michael Arnone in  
“Texas Falls Behind in Plan to Enroll More Minority Students”  
*Chronicle of Higher Education, January 17, 2003*

While 24% of Texans have not complete high school, 30% of Cameron County residents have not completed ninth grade. This is over four times the national rate, and close to three times the state rate for less than ninth grade education. An additional 15% have completed less than high school, bringing the total to 45% who have less than a high school education<sup>1</sup>. 34% of Cameron County residents have pursued college, and 17% have received a college degree, Figure 4.1. At the national level, 84% of all adults ages 25 and over have completed high school and 26 % have completed a bachelor’s degree or more. The high school completion level of young adults (ages 25 to 29) is 88%, while the college completion level is 29%.

**Figure 4. 1. Comparative Education Attainment of Population 25 & Older**



Source: U.S. Census Data 2000

<sup>1</sup> National Rankings recently published by the U.S. Census Bureau show that, of counties with 250,000 or more, Hidalgo and Cameron County have the highest percentages nationwide of adults 25 years and older with less than a high school education, see page 17.

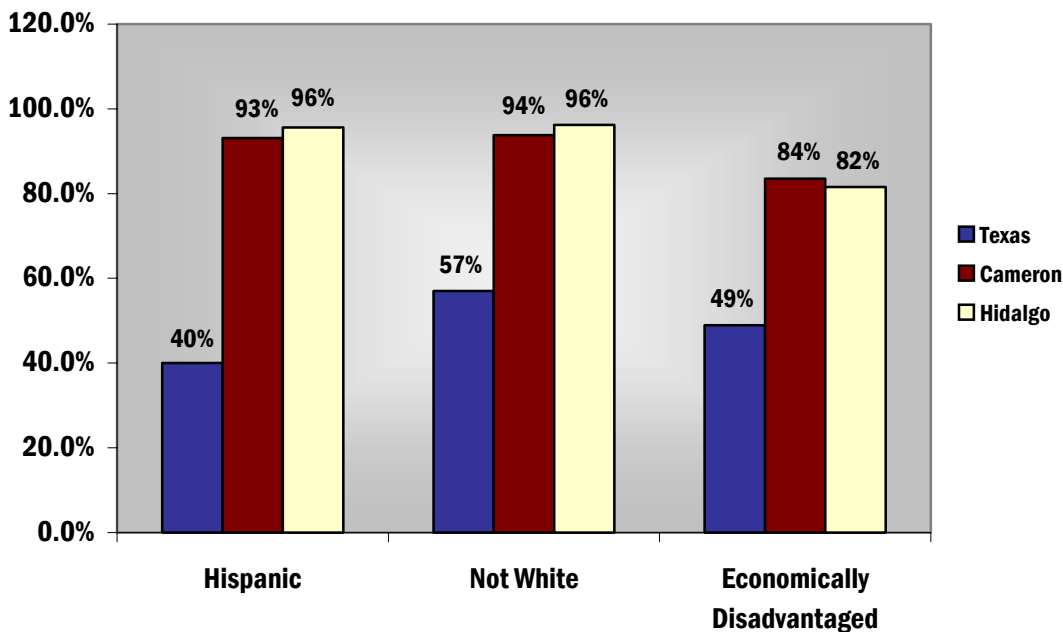
## CAMERON COUNTY PUBLIC SCHOOLS

### Enrollment

There are 12 independent school districts in Cameron County, ranging in size from Brownsville with 45 schools and 40,898 students to Santa Rosa with three schools and 1,151 students. Two charter schools enroll an additional 371 students. In grand total, in the 2001-2002 school year there were 121 schools enrolling 81,067 students. In addition, South Texas Independent School District (ISD) serves 28 school districts in Cameron, Hidalgo, and Willacy counties. This public, tuition-free district has four campuses, (including three magnet schools) with an enrollment of 2,300.

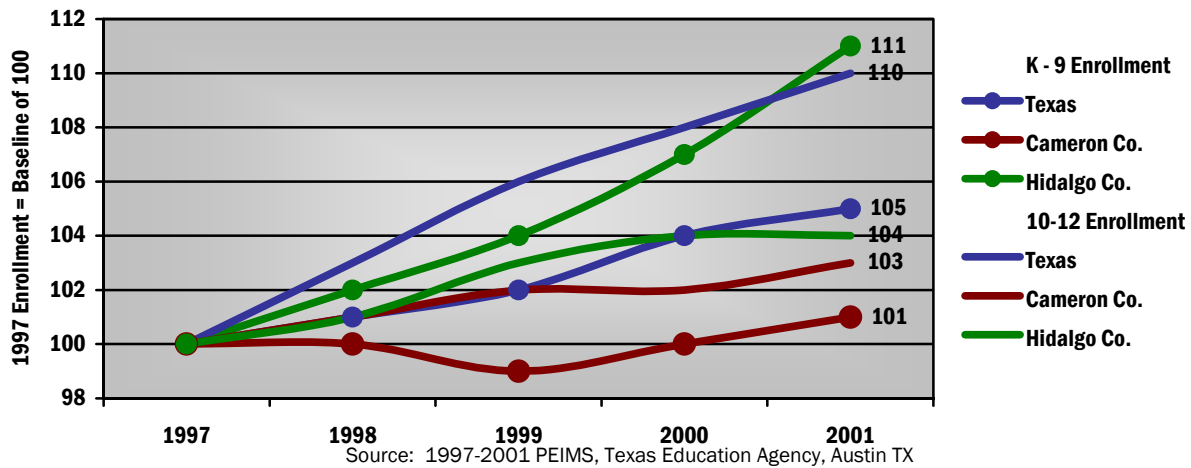
Cameron County public schools are 94% Hispanic and 84% of the students are classified as economically disadvantaged, Figure 4.2. Just three school districts, Harlingen, La Feria, and Point Isabel have fewer than 90% Hispanic students, and only one of those had fewer than 80% economically disadvantaged students.

**Figure 4. 2. Ethnicity & Economic Disadvantage Enrollment, 1999-2000**



Source: 1999-2000 PEIMS, Texas Education Agency, Austin TX

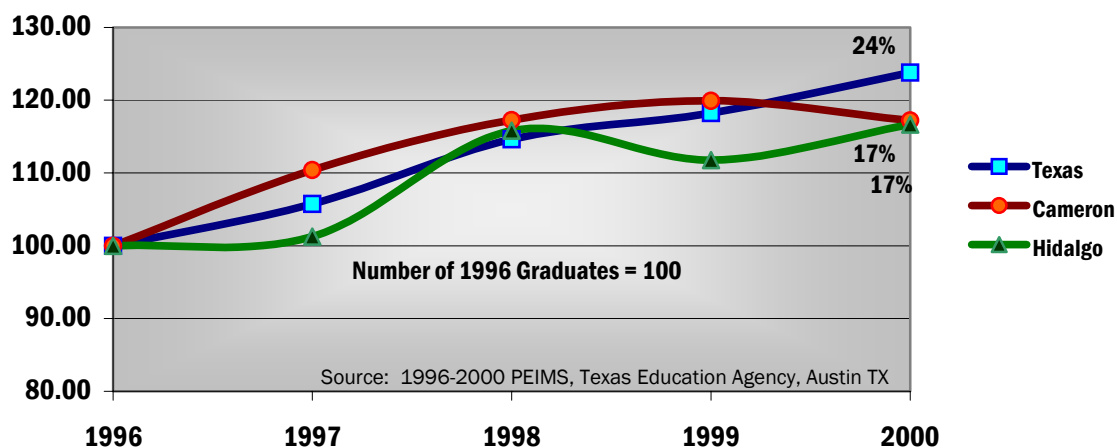
From 1997 to 2001, Texas experienced 5% growth within grades K-9, and 10% growth in grades 10-12. Cameron County's growth within the lower grades has been 1%, while the growth in the upper grades has been 5% (Figure 4.3). Hidalgo County has higher K-9 growth (11%), but a lower 3% growth rate in grades 10-12.

**Figure 4. 3. Enrollment Growth, 1997-2001**

While public school enrollment figures show overall growth, Cameron County has an "attrition rate" of 51%<sup>1</sup> according to the Intercultural Development Research Association (IDRA). While not a drop out rate, per se, the attrition rate depicts the loss of students within each graduating cohort. While some of this number includes students who move to another area, pursue private schooling, or attain a GED, the 51% attrition rate more accurately describes the rate of student loss, than the 1% annual drop out rate reported by the Texas Education Agency (TEA) for the State of Texas and also for Cameron County.

### High School Graduates

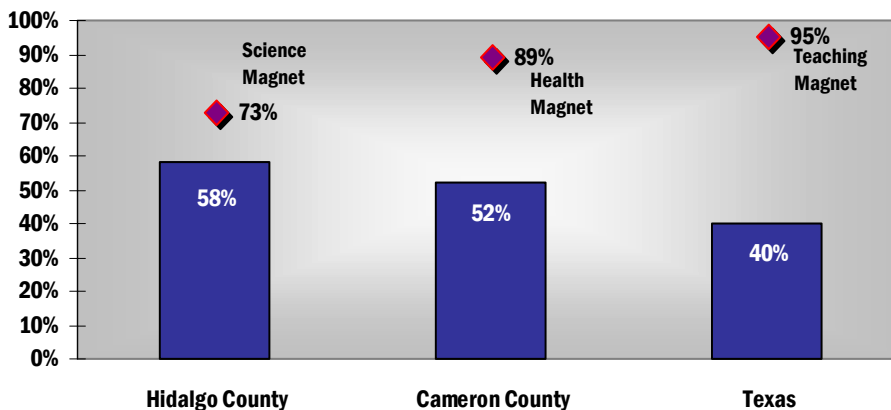
According to the 1999-2000 Academic Excellence Indicator System (AEIS) data, there were 4,300 high school graduates in Cameron County, representing 2% of the state total. The number of high school graduates in the county increased 17% in the past five years (a fraction of a percentage more than Hidalgo County), compared to a 24% increase statewide, Figure 4.4.

**Figure 4. 4. Growth in HS Graduates, 1996-2000**

<sup>1</sup> For the school year of 2000-2001, according to the IDRA, [www.idra.org](http://www.idra.org). Attrition is calculated by (1) dividing the high school enrollment in the end year by the high school enrollment in the base year; (2) multiplying the results from Calculation 1 by the ninth grade enrollment in the base year; (3) subtracting the results from Calculation 2 from 12th grade enrollment in the end year; and (4) dividing the results of Calculation 3 by the result of Calculation 2. The attrition rate results (percentages) were rounded to the nearest whole number.

Texas graduates receive one of six kinds of high school diplomas: minimum, IEP completion, recommended, advanced, honors, or distinguished achievement, the latter four being college preparatory. One of the stated goals in The Texas Higher Education Plan (2002) to “Close the Gaps” was to upgrade all statewide diplomas to the level of college preparatory.<sup>1</sup> Figure 4.5 shows percentages of college preparatory programs completed in the state of Texas compared to Cameron and Hidalgo County for the 2001-2002 school year. The South Texas ISD magnet schools produced exceptional numbers, which are indicated with individual bullets on the graph.

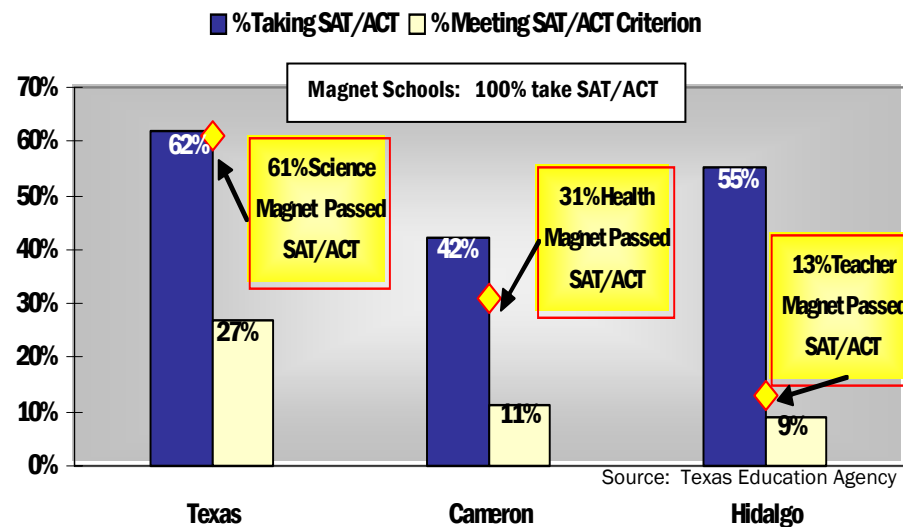
**Figure 4. 5. HS Graduates Completing College Preparatory Program**



Source: Texas Education Agency

While Cameron (52%) and Hidalgo (58%) Counties both graduated a higher percentage of students with some sort of college preparatory program than did the state (40%), the South Texas magnet schools outdid them all, with 73%, 89%, and 95%, Figure 4.5.

**Figure 4. 6. College Admission Testing Criteria**



Source: Texas Education Agency

While Cameron County schools graduate a higher percentage of graduates with college preparatory programs, less than half as many of these graduates meet SAT/ACT criterion.

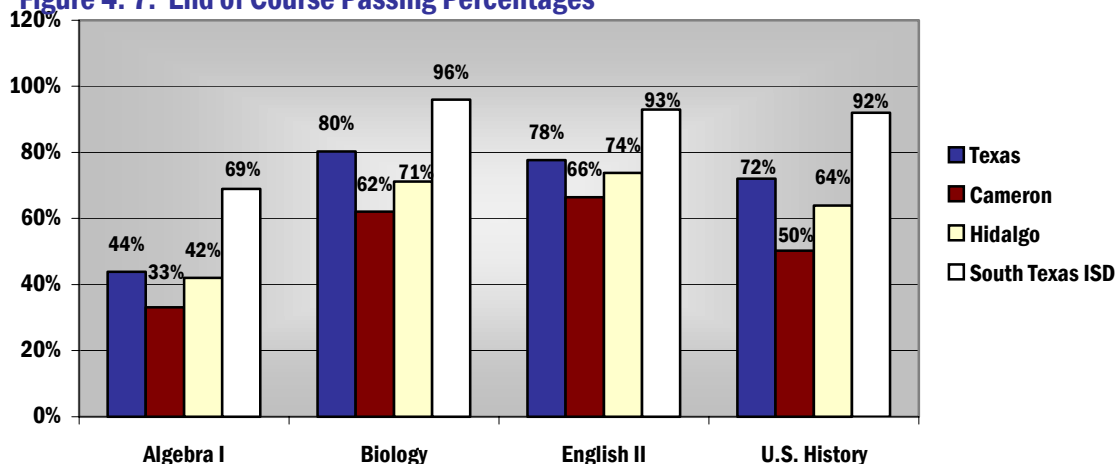
<sup>1</sup> In the past several years, college preparatory numbers fluctuated because these programs were not adequately validated with oversight for academic quality. In recent years, however, these programs have become more standard and have provided more accountability.



An important measure of the quality of high school graduates is their performance on the college entrance SAT/ACT exams. National average for the SAT is 1,017 and a score of 21 for the ACT. 11% of the Cameron and 9% of Hidalgo students who took either of those tests met that criterion, compared to 27% statewide, Figure 4.6. These data indicate that the high school graduates of the Lower Rio Grande Valley are not as well prepared for college as their contemporaries in the rest of the state (with the exception of the science and health magnet schools).

The Texas Education Agency has initiated “end-of-course” examinations in Algebra I, Biology, English II, and United States History. These examinations are administered at the completion of each of the specific courses and are designed to measure how well each student has met course competencies. Of particular concern is the statewide tendency for low passing percentages on the Algebra 1 examination (44% within the state and 33% for Cameron County), Figure 4.7. This course is a foundation for further study in the sciences, mathematics, engineering, and technology – and should be considered an integral target for academic improvement toward career preparation in these disciplines. In all four of these courses, Cameron County’s passing percentages track consistently and significantly below those for the state and Hidalgo County. At the same time, South Texas ISD magnet schools have an End-of-Course passing rate in each course that is at least 15% higher than the state average.

**Figure 4. 7. End of Course Passing Percentages**



Source: 1999-2000 AEIS, Texas Education Agency, Austin TX

### Closing the Gaps through Magnet Schools

As the data illustrate, the magnet schools in South Texas ISD ([www.south-texas.k12.tx.us](http://www.south-texas.k12.tx.us)) produce exceptional results. These successes defy the belief that low performance is unavoidable given border county demographics as magnet schools serving the border county outperform the state of Texas with:

- ⇒ More graduates completing college preparation diploma, Figure 4.5
- ⇒ More students meeting the SAT/ACT criterion, Figure 4.6
- ⇒ Higher End-of-Course scores, Figure 4.7
- ⇒ More students passing TAAS tests
- ⇒ Lower Drop-Out Rates

The reasons for the success of the magnet schools are complex, but classic success parameters produced by financial investment are present. In Table 4.2, we see that South Texas ISD, compared to Cameron County ISD averages, has fewer economically disadvantaged students enrolled. They spend \$2,453 more per pupil, including \$1,147 on instructional dollars. They receive \$1,509 more State Aid per pupil, and realize \$2,409 more total revenue per pupil. Their teacher salaries average \$3,313 higher than Cameron County ISDs, and they have a lower student-per-teacher ratio.

**Table 4. 2. Financial Data, South Texas ISD & Cameron County ISDs**

	South Texas ISD	Cameron County ISD s
<b>Total Students</b>	<b>2,300</b>	<b>81,067</b>
<b>Total Schools</b>	<b>5</b>	<b>121</b>
<b>Economically Disadvantaged</b>	<b>52%</b>	<b>85%</b>
<b>Total \$ per Pupil</b>	<b>8,754</b>	<b>6,301</b>
<b>Instructional \$ per Pupil</b>	<b>4,684</b>	<b>3,537</b>
<b>Total Revenue per Pupil</b>	<b>9,296</b>	<b>6,887</b>
<b>State Aid per Pupil</b>	<b>6,602</b>	<b>5,093</b>
<b>Average Teacher salary</b>	<b>41,520</b>	<b>38,207</b>
<b>Students per Teacher</b>	<b>12.7</b>	<b>15</b>

Source: Texas Education Agency Assessment Statistics

In short, the magnet schools have received a much higher rate of funding than Cameron County, and with these “higher funding dollars” they have employed programs that produce results. Magnet schools demand high academic standards and promote education continuance. Students are encouraged to pursue personal interests and abilities toward a career focus of their choice.

### Conclusion – At the Crossroads

There is no more important resource for the Lower Rio Grande Valley than its young people and the single most important factor for the development of this resource is public school education. The challenges facing the public schools in Cameron County are clear and serious: more students must finish high school and more must finish high school prepared for post-secondary education, whether that be in the university, community college, or workforce training programs.

The most crucial and immediate need is to reduce the loss in enrollment that takes place during middle and high school years. While significant strides have been made in increases in the percentage of high school graduates completing a college preparatory curriculum and in the percentage participating in advanced placement (AP) course work, these strides need to be matched by progress in successful SAT/ACT test performance and college/university enrollment and graduation.

While the South Texas Independent School District is meeting important educational challenges of the border region, it serves a limited number of students. The methods employed in the magnet schools should be examined in light of how they may be copied and used more broadly.

More than 90% of South Texas ISD graduates from the high school for Health Professions and the Science Academy enter college.

The success of the South Texas ISD magnet schools illustrates the possibilities that can be attained with a regional vision that crosses geographic/ political borders and implements non-traditional methods to solve long-standing challenges. This success is displayed in the area of the region’s “most critical need” – education of its young population.

## CLOSING THE GAPS: Tech Prep

**Tech Prep, Rio Grande Valley, Inc. ([www.techprepRGV.com](http://www.techprepRGV.com))**

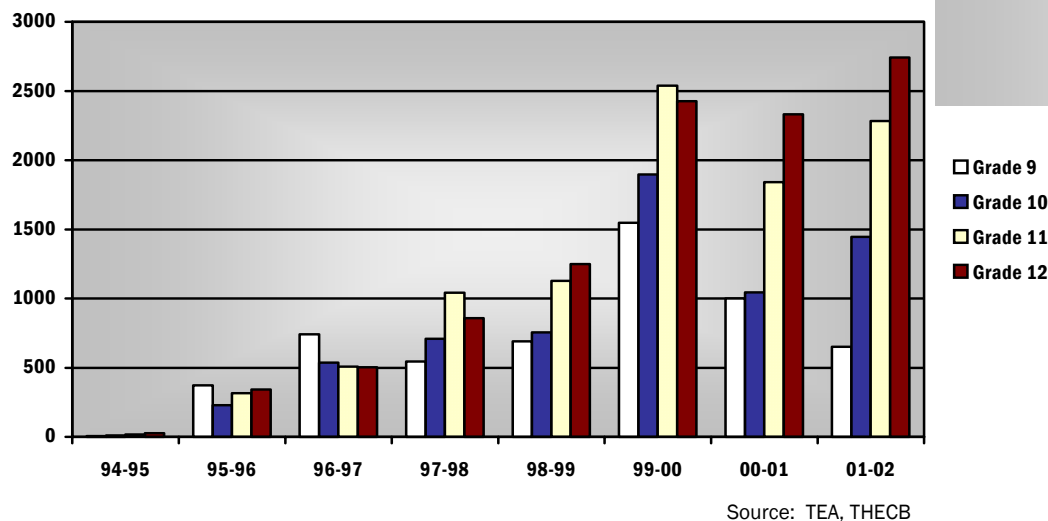
Tech Prep of the Rio Grande Valley, Inc. is a Texas non-profit, federal 501(c)(3) corporation formed in 1994. Its members include 32 independent school districts, 6 colleges and universities, the Region One Education Service Center, and several professional and community-based organizations. Tech Prep's vision is to enhance economic development of the Rio Grande Valley by being a catalyst for regional partnerships to leverage regional resources and to fulfill employers' workforce demands for the 21<sup>st</sup> Century. Tech Prep has programs at the high school level as well as adult programs that facilitate re-entry into formal education.

### RGV Tech Prep in High Schools

The number of secondary Tech Prep students in the Rio Grande Valley has grown from 60 in 1994-95 to over 7,100 in 2001-2002, Figure 4.8.<sup>1</sup> A five-year statewide Tech-Prep study conducted by the Region V Education Service Center shows that Tech-Prep participation has served as a successful action strategy to improve students' performance in several key categories, including the following:

- ⇒ Lower Dropout Rates. At-risk and economically disadvantaged Tech Prep students average lower dropout rates than other students.
- ⇒ Higher Graduation Rates. Tech Prep students graduate at a higher rate than other regional students, Figure 4.9.
- ⇒ Higher Completion of Rigorous Curriculum. Tech Prep students complete a higher rate of rigorous academic programs (the Recommended High School Program, the Advanced Program, and the Distinguished Achievement Program) than other students.
- ⇒ Higher Enrollment in Postsecondary Programs. Students who participate in Tech Prep programs in high school enroll in college within one year of high school at rates that are higher than those of other regional students, Figure 4.9.

**Figure 4. 8. RGV Tech Prep Student Enrollment Growth**



**"Tech Prep's goals for the near future are to work with local universities to expand baccalaureate opportunities that will allow graduates of Tech Prep associate degree programs to continue their education without starting over. In addition, Tech Prep is expanding its partnerships with organizations serving adults so as to create a seamless system for the young and adults who must be retrained or who must upgrade their skills to succeed."**

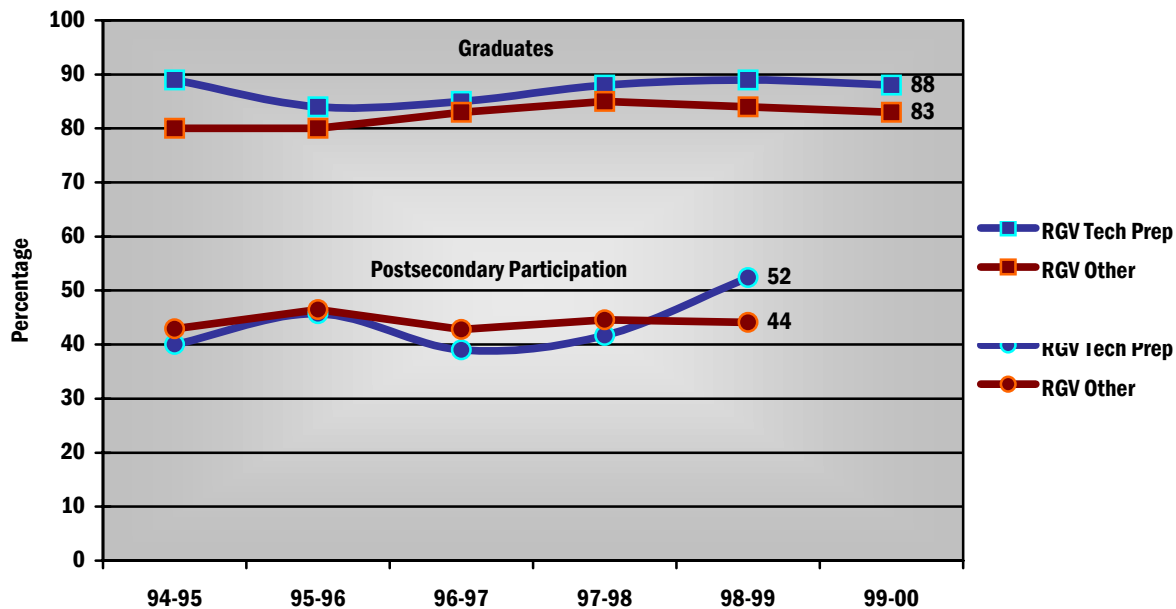
*Patricia (Pat) Bubb  
Executive Director  
TechPrep RGV  
October, 2002*

<sup>1</sup> The 1999-2000 enrollment "peak" coincides with the year of highest funding for Tech Prep.

Tech Prep’s high school programs are modeled on the magnet schools; and the success parameters that Tech Prep is attaining across the border counties (and across the state of Texas) are similar. Both the magnet schools and Tech Prep emphasize:

- ⇒ Academic rigor
- ⇒ The necessity of postsecondary education
- ⇒ Planning for the future
- ⇒ Establishing a career focus as a motivator for students to study hard and to “aim high.”

**Figure 4. 9. Graduation Rates & Postsecondary Participation**



Source: THECB Master Enrollment files (Texas SOICC/CDR)

### Closing the Gap through Meeting Workforce Needs

Tech Prep performs labor market assessments so that career-planning recommendations are benchmarked against current labor market needs and trends. And while magnet schools primarily emphasize preparation for entry into four-year degree programs, Tech Prep advises students about opportunities available through two-year as well as four-year degree programs. Tech prep serves another targeted need of the border area by helping adults re-enter the educational system including those without a high school diploma as well as four-year degree graduates who want vocational training.

Since the 1950's the U.S. has needed about 20% of its workforce to have professional degrees. That need has not changed a great deal. What has changed is the educational need of the other 80%. There has been a rapidly increasing demand for “literate technicians” – people who have technical skills who can also read, write, think, compute, and problem-solve. These are career-oriented jobs where companies often pay for the continuing education.

Tech Prep RGV’s **Careers in Action Curriculum** is an employer-endorsed curriculum for kindergarten through high school, designed to encourage young students to learn about local industries as well as the relationship between

education and personal economic success. **Shared Advisor Initiatives** at colleges and an in-house credit-tracking system maintained by Tech Prep RGV support student outreach to encourage high school graduates to participate in the system and enter the college programs available to them.

Since 1993, Tech Prep RGV’s **Manufacturing Technologies Laboratory (MTL)** has introduced over 19,000 Rio Grande Valley middle- and high-school students to applications of mathematics and science plus the lucrative opportunities in high-tech careers. The MTL is a mobile laboratory that is used for teaching and learning computers, computer design, computer programming, and computer manufacturing through the use of mathematics and science with real-life, hands-on applications. The goal of the MTL program is to promote the pursuit of higher-level math and science course work and an interest in manufacturing careers among middle- and high-school students. Students work with three programs: CAD (computer-aided design), CAM (computer-aided manufacturing), and CNC (computer numeric control).

### Closing the Gap through Educational and Social Inclusion

**Tech Prep Texas Scholars** is a student-recognition initiative that was developed in partnership with the Texas Business and Education Coalition. Almost 10,000 Rio Grande Valley high school students have graduated as Tech Prep Texas Scholars in the three years that the program has been in existence. In May 2002, there were over 4,000 Tech Prep Texas Scholar graduates, with over 1,000 of those graduates coming from schools located in Cameron County.

Texas Tech Prep Scholars become eligible to compete for the **Dr. Lauro F. Cavazos Tech Prep scholarships**, in honor of former U.S. Secretary of Education Dr. Lauro F. Cavazos – the first Hispanic to hold a U.S. Cabinet-level position and a supporter of Tech Prep RGV’s work in the Valley. The Cavazos Scholarships are supported by local donations, including the Valley’s colleges and universities, which offer these scholarships to help build regional “lifelong learning.”

Examples of the Cavazos Scholarship recipients are:

- ⇒ **David Leal**, a May 1999 graduate of Nikki Rowe High School, graduated third in his high school class and was recruited by Rice University to study electrical engineering. Born in Mexico and the youngest of four children, Leal is now a senior at Rice and has completed internships at GE-Lighting in Ohio and IBM in Austin.
- ⇒ **Hector Casas, Jr.**, a May 2000 graduate of McAllen’s Nikki Rowe High School, received a \$5,000 scholarship and is now a sophomore pre-med major at St. Mary’s University in San Antonio.
- ⇒ **Monika Galvan**, a May 2000 graduate of Harlingen High School South, received a \$4,000 scholarship donated by Texas State Technical College. Galvan, who ranked 24<sup>th</sup> in a class of 377, completed a dental hygiene degree at Texas State Technical College and is employed in her field.
- ⇒ **Alfonso Guillen III**, February 1999 graduate of Texas State Technical College, Harlingen, received a \$3,000 scholarship donated by The University of Texas-Pan American, Edinburg. Guillen completed his baccalaureate studies and is teaching at Rio Hondo ISD in Cameron County.
- ⇒ **Amy Yvonne Dorsett**, an associate degree graduate of Texas Southmost College, Brownsville, was named recipient of a \$3,000 scholarship from The University of Texas at Brownsville. Dorsett completed her baccalaureate degree in Criminal Justice at UT-Brownsville; she hopes to

“Thanks to Tech Prep, many students all over the Rio Grande Valley were able to discover and experience their career goals, as I have throughout my entire high school career; . . . Someday, after I become a specialized physician, I wish to ... have the honor to tell students that I once sat where they are now, and that Tech Prep can fulfill many dreams and aspirations... my dream is to come back to my community and repay it by awarding educational scholarships like Tech Prep of the Rio Grande Valley, Inc.”

*Hector Casas, Jr.,  
Tech Prep Graduate*

attain master's and doctorate degrees in Criminal Justice, to become a U.S. Deputy Marshal, and “one day to be a powerful influence to all young females of school age.”

- ⇒ **Javier Garcia**, a graduate of TSTC's Biomedical Engineering Program, has been named recipient of a \$3,000 Tech Prep Scholarship to the University of Texas-Pan American. Garcia has worked for several years in the health field and currently teaches Biomedical Engineering Technology students at TSTC.

### Closing the Gap through Regional Cooperation

The **Lower Rio Grande Valley Counselors' Network** and the **Lower Rio Grande Valley S-TEAM (Support Team) Network** provide thousands of educators each year with labor market information as well as training in counseling and implementation techniques to support Tech Prep RGV's strategic initiatives. **Recognition programs for teachers and counselors** contribute to the success of these initiatives. Annual curriculum-alignment meetings allow hundreds of secondary and postsecondary educators to meet and discuss curriculum offerings and to plan for the coming year.

**Communities Career Ladder (C<sup>2</sup>L)** is a technology-based education and training program based on the collaborative efforts of the Cross Border Institute for Regional Development (CBIRD), IC<sup>2</sup> Institute, The University of Texas at Austin, Cameron Works, Inc., WorkFORCE Solutions, Human Results Institute, and Tech Prep of the Rio Grande Valley, Inc. The objectives are:

- ⇒ To leverage computer and information technology and regional resources to create a workforce training system for the perpetual improvement of workforce quality standards to satisfy the employment needs of regional established and start-up businesses, and
- ⇒ To provide the tools and knowledge for the unemployed and underemployed to find employment and climb the career ladder to positions of greater responsibility and value-added work.

The C<sup>2</sup>L program has three major components: (1) knowledge-base management, (2) education and training delivery systems, and (3) data and information about a pool of motivated learners. C<sup>2</sup>L is different from more traditional training programs in that it is:

- ⇒ **Regional and targeted** for a binational population of Hispanic- and Non-Hispanic students
- ⇒ **Focused on training talent** to help retain and grow existing businesses as well as to attract new businesses
- ⇒ **A perpetual program** in that participants are expected to continually train for continually advanced positions
- ⇒ **Concerned with participant empowerment** where the employee is the catalyst for increasingly meaningful career advancement
- ⇒ **Technology-based** in that CIT (computer and information technologies) are used to match and develop skills to opportunities as well as to train and educate the client

**Limited funding is the main obstacle to Tech Preps' growth. “We have done a lot of listening to local people, identified issues that the local stakeholders brought up, devised strategies that the local stakeholders said were needed, and then worked on implementing those strategies. However, our loss of school-to-careers funds has caused us to cut staff, which means we have fewer people to go out and work with the educators and fewer people to work directly with students and parents. We also need more money for subcontracts to school districts and colleges to serve as incentive funds for them to implement the programs we design.”**

*Patricia (Pat) G. Bubb  
Executive Director  
Tech Prep RGV*



## CLOSING THE GAPS: TSTC

Texas State Technical College ([www.tstc.edu](http://www.tstc.edu))

Texas State Technical College System shall contribute to the educational and economic development of the State of Texas by offering occupationally oriented programs with supporting and emerging technical and vocational areas for certificates or associate degrees. The System's efforts to improve the competitiveness of Texas business and industry include... centers of excellence in technical program clusters... and support of educational research and commercialization initiatives. Through close collaboration with business, industry, governmental agencies, and communities, including public and private secondary and post-secondary educational institutions, the System shall facilitate and deliver an articulated and responsive technical education system.

*TSTC Statement of Institutional Purpose*

The State funded Texas State Technical College (TSTC) System has facilities in Waco, Central Texas; Sweetwater, Abilene, Breckenridge, and Brownwood, West Texas; Marshall, East Texas; and Harlingen, South Texas. The TSTC System is charged with a legislated mission of providing technical education and academic support in certificate and associate degree programs that benefit the economic development of the State. TSTC offers 75 associate degrees and certificates in two years or less and since 1998 the system's overall budget has increased by 53.7% and enrollment has increased from 8,470 to 10,214 statewide (20.6%). TSTC is consistently ranked among the top college systems in the nation in the number of associate degree graduates in engineering-related technology, communications technology, computer and information sciences, science technology, and agriculture business and production.

### TSTC Harlingen

Our economy is based on the transfer and conversion of knowledge into value, and then transferring that value into opportunities. All of us are involved in economic development: chambers of commerce, economic development organizations, higher education, and public schools. We need to work together to provide opportunities for our citizens as human resources are our biggest asset.

The future of the Valley is dependent on providing our growing workforce with the education and technical skills required by business and industry and needed by our people to achieve the American Dream.

*Gilbert Leal, President  
Presentation to Coordinating Board  
"Closing The Gaps" initiative  
July 2002*

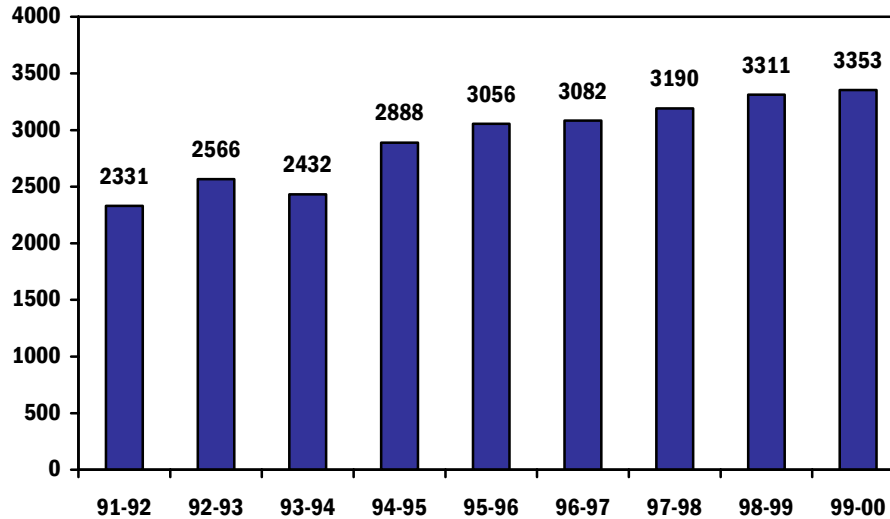
TSTC Harlingen primarily serves the South Texas and the Rio Grande Valley, which has in excess of 15,000 high school graduates each year. The College has about 160 faculty and approximately 2,500 regular tuition students as well as an additional 8,000-to-10,000 students taking continuing education and contract training courses for industry. The average age of the enrolled student is between

**The TSTC System is a leader in strengthening the competitiveness of Texas business and industry by building the state's capacity to develop the highest quality workforce. These values include excellence in leadership, innovation, collaboration, responsiveness, accountability, and stewardship. TSTC will continue to grow, make a difference, build our reputation, broaden our influence, and develop new revenue streams.**

*Dr. Bill Segura  
TSTC Chancellor  
April 2002*

18 and 24. Eighty-seven percent (87%) receive some form of financial assistance. TSTC Harlingen annually graduates approximately 600 students in 34 technical programs and places over 85% of the graduates into the Texas workforce or continuing education. TSTC's enrollments increased 19% in Fall and 16% in Spring 2002, Figure 4.10.

**Figure 4.10. TSTC Harlingen Enrollment, 1991-2000**



Source: 2001 Texas State Technical College, Harlingen, TX

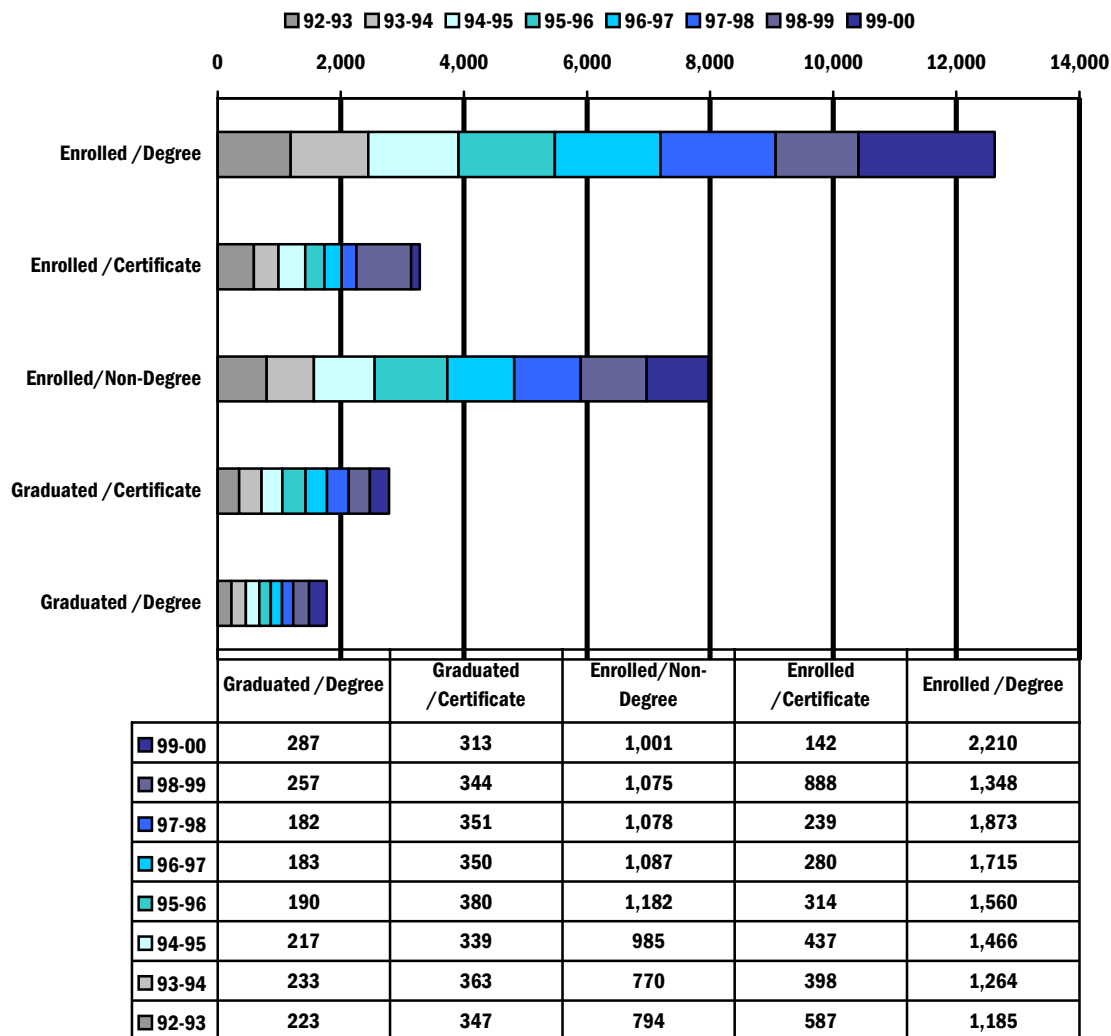
TSTC Harlingen offers 29 Associate of Applied Science (AAS) degrees and 26 Certificate of Proficiency programs. The objective is to prepare technicians for current and future industry and business needs to produce products and services and to work at levels between engineers and skilled craftsmen. Programs offered in five divisions include:

- ⇒ **Computer Information Systems** – including business office technology, computer science, digital imaging, network information management, and computer maintenance.
- ⇒ **Engineering Technology** - including biomedical engineering, electronic engineering, electronic servicing, instrumentation technology, semiconductor manufacturing, and electrical-mechanical manufacturing.
- ⇒ **Health Technology** – including an Associate Degree in nursing and programs in dental services, emergency medical technology, culinary arts, health information, medical information specialist, nurse assistant, and surgical technician.
- ⇒ **Industrial/Manufacturing Technology** – including computer drafting and design, chemical-environmental technology, machining and welding, building construction, air conditioning, automotive technology, aviation maintenance, building construction, and agriculture technology.
- ⇒ **General Education** – includes academic transfer courses offered in English and humanities, social/behavioral sciences, mathematics, development studies, and biology.



Figures 4.11 illustrates how the enrollment at TSTC has been distributed among degree, certificate, and undeclared /non-degree programs since 1992. In 1998-1999 degree candidates sharply escalated while there was a steep decline in students seeking a certificate. TSTC graduated 500 students in 1999: 287 Associates Degrees and 313 Certificates.

**Figure 4.11. TSTC Enrollment & Graduates: Degree vs. Certificate '92-'00**

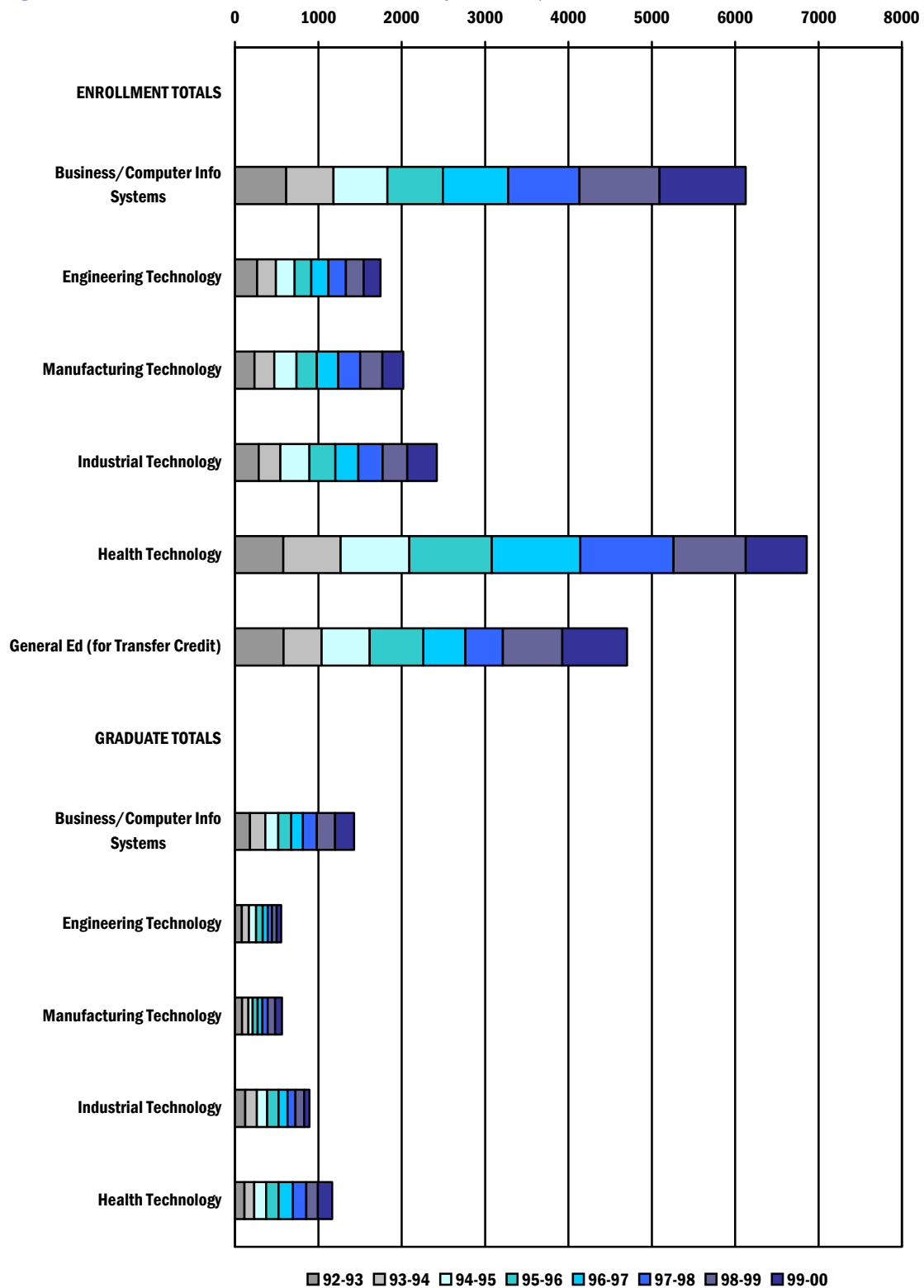


Source: 2001 Texas State Technical College, Harlingen, TX

Figure 4.12 shows that there has been a steady increase in the number of Business/Computer Information System students to over 1,000 students in academic year 1999-2000 and there has also been an increase in the number of General Education students to about 800 as there was a decrease in the number of Health Technology students from 1,100 in 1997 to about 775 in 1999. The number of students enrolling in Industrial Technology, Manufacturing Technology, and Engineering Technology has remained relatively constant over the years at between 200-to-375 students.

**While the numbers of TSTC graduates is increasing, the volume is relatively small given the needs of the valley.**

**Figure 4.12. TSTC Enrollment & Graduates by Division, '92-'00**



Source: 2001 Texas State Technical College, Harlingen, TX

Some TSTC Harlingen programs have a statewide focus (e.g., semiconductors) and some have a more locally oriented focus (e.g., healthcare). Having a statewide mandate allows the TSTC System to train workers for jobs that currently do not exist in one particular region but could provide future employment so that if these technology jobs become available in the future, area students can be recruited back home with their technical degree and years of experience.

Table 4.3 shows the ten largest programs, in terms of number of graduates, from 1991-2000. It also includes the consolidated number of graduates by division or cluster for the same period.

**Table 4. 3. Ten Largest TSTC Programs, Number of Graduates, 1991-2000**

Degree Program	Graduates
1. Business Office Technology	867
2. Nurse Assistance	286
3. Air-conditioning & Refrigeration	286
4. Medical Information	265
5. Computerized Drafting & Design	247
6. Surgical Technology	214
7. Information Management Technology	208
8. Machining Technology	179
9. Automotive Technology	171
10. Computer Maintenance	166
<b>Clusters</b>	<b>Graduates</b>
1. Business/Computer Information Systems	1,428
2. Health Technology	1,167
3. Industrial Technology	879
4. Engineering Technology	555

Source: 2001 Texas State Technical College, Harlingen, TX

Table 4.4 shows the number of graduates in SMET (Science, Mathematics, Engineering and Technology) programs at TSTC in the last ten years which totals 1,170 students. Two new programs – Semiconductor Manufacturing and Telecommunications – were recently incorporated by TSTC within the SMET Program.

**Table 4. 4. TSTC Graduates in SMET Programs, 1991-2000**

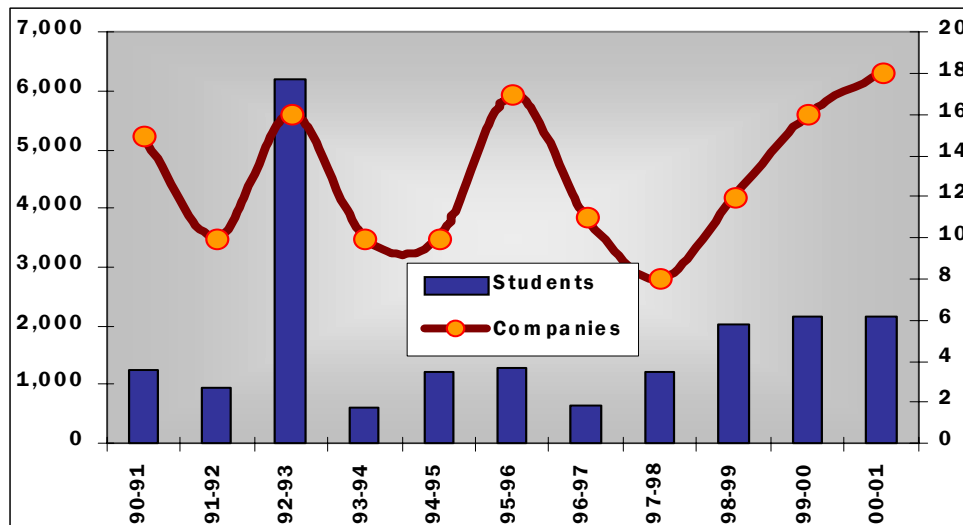
Degree Program	Graduates
1. Biomedical Engineering Technology	38
2. Electrical/Mechanical Manufacturing	158
3. Electronic Engineering	150
4. Instrumentation Technology	155
5. Semiconductor Manufacturing	New Program
6. Telecommunications	New Program
7. Chemical/Environmental Technology	155
8. Computer Drafting and Design	316
9. Machining Technology	207
<b>TOTAL</b>	<b>1,170</b>

Source: 2001 Texas State Technical College, Harlingen, TX

### Closing The Gaps Through Industry Partnerships

TSTC Harlingen's Partnership for Business and Industry Training Program provides training on contract to meet individual business and industry needs. Figure 4.13 shows the number of students participating for the last ten years grew 70%, with marked fluctuations throughout the period. The last three years shows an increase in the number of participating students (2,000) and partner companies (to 18 in 2001).

**Figure 4.13. TSTC's Partnership for Business & Industry Training, 1991-2000**



Source: 2001 Texas State Technical College, Harlingen, TX

By leveraging funds TSTC Harlingen has been able to start new and popular programs, each costing about \$500,000 to launch — a relatively minor cost when considering the potential pay-off for regional businesses, career opportunities for the students, and increased economic development and tax revenue for the city.

TSTC Harlingen has established new technical programs in:

- ⇒ Telecommunications Technology
- ⇒ Semiconductor Manufacturing Technology
- ⇒ Dental Assistant
- ⇒ Medical Assistant

Given needed financial resources, they plan to establish new programs in:

- ⇒ Geographical Information Systems & Global Positioning Software (GIS/GPS)
- ⇒ Network Security
- ⇒ Database Administration
- ⇒ Digital Imaging/Gaming
- ⇒ Fuel Cell Technology
- ⇒ Emergency Medical Technology
- ⇒ Other TSTC Harlingen initiatives
- ⇒ Distance Learning and Training programs for area state agencies
- ⇒ Expand evening and weekend programs for increased access of potential students
- ⇒ A "Web Camp" for computer challenged students and adults

If economic development is really important to Texas, then state taxes should be dedicated to help TSTC develop new programs. As these programs will help attract new companies, they will help grow existing companies. They will provide high value jobs for TSTC graduates so that they earn higher wages and have more disposable income and pay more taxes. The first question asked by firms that the Chamber is trying to recruit to Harlingen is "Do you have a trained workforce?" – if you don't have the education and training programs needed for their workers they will not locate in your area.

*Pat Hobbs, Dean  
TSTC Instruction  
August 14, 2002*

### TSTC Courses are Demand Driven

Before offering new programs, TSTC holds focus group meetings to determine the sustainability of the proposed course and to see if it meets student career needs and industry requirements. TSTC also conducts industry surveys and forms ad hoc committees including industry representatives to help organize the program. Once formed, an industry advisory committee provides continued input to each program area. TSTC Program Chairmen have the responsibility of satisfying state and national certification requirements, industry and student needs, and student placement.

TSTC's Chemical-Environmental Technology Advisory Committee meets in June 2002 to discuss curriculum and budget issues. Awards were presented to representatives from Solvay Polymers, Shell Oil, and Texas General Land Office. Shell Oil has contributed about \$250,000 scholarship funds allowing TSTC students to concentrate more fully on their curriculum and be less dependent on outside work to pay day-to-day bills.

**"We know when we hire them [TSTC graduates], they will be well prepared and will know the equipment that they will be using...they have an excellent work ethic and are well prepared for team-work in the labs."**

**John Buckfelde  
Solvay Polymers  
TSTC Mustang**

It is important that the Valley sees itself as one large market for education and training – we need to cooperate on the design and offering of programs – there should not be duplication in special niche areas. We need to ask what is the market for these programs and is that market sustainable.

*Pat Hobbs, Dean  
TSTC Instruction  
August 14, 2002*

### Closing the Gaps Through Educational & Social Inclusion

TSTC Harlingen, a designated Hispanic Serving Institution (HSI), has been successful in winning federally funded Title V Retention and Recruitment Grants and Educational Opportunity Center Grants to provide manpower and support for student services to increase enrollments and to increase the number of graduates into the Texas workforce.

TSTC was recently awarded \$300,000 for 3-years from The Agricultural Technology Outreach Program to work with Texas A&M Kingsville's agriculture department to focus on disadvantaged youth with potential for post-secondary education... to provide students with knowledge and mentors so they can better participate in high-tech agriculture career opportunities in such areas as herd management and soil conservation.

**"This is an opportunity to re-introduce students to high-tech jobs involved with agriculture and to make sure they don't fall through the cracks... a lot of cutting-edge technology associated with agriculture exists that Texans don't even know about."**

*Judy Ybarra  
TSTC Mustang Messenger  
July 2002*

TSTC was awarded a Department of Education grant of about \$1million for the College's Educational Opportunity Center – which serves about 600 students/year and focuses on underemployed and disadvantaged dropouts or stop-outs and encourages them to return to school.

**"It doesn't matter at what level they dropped out of school... the program will help them get back to earn their diploma and perhaps enroll in a college or university and graduate into the job market."**

*Pepper Chew  
TSTC Mustang Messenger  
July 2002*

TSTC recently raised \$60,000 from the Harlingen community to satisfy the Long Scholarship Challenge. Joe and Teresa Long, Austin, Texas residents donated over \$110,000 to TSTC Harlingen on a dollar-for-dollar matching basis for Fall 2002 scholarships that will benefit about 70 TSTC students. As TSTC President Dr. Gilbert Leal noted, "such scholarship funds can mean the difference of students completing their education or having to drop out." The Longs see education as the path out of poverty.

**"The community has met the challenge... TSTC, its students, faculty, administrators and the community put it all together to make this happen."**

*Joe Long  
TSTC Mustang Messenger  
July 2002*

In a celebration of scholarly endeavor and accomplishment, in July 2002, 11 TSTC students were inducted into the Xi Beta Chapter of Sigma Kappa Delta National English Honor Society. The organization was established at TSTC last spring and confers distinction upon outstanding students of English and English literature in two-year colleges and institutions.

**"The honorees were told they could look forward to professional networking advantages, academic support systems, and collegiate scholarship opportunities."**

*TSTC Mustang Messenger  
August 2002*

### Closing the Gaps Through Regional Cooperation

Working with Texas A&M Laredo, TSTC Harlingen acquired \$1 million/year for two years from a local Bond Issue to provide start-up funding to launch two successful programs in Diesel Mechanics and Computer Drafting and Design. TSTC also has three-year partnership with Laredo Community College to provide technical programs.

TSTC has signed cooperative agreements with area universities — including UT-Arlington, UT-Pan American, Texas A&M Kingsville, and UT-Brownsville/Texas Southmost College — to facilitate the transition of TSTC graduates into bachelor degree programs. The goal is to increase the number of Hispanic students in higher education and to foster access to career growth opportunities. UTB/TSC and TSTC have signed a Memorandum Of Understanding (MOU) – where TSTC can use UTB/TSC’s Brownsville facilities to offer technology programs such as CAD/drafting and UTB/TSC can use TSTC facilities to teach in Harlingen.

It costs TSTC about \$500,000 to start a new technology program even when using existing facilities. These costs include purchasing needed computer and other equipment, faculty training, administrative costs and there is a delay of about 3 years before contact hour funds, to run the program, start to flow from the state. In short, without start-up funds it is very difficult for TSTC to offer new and needed programs in cutting-edge technology areas for Harlingen much less Brownsville or Laredo.

TSTC Harlingen, supported by TSTC’s Chancellor’s Office, is working with CBIRD (Cross Border Institute for Regional Development) in cooperation with IC<sup>2</sup> Institute, The University of Texas at Austin; Valley telecommunication businesses; the City of Harlingen; and Harlingen Consolidated Independent School District to expand educational and health service information and computer access to all community residents. TSTC Harlingen is also working with the Spaceport efforts of Willacy County to become one of Texas’ new recoverable space vehicle launch sites.

### Closing the Gaps Through Entrepreneurship

Thanks to the entrepreneurial initiative of Cindy Vasquez, counselor for TSTC’s Economic Development and Industrial Training Department, The Harlingen Lions Club sponsored the purchase of eyeglasses for 33 students at TSTC. All the students were displaced workers and Harlingen residents.

TSTC has developed the innovative concept of Training Centers where industry partners and major area manufacturers donate used and new equipment. Both TSTC and the Industry Partners use the “Training Centers” as laboratories and as classrooms as employee and dealer training facilities – saving the manufacturer the cost of training facilities and saving TSTC the cost of purchasing equipment needed for faculty and student training.

### Closing the Gaps through Binational Cooperation

In 1991 TSTC signed an agreement with the *Coordinacion Estatal de Educacion Tecnologica Industrial de Tamaulipas* to initiate activities with the Tamaulipas technical high school system for faculty to take short courses in technical areas at TSTC as well as to encourage student and faculty exchange. The majority of TSTC faculty and staff are bilingual/bicultural and courses developed for Mexican faculty are taught in Spanish. In 1996 TSTC signed an agreement with *Secretaria de Educacion Publica (SEP) Direccion General de Educacion*

**“I’ve never had glasses before. I knew I needed them... We were both having trouble seeing the blackboard... Since we got our glasses our grades are much better. We are very grateful.”**

*Manuel Dorado speaking for himself and his wife, both TSTC students  
TSTC Mustang Messenger  
August 2002*



*Tecnológico Y Industrial* for Mexico to expand these ties throughout Mexico’s school system.

In 1994 TSTC signed an agreement with the *Centro Educativo Bilingue La Paz* in Monterrey, Nuevo Leon to help develop and implement an administrative assistant option for high school students including exchange visits of faculty and staff. In 1999 an agreement was signed with the *Colegio de Estudio Científico y Tecnológico (CESyT) del Estado de Nuevo Leon* which established exchange activities with the state’s system of nine technical high schools. TSTC assisted the CESyT in developing an aviation mechanics program for its campus in Apodaca (near Monterrey’s airport) and technical training for CESyT faculty.

In 2001 an agreement was signed with the ENLACE (technical high school system) *Estado de Coahuila* establishing a framework for activities between the 18 state schools and TSTC including short courses in English and technical training for faculty.

Most recently TSTC has been working to establish relationships with the *Universidades Tecnológicas* located in Matamoros and Reynosa. This national system of 48 schools, throughout Mexico, provides two-year degrees in technical fields at the same grade level as TSTC. TSTC will partner with these educational institutions in both Matamoros and Reynosa and encourage the exchange of faculty and students.

### TSTC Harlingen: At the Crossroads

Important challenges facing TSTC Harlingen are:

- ⇒ Institute full Contact Hour Formula Funding for technical programs. Current Reduced Formula Funding rates make it extremely difficult for TSTC to
  - Launch new and needed technology programs
  - Retain and attract quality faculty to teach technology programs
- ⇒ Retaining, recruiting, and training quality faculty:
  - TSTC Harlingen faculty salaries are below salaries paid to community college faculty across the state<sup>1</sup>
- ⇒ Developing new and needed technical programs that will benefit TSTC students and the economic base of Cameron County and state:
  - TSTC needs start-up funds to maintain and improve technical programs with needed computer and other equipment needed for instruction
  - TSTC needs a “New Technical Program Development Fund” at the state level to help regional Texas economies be nationally and globally competitive
  - TSTC continually upgrades its computer and information technologies (CIT)<sup>2</sup>; however, it is not possible to donate discarded computers or other (CIT) equipment to Mexican schools since Texas law stipulates that such surplus items be auctioned and/or given to Texas prisons

<sup>1</sup> Community Colleges have a regional tax base for funding support in addition to tuition. TSTC funding is based on the total number of student/faculty contact hours in class and a State funding formula that provides just 60-to-80% of needed funding.

<sup>2</sup> TSTC’s Digital Imaging Technology program has 3 labs with Apple G4 Computers available for advanced coursework. Specs: 512 MB memory, G4 dual processor with 800 Mhz, 80 GB hard drive; DVD-R/CD-RW media drive, 17” Flat screen monitor; NVDA GeForce2 Accelerated video card; running Mac OS X and OS 9. TSTC’s Department of Computer Drafting & Design Technology uses: Dell Precision 340 Workstation, 1.8 GHz, P4, Windows 2000 SP2, 19” flat panel 2x256, RIMM, Ram bus Memory 40GB Hard Drive, 3.5 Floppy, 250M Zip.



- ⇒ A major barrier to working with Mexican (or other international) schools is the fact that TSTC cannot use state funds to pay for the cost of international travel and it is difficult to dedicate local funds to promote such international activities.

“We need start-up funds if we hope to introduce new technology programs into Brownsville like we did in Laredo. If economic development is in State priority, then State incentives and funding sources should be available to develop new and needed technical and educational programs to attract and retain technology-based industries to the region. Without the funding reserves necessary to develop and implement new technical programs, colleges tend to “opt out” of such development and the state and its citizens suffer from a lack of career opportunities and a lack of economic development possibilities to attract, retain, and grow needed industries.”

*Gilbert Leal  
TSTC Harlingen President  
August 14, 2002*

## CLOSING THE GAPS: UTB/TSC

The University of Texas at Brownsville/Texas Southmost College

[www.utb.edu](http://www.utb.edu)

Our mission places UTB/TSC at the heart of what is happening in South Texas – a frontier of spectacular growth, expanding manufacturing possibilities, and innovative strategies. We enjoy an intimate relationship with our community that few other colleges can match – a relationship born of necessity and strengthened by our passionate commitment to the border region. We have the educational foundation, the talent, and perhaps most of all, the desire – “El Animo” – to be a powerful catalyst for positive change in South Texas.

*Juliet V. Garcia, President  
The University of Texas at Brownsville  
Texas Southmost College*

### The Partnership

An historic partnership was implemented in 1992 between the recently formed University of Texas at Brownsville (UTB) and Texas Southmost College (TSC) established in 1926. This partnership sets UTB/TSC apart from all other Institutions of higher education in Texas as it provides a cohesive educational system that meets the special needs of the South Texas Border Region. Working in partnership, UTB/TSC forms an educational delivery system that combines the strengths of the administrative, instructional and support services of an upper-level university with the flexibility of an open-admissions community college. Continuing education programs, technical and occupational certificates and associate degrees are offered in a seamless educational environment along with baccalaureate and graduate degrees.

In 1997, the Texas Legislature authorized the downward expansion of UT-Brownsville from an upper division and graduate level institution to include the lower division, and UTB/TSC became a four-year “community university” offering baccalaureate degrees in education, engineering technology, business, art, music, and many other essential arts and science degree programs. As of 2002, UTB/TSC offers a total of 34 bachelor degree programs, and 15 master degree programs serving approximately 10,000 academic students at the Brownsville, Texas campus. Truly an urban metropolitan border institution, UTB/TSC’s main campus is located approximately one city block from Matamoros, Mexico. UTB/TSC forms a comprehensive higher education delivery system that serves a combined cross-border regional population of more than one million persons.

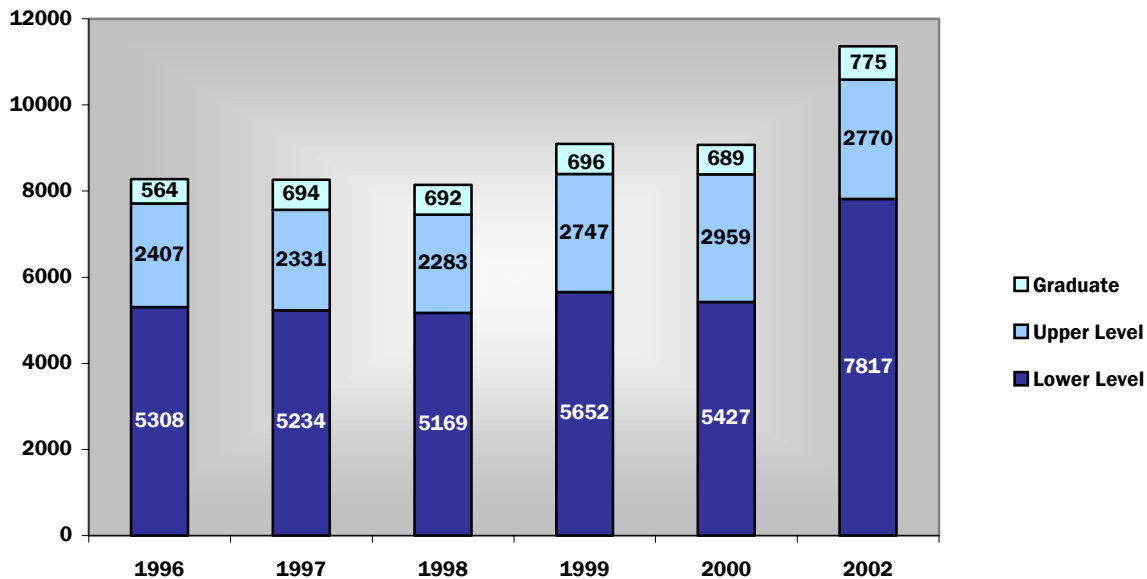
### Growth Parameters

Figure 4.14 shows UTB/TSC’s student enrollment in lower, upper level, and graduate courses since 1996. In 2002 enrollment included 7,817 lower level students, 2,770 upper level students, and 775 graduate students (students may be counted in more than one category.) Over the period 1992-2002, Lower level enrollment has increased by 22% from 6,429 to 7,817. Upper level enrollment has increased by 101% from 1,376 to 2,770 and graduate enrollment has increased by 159% from 299 to 775 students.

**UTB/TSC’s mission is to meet the needs of the South Texas Border Region and Lower Rio Grande Valley by providing:**

- ⇒ Accessible, affordable, postsecondary education of high quality
- ⇒ Research to expand knowledge
- ⇒ Programs of continuing education, public service, and cultural value

**Figure 4.14. UTB/TSC Enrollment, 1996 – 2002**



Source UTB-CBIRD  
(Note: some numbers duplicated in the 2002 data, total unduplicated students in Spring 2003 is 10,000)

UTB/TSC places excellence in learning and teaching at the core of its mission as the institution is committed to helping students at all levels develop the skills which sustain lifelong learning: critical thinking, quantitative analysis, and effective communication. UTB/TSC strives to respect the dignity of each learner while addressing the needs of the South Texas Border Region by fostering an appreciation of the unique heritage of the Lower Rio Grande Valley and by encouraging the development and application of bilingual abilities in its students and the region it serves.

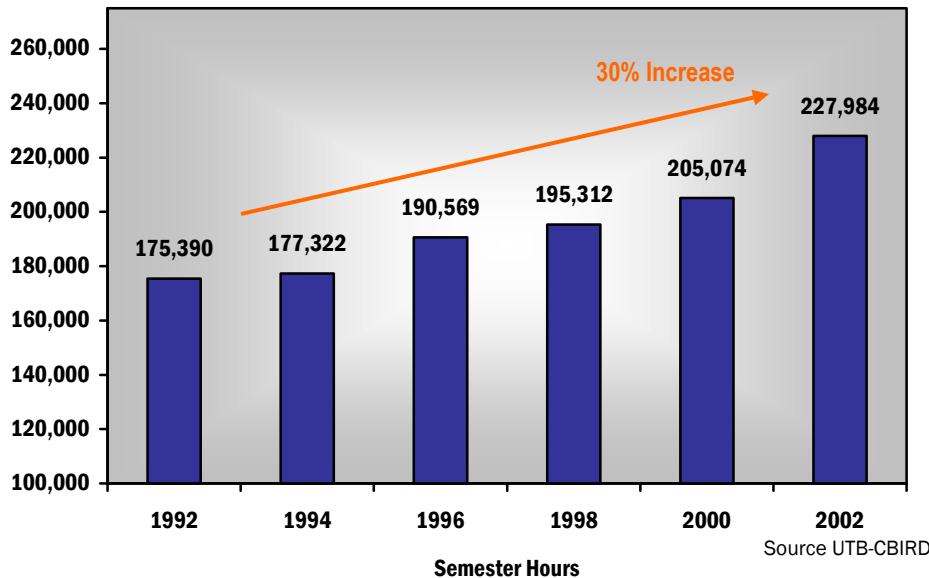
During the past decade, UTB/TSC has experienced the following growth parameters:

- ⇒ 30% more Semester Credit Hours offered (from 175,390 to 227,984)
- ⇒ 23% more certificates awarded
- ⇒ 37% more associates degrees awarded
- ⇒ 134% more bachelors degrees awarded
- ⇒ 196% more masters degrees awarded

As a developing regional comprehensive university in partnership with a community college, UTB/TSC has developed a strategic plan to meet the unmet needs of the region by delivering quality higher education programs. UTB/TSC experienced a rapid increase in new degree programs and semester hours taken shortly after the creation of the partnership in 1992, Figure 4.15. **During the period, 1996-2000, UTB/TSC's growth of new educational programs has not been able to keep pace with the growth in student enrollment.** In the Spring Semester of 2003, enrollment surpassed 10,000 – a major planning benchmark for the institution.

**I am impressed with the awesome opportunities of this special place – in a sense the region is a window to the future of Texas.**

*UTB/TSC Student, 2002*

**Figure 4.15. UTB/TSC Program Growth as Measured by Semester Hours**

While new bachelor and master degrees were added in 2002, program growth must continue in order to meet student and market needs. New degree programs attract new students as well as new faculty members, promoting the diversity of the university community. Inadequate resources have hampered UTB/TSC's ability to grow existing programs, develop new programs, and to accommodate enrollment growth.

Figure 4.16 indicates the enrollment gap that exists in South Texas institutions of higher education. The gap is the difference between the statewide college going rate (30%) and the historic college going rate in South Texas (15%). The low historic rate – which is half the state average – would have been the future of the region had the State of Texas not invested in UTB/TSC and other border universities in the 1990's. Still, there is an unmet need to increase the College Going Rate of the LRGV population.

UTB/TSC's goal for enrollment growth is to “close the gap” the difference between the South Texas College Going Rate and the Statewide College Going Rate, relative to the projected population growth for the UTB/TSC service area (including projected changes in migration rates, and the capture of a percentage of local students who ordinarily leave the area to go to college). By gradually increasing the college going rate from 15% in 1990, to 30%, and given adequate resources, UTB/TSC would attain an enrollment of approximately 20,000 students by 2010.

The orange line in Figure 4.16 represents UTB/TSC's actual enrollment figures from 1995 to Fall 2003 enrollment of over 10,000. This line indicates the return in value of the State of Texas has realized from investments in UTB/TSC and that it is possible to decrease the college going enrollment gap in the Lower Rio Grande Valley.

**Accelerating the development of higher educational opportunities is required to provide the knowledge and training to save yet another South Texas generation from a life of poverty and desperation.**

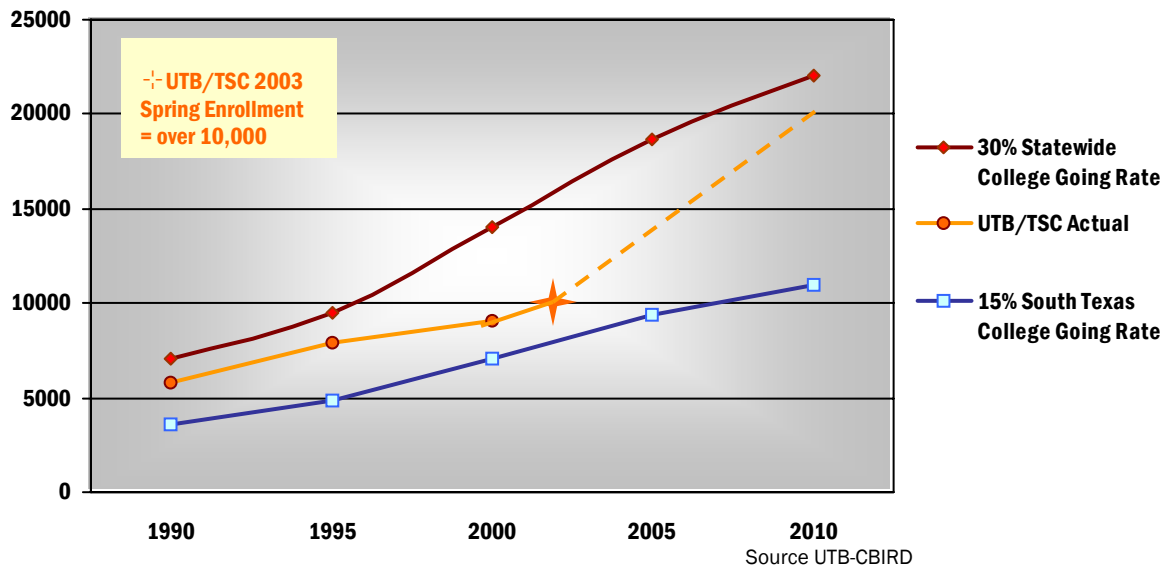
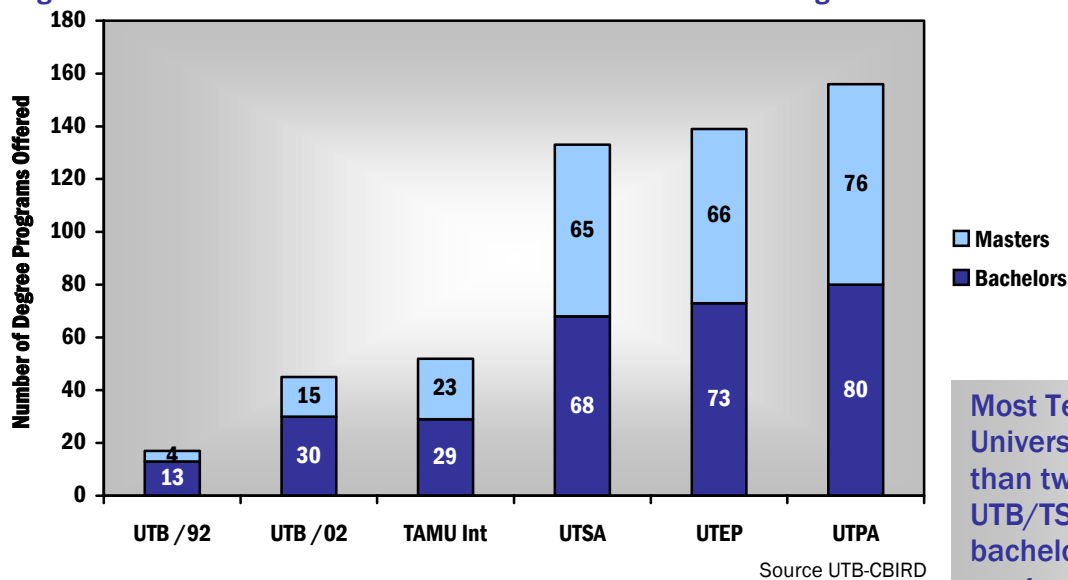
**Figure 4.16. Cameron County College Going Rate: State, Historic & Actual Rates**


Figure 4.17 shows that while the number of degree programs offered at UTB/TSC has more than doubled in the past ten years, current program offerings are relatively modest when compared to other regional universities.

**Figure 4.17. South Texas Universities<sup>1</sup>: Bachelors and Masters Programs**


Most Texas Border Universities have more than twice the number of UTB/TSC's masters and bachelor degree programs.

In 1992, UTB/TSC offered four Master's degrees and since that time has been able to almost quadruple the number to 15 in 2002. New Master's Degree programs include:

- ⇒ Curriculum and Instruction
- ⇒ Educational Technology
- ⇒ Special Education

<sup>1</sup> Texas A&M University International (TAMU Int), The University of Texas at San Antonio (UTSA), The University of Texas at El Paso (UTEP), The University of Texas-Pan American (UTPA).

- ⇒ Education with a Major in Counseling and Guidance
- ⇒ Education with a Major in Elementary Education
- ⇒ Early Childhood Education
- ⇒ English as a Second Language
- ⇒ Spanish
- ⇒ English
- ⇒ Public Health Nursing
- ⇒ Business Administration

### Distance Education Programs at UTB/TSC

Developing programs to meet the varied needs of the South Texas Border Region UTB/TSC offers three types of distance education courses for undergraduate and graduate students:

- ⇒ Web-based courses via the Internet in Basic Math, Introductory and Intermediate Algebra, Nursing, and Nutrition.
- ⇒ Tele-courses via local TV or tape copies
- ⇒ Videoconferencing courses where UTB/TSC has two-way video rooms that are available throughout the LRGV for a Bachelor of Science in Nursing

UTB/TSC also offers web-based courses via the University of Texas Tele-Campus that include the first year of an undergraduate degree, a Bachelor of Science in Criminal Justice, and Masters Degrees in Business Administration and Education.

Many traditional academic delivery systems are archaic in the face of current realities. Students are older and working and they still want to pursue their education and advancement opportunities. UTB/TSC is trying different kinds of instructional delivery systems. We recently graduated one of the first UT System students to complete a master's degree on the Internet. She is Hispanic, lives in New York, and works at IBM. She is married with a child. She couldn't leave work to attend school so she enrolled in UTB/TSC's distance education program. Last September she flew here for graduation. Her family came in from Florida. Here was a Hispanic who liked what she saw at UTB, was not from the Valley, and was still able to get an advanced degree under challenging circumstances using innovative Internet-based education.

*Juliet Garcia, President  
The University of Texas at Brownsville/  
Texas Southmost College  
August 28, 2002*

### Serving the Hispanic Community

UTB/TSC's student profile (Table 4.5) closely resembles Cameron County's demographics: 92% of students are Hispanic, 62% are female, and the average age is about 26 years.<sup>1</sup> Seventy percent of UTB/TSC students receive financial aid. Additionally, 16.25% of financial aid students (1031 of 6344) are single parents. The new generation of students in South Texas is increasing the enrollment of non-traditional age college students who have high educational aspirations and great financial need.

**We are working to place UTB/TSC at the center of what is happening in South Texas...and to use innovative strategies to be a powerful catalyst for positive change.**

*Juliet Garcia  
President, UTB/TSC*

**Our student population is almost entirely first generation in their families to complete college in a region where over 50% of the population have not completed high school. We have one of the highest graduation rates for transfer students of 58% in 4 years. And our retention rate for all freshmen is 69% and for Hispanic freshmen is 68%.**

*Juliet V. Garcia, Ph.D.  
President, UTB/TSC  
to the House Appropriations  
Subcommittee on Education  
February 19, 2003*

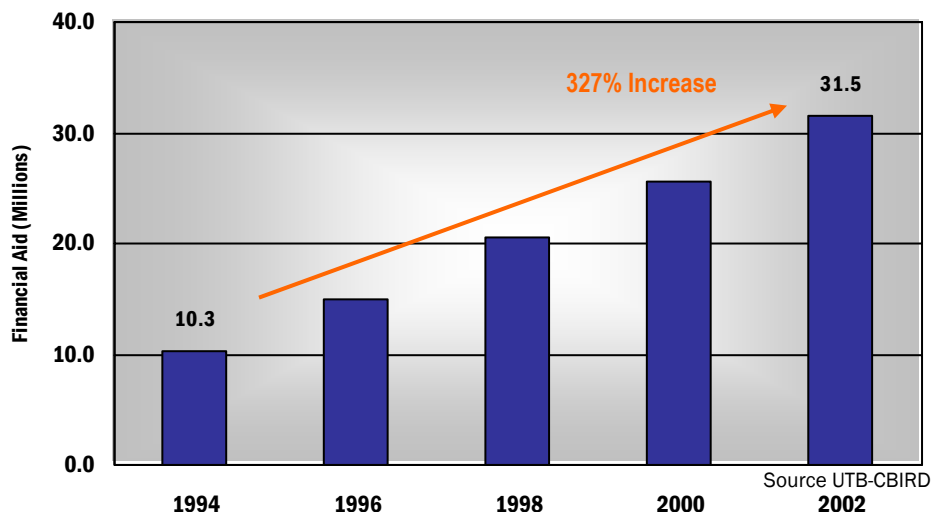
<sup>1</sup> Cameron County Demographics show 85% Hispanic, 52% female, and a median age of 29.

**Table 4. 5. UTB/TSC Student Profile 2002**

University of Texas at Brownsville/Texas Southmost College					
Total Headcount	9,373		Under 18	453	
Undergraduates	8,607	92%	18-25	5,432	
Graduates	766	8%	25-35	2,226	Average Age = 25.8
Female	5,786	62%	36-45	868	
Male	3,587	38%	Over 45	394	
Hispanic	8,667	92%	Brownsville	7,196	77%
White, Non-Hispanic	569	6%	San Benito	605	7%
Other		2%	Harlingen	411	4%
International	68		Los Fresnos	296	3%
Black	27		Other		9%
Asian	26		Certificates	142	(Dec '00,
Indian	7		Associates	459	May '01, &
Unknown	15		Bachelors	543	Aug '01

Source UTB-CBIRD

Figure 4.18 demonstrates the increase in federal aid to UTB/TSC students 1994-2002. For those students who have completed the financial aid process for the 2002-2003 school year, the average financial need is \$10,332 for one academic year while the financial aid package available averages \$6,408.

**Figure 4.18. UTB/TSC Financial Aid Increase 1994-2002**

In short, this economically marginalized population has an average unmet educational aid need of at least \$3,924 per year, further exacerbating the socio-economic barriers to completing their education. While Financial Aid to UTB/TSC students has increased by 327% since 1994, a 38% financial shortfall "per student" remains unaddressed for 2002-2003. At the same time, **The University of Texas System has met less than 15% of its stated goal to enroll 102,500 Hispanic students by 2005.**<sup>1</sup> Indeed, the Texas Higher Education Coordinating Board identified a goal of increasing statewide Hispanic enrollment in Texas higher education institutions to 60% of the total enrollment (300,000 of 500,000) by 2015.<sup>2</sup>

<sup>1</sup> UTB/TSC is part of The University of Texas System which includes 9 academic universities and 6 health institutions.

<sup>2</sup> "The Daily Texan," UT-Austin newspaper, January 17, 2003, page 1.

The main reason Hispanic students are not meeting the state's enrollment goals is that their family incomes tend to be lower than those of other ethnic groups and they cannot afford tuition and fees for four years at Texas public education institutions.

Steven H. Murdock  
Texas State Demographer  
Texas A&M University  
Quoted by M. Arnone in "Texas Falls Behind in Plan to Enroll More Minority Students"  
*Chronicle of Higher Education*,  
1/17/03



When examining the education value-added that UTB/TSC offers its students as compared to those of the rest of the state and nation it becomes clear that UTB/TSC, like other regional comprehensive universities in Texas, is key to “Closing the Gaps” in higher educational opportunity. *The Hispanic Outlook in Higher Education* annually lists the top 100 U.S. institutions graduating Hispanics with bachelor’s degrees. In May 2002 UTB/TSC ranked 34<sup>th</sup> among the top 100 baccalaureate producers in the country with a total of 441 Hispanic graduates. That is equivalent to 9<sup>th</sup> in the State of Texas. This level of degree productivity in the last 10 years documents the enormity of the unmet need for Hispanic higher education in the state and nation.

In 2002, nationwide, UTB/TSC ranks 26<sup>th</sup> in the top 100 producers of Hispanic graduate degrees with a total of 127 master’s degrees awarded. This is equivalent to 7<sup>th</sup> in the State of Texas. Investing in a strategically chosen master’s degrees could propel this number dramatically upward. UTB/TSC students with the described demographic and educational aspiration profile are generally not able to leave the area to complete their education easily; they have jobs, homes and family responsibilities. Degree offerings at UTB/TSC are usually their only option.

Examining specific degree programs makes the UTB/TSC case even more compelling. *The Hispanic Outlook in Higher Education* (2002) ranked UTB/TSC third in the nation in the production of Hispanic graduates with degrees in Foreign Language (56), and second in the nation in the production of Hispanic graduates in Mathematics (24), Table 4.6. In 1999 UTB/TSC ranked first nationwide in producing Hispanic graduates in Mathematics.

**Table 4.6. UTB/TSC Hispanic Graduates: 2002 National & State Ranks**

Hispanic Graduates	National Rank	State Rank	Degrees Awarded
Mathematics	1	1	24
Foreign Languages	3	2	56
Masters Degrees	26	7	127
Bachelors	34	9	441

Source: *The Hispanic Outlook in Higher Education*, Vol. 12, No. 15, May 6, 2002

These national rankings indicate that UTB/TSC is doing some things exceptionally well in terms of “closing the gap,” while the production of Hispanics in undergraduate and graduate degree programs in the rest of the state and nation is lagging.

During the period, 1992-2002, UTB/TSC’s production of certificates and associate degrees has been lower as a percentage than the percentage of increase of production of bachelor and master’s degrees. The institution has experienced the familiar pattern of students recognizing success in by-passing the associate degree and going directly into the bachelor degree program upon the completion of the core curriculum in the Freshman and Sophomore years. It is clear that the regional economy of South Texas will increasingly depend upon the production of an educated and trained workforce. This requires the development of workforce training and continuing education programs as well as occupational and technical certificates and associate degree programs. Figure 4.19 shows a proportional growth comparison between UTB/TSC’s programs, faculty, and students. The growth in degree programs, 1992-2002 – while significant – is modest when compared to what is needed. The growth in academic program development was virtually flat during 1996-2000; however, since 2000, program development has begun to increase with the addition of a

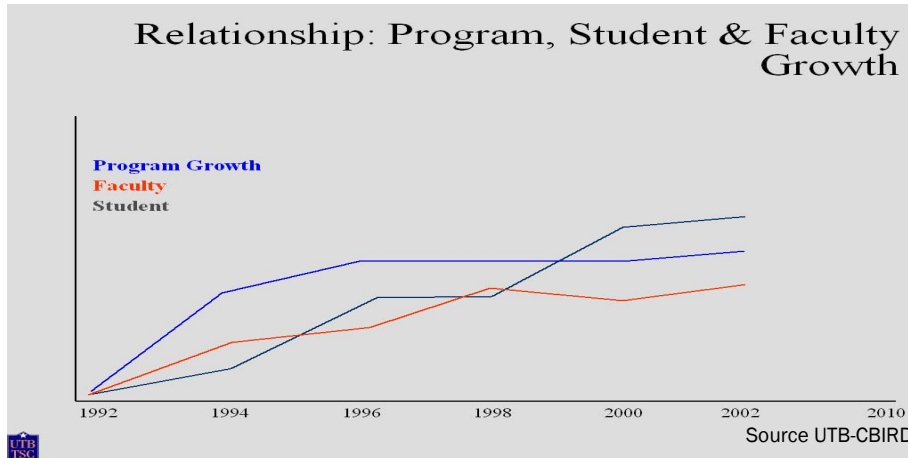
**While the state struggles to enroll the desired percentage of Hispanics in higher education, perhaps they should place their attention on enlarging UTB/TSC’s existing programs... they have a 92% Hispanic enrollment that doesn’t merely “match” Cameron County’s high Hispanic population percentage... it “exceeds” it by 7%.**

**This would also reduce the “brain drain” of local talent to other areas of the state.**



Master's in Public Health Nursing (MSPHN) and a Bachelor's in Applied Technology (BAT). While faculty growth has occurred – proportionate to enrollment growth, faculty positions have effectively (not actually) declined. Without the continued acquisition of new programs and faculty positions, enrollment growth cannot be sustained to meet the demonstrated population growth imperative in UTB/TSC's region of South Texas as called for by The Texas Higher Education Coordinating Board.

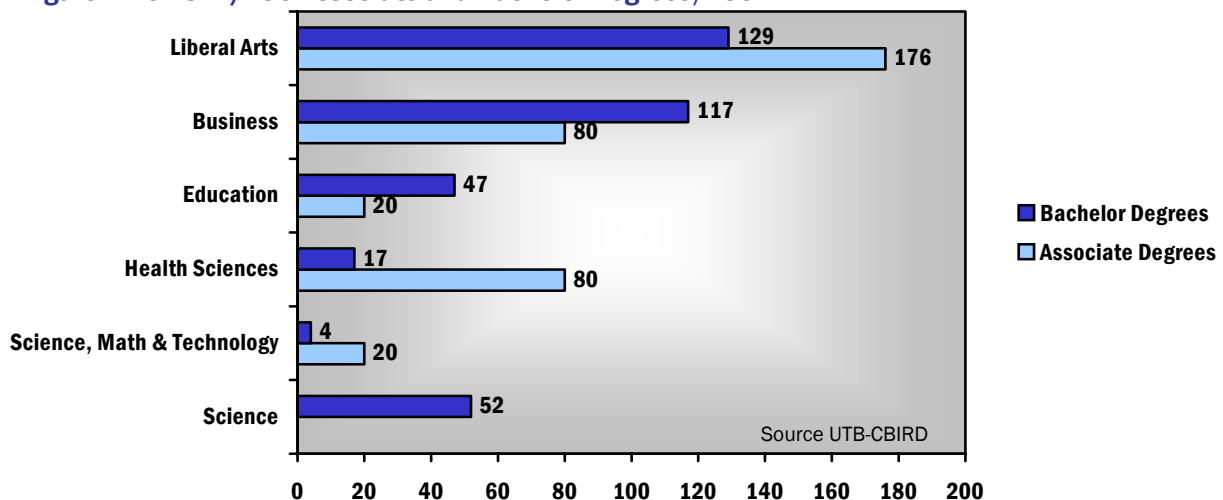
**Figure 4.19 Relative Growth of Academic Programs, Enrollment and Faculty**



As of 2002, UTB/TSC's most popular Associate Degree program was in Liberal Arts with 176 graduates followed by Health Sciences, Business, each with about 80 graduates and Science, Math, and Technology and Education each with about 20 graduates, Figure 4.20. The College of Liberal Arts is the largest of UTB/TSC's five Colleges and Schools. In 2002, the majority of bachelor degrees were awarded in Liberal Arts (129), Business (117), followed by Science (52) and Education (47). The areas of study with the least bachelor degrees awarded are the new degrees in Health with 17 graduates; Science, Math, & Technology with 4. The most popular Master Degree program at UTB/TSC is Education, followed by Business and Liberal Arts.

The number of UTB/TSC bachelor degrees awarded in sciences, math and technology is less than 75 annually.

**Figure 4.20. UTB/TSC Associate and Bachelor Degrees, 2002**



## Workforce Training and Continuing Education at UTB/TSC

**The University as an economic engine helps the future of the region. Of all the different industries the community has as manufacturing, agriculture, trade, the Port, or any other business and industry, none of those can impact a community by themselves without an educated population.**

**Juliet Garcia  
UTB/TSC President  
Interview, 2002**

The UTB/TSC partnership is designed to address on-going community needs. In addition to degree production at all levels, the cross-border region requires that UTB/TSC maintain and develop an active Workforce Training and Continuing Education (WTCE) program. WTCE programs are specifically designed to address non-degree seeking educational and training needs across the community.

Over the period 1999 to 2002, WTCE enrollment at UTB/TSC has grown by 78%, from 5,900 to 13,200 students. During the same period, WTCE program growth has increased by 85% from 28 programs in 1999 to 52 in 2002. While the WTCE budget has increased by 18% in the past four years, revenues have increased by 70% during the same period. The exponential growth experienced by UTB/TSC's Workforce Training and Continuing Education program, 1999-2002, indicates the magnitude of the unmet need in the community and cross-border region of South Texas.

## UTB/TSC's Int'l Technology, Education & Commerce Campus (ITEC)

**Dream with me... dream with us... We have recently acquired a retired shopping mall which includes a 550,000 square foot building, located on approximately 60 acres of land with about 3100 parking spaces. At the current rate of development it would take more than 20 years to develop the current campus to the size of the mall space that was acquired in a single acquisition. This acquisition almost doubles the current physical space on campus. At the former Amigoland Mall location UTB/TSC will create an International Technology Center and co-locate federal/state/local economic development activities for “one stop shopping” and provide flexible training space and incubate new cross-border businesses..**

*Tony Zavaleta  
VP for External Affairs, UTB  
June 26, 2002*

In 2002 UTB/TSC acquired the Amigoland Mall property now known as the International Technology, Education and Commerce Campus (ITEC). UTB/TSC is developing a comprehensive plan for the approximately 600,000 sq. ft. facility to focus on International trade and emerging technology sector jobs using public-private partnerships. The envisioned plan, which will evolve over the next several years, includes the following components:

- ⇒ Advanced Technology & Small binational Business Incubator
- ⇒ Workforce Training and Continuing Education facilities
- ⇒ Small Business Development Center
- ⇒ Associate/Bachelor/Masters Degree Program Space
- ⇒ International Trade Center
- ⇒ Trade Show Venue
- ⇒ Child Care Development Center
- ⇒ Economic Development Agencies

In 2002, the Greater Brownsville Incentive Program (GBIC) awarded UTB/TSC \$5.5 million to renovate the facility. To this major community contribution is added a one million dollar grant from the U.S. Economic Development (EDA) Administration for the physical development of the binational small business incubator as well as a \$600,000 HUD grant for the incubator's operation. The University's plans for the facility also include revenue generating functions and business development activities such as:

- ⇒ Partnering with the Brownsville Economic Development Council (BEDC) to recruit a national technology tenant company
- ⇒ Nurturing start-up companies
- ⇒ Establishing a Small Business Association Export Assistance Center
- ⇒ Recruitment of advocacy offices for the State of Tamaulipas, Nuevo Leon, and the Mexican Consulate
- ⇒ Recruitment of national and international wholesale/distributors and other businesses

As of fall 2002, the ITEC had begun to meet a major community need in terms of training and retraining the regional workforce. On August 1, 2002, Levi's Brownsville Plant was closed resulting in the displacement of 600 Brownsville employees. Over 500 of these unemployed workers are enrolled in UTB/TSC training programs ranging from computer specialist and electronics technicians to certified nurses and medical assistants. A previous UTB/TSC training program, The "Haggar Project," graduated 306 students with 46 degrees and 365 certificates with close to 100% job placement.

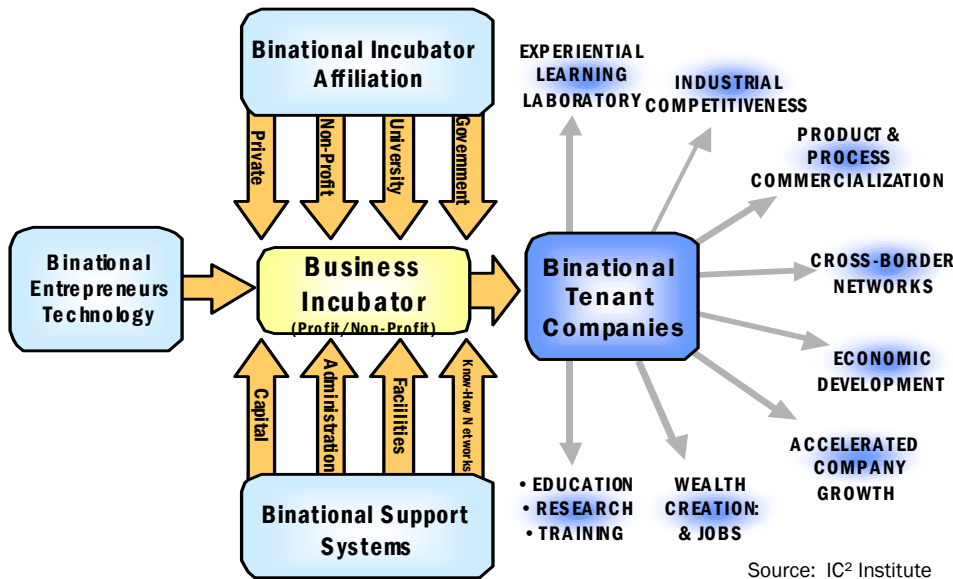
UTB/TSC's Binational Business Incubator (Figure 4.21) will be a positive catalyst for education, training, and research on small business development to

- ⇒ Accelerate the growth of start-up companies and job creation
- ⇒ Increase the region's industrial competitiveness
- ⇒ Facilitate the development of international networks, especially with Mexico and Latin America
- ⇒ Be a world-class "experiential living laboratory" for curriculum development in binational entrepreneurship and business development

**The entire Technology Campus will be a work experience facility. The business incubator will be a "experiential learning laboratory" for launching and growing binational companies. For example, UTB/TSC's technical programs will provide student interns for building maintenance, and the culinary arts program will staff the center's restaurant facilities. We will have health care, a beauty shop, and recreational facilities all staffed by UTB/TSC student interns who will benefit from on-the-job training.**

*James R. Holt, Dean  
Workforce Training and  
Continuing Education  
UTB/TSC  
Interview, June 26, 2002*

**Figure 4.21. Components of UTB/TSC's ITEC Business Incubator**



### Texas Center for Border Economic & Enterprise Development (CEED, formerly CBED)

CEED, established in 1992, is UTB/TSC's central source for business support services and training in advanced technology and workforce development. CEED works in concert with UTB-CBIRD also offers consulting and assistance services to business, industry, municipalities, and nonprofit agencies. The Center provides marketing assistance through its Valley Procurement Technical Assistance Center to help businesses diversify their markets including government and public buying opportunities.

CEED's International Trade Development (ITD) office sponsors seminars on the globalization of commerce including such topics as Trade Finance, International Sales Contracts, and NAFTA. Enterprise Start-Up and Development assistance is provided by CEED counselors and representatives of the Service Core of Retired Executives (SCORE).

CEED has Corporate Customized Training (CCT) and technical assistance facilities in Port Isabel, South Padre Island, and Harlingen in addition to Brownsville that provide courses on such topics as:

- ⇒ CAD/CAM
- ⇒ Blueprint and Schematic Reading
- ⇒ English as a Second Language
- ⇒ Fundamentals of Management
- ⇒ Forklift Training
- ⇒ Geometric Dimensioning and Tolerances (GDT)
- ⇒ Plastic Molding Injection
- ⇒ Team Building

CEED offers one-stop "shopping" for business including customized corporate training, technical assistance, international trade development, and small enterprise start-up.

They learn about where the federal government has a need for their products or services... to get into the General Services Administration (GSA) Schedule at the US level in order to position their company to be solicited by buying agencies nationwide.

Rosalie Manzano, Director CEED  
2002 Business Contracting Opportunities Conference  
Industrial Community  
December 2002

### UTB/TSC’s Cross-Border Institute for Regional Development (UTB-CBIRD)

The Cross-Border Institute for Regional Development (CBIRD) is a binational institute which promotes public-private partnerships for socio-economic development and a binational regional vision. In 1999 UTB/TSC was a founding partner in the creation of this binational collaborative initiative with the Instituto Tecnológico de Estudios Superiores de Monterrey (ITESM), the IC<sup>2</sup> Institute at The University of Texas at Austin, and the Houston Advanced Research Center (HARC). UTB-CBIRD is dedicated to being a positive catalyst to facilitate a working dialogue between academic, business, and government interests to accelerate regional and binational economic, educational, social, and cultural development.

In addition to UTB-CBIRD, a CBIRD office has also been established at The University of Texas Pan American in Hidalgo County and at IC<sup>2</sup> Institute, The University of Texas at Austin. In Northeastern Mexico, two additional CBIRD offices are being formed: CBIRD-CODERT (Consejo para el Desarrollo Regional Transfronterizo), Tamaulipas and CBIRD-ITESM (Instituto Tecnológico y de Estudios Superiores, Monterrey). Together the four CBIRD entities will provide a binational network to help transform and diversify the economic and social conditions of the lower border region. These CBIRD entities also work with the Lower Rio Grande Valley CBIRD-TRAC (Texas Region Action Council) to better connect with communities and their organizations to network and talent and know-how – regionally and binationally – to accelerate regional development.

UTB-CBIRD works by:

- ⇒ Developing opportunities at the community level
- ⇒ Facilitating cross-border cooperation, collaboration and coordination
- ⇒ Bringing together government, business, academic, and philanthropic foundations as well as other non-government organizations with the common goal of developing the cross-border region.
- ⇒ Developing and reporting the metrics for benchmarking and progress assessment. (This report is an example of a UTB-CBIRD Benchmarking project).
- ⇒ Facilitating the development of civic and social entrepreneurship.
- ⇒ Providing technical assistance for expanding the internal capacity of UTB/TSC components to meet the educational and training needs of their clients.

### School of Public Health

In partnership with UTB/TSC the Brownsville Regional Campus of The University of Texas Health Science Center at Houston, School of Public Health, was officially dedicated, May 24, 2002. The UTB/TSC located facility offers a Masters of Public Health degree and is a division of the Lower Rio Grande Valley Regional Academic Health Center (RAHC)<sup>1</sup>. Interactive television classes network faculty and students from all five UT School of Public Health campuses located in El Paso, San Antonio, Dallas, and Houston, in addition to Brownsville. The Brownsville Regional Campus is supported by a binational advisory committee and, the cross-border academic and medical communities are working together to develop leading-edge teaching and community-based research programs.

<sup>1</sup> See Section 5 for a more complete descriptions of the RAHC.

Public Health as a discipline focuses on promoting and preventing disease within and across communities and aims to provide unfettered access to quality healthcare, to educate and encourage healthy behavior, and to create healthy environments. Public Health is concerned with poverty, disease control, international health, substance abuse, and environmental issues – all important concerns of the U.S.-Mexico Border Region. The Brownsville Campus focuses on problem oriented teaching and research in the following areas:

- ⇒ Community Health Practice
- ⇒ Disease Control
- ⇒ Health Promotion
- ⇒ Health Services Organization
- ⇒ International and Family Health
- ⇒ Occupational and Environmental Health

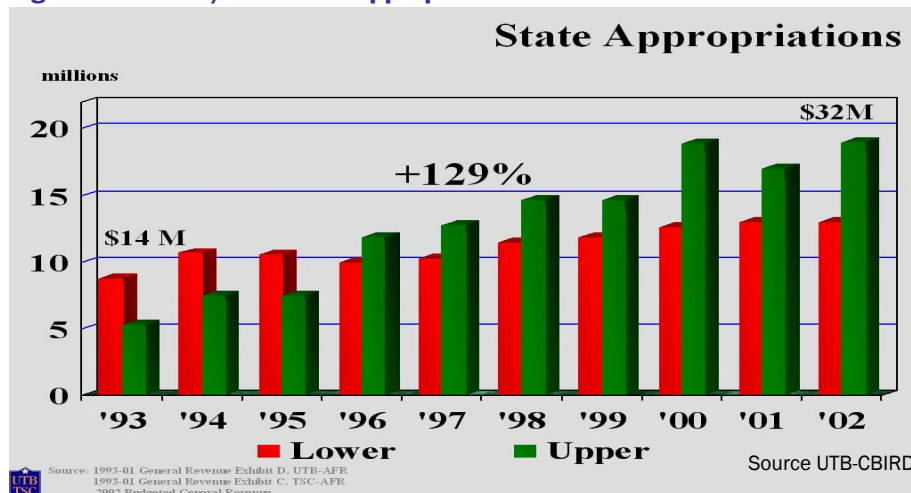
### UTB/TSC Research

**In 1988, Texas had two institutions listed among the top 40 in federal grants for science and engineering; California had seven such institutions. Nationally, at least ten institutions individually receive more intellectual property income – income generated by research discoveries and applications – than is received by all Texas higher education institutions combined.**

*Closing The Gaps by 2015  
Texas Higher Education Coordinating Board  
October 2000*

The UTB/TSC partnership established in 1992 has demonstrated the need for graduate education and as such has established two co-operative doctoral degrees in collaboration with other institutions. UTB/TSC has sought to attract a combination of local, foundation, state and federal funds needed to build graduate research programs to produce world-class research capable of winning multi-million dollar public and private grants. While Figure 4.22 indicates that UTB/TSC working with state the legislature and governors has achieved a combined increase of 129% in state appropriations during the past decade, these funds have served to grow the academic enterprise and have not addressed the institution's research needs.

**Figure 4.22. UTB/TSC State Appropriations 1993-2002**

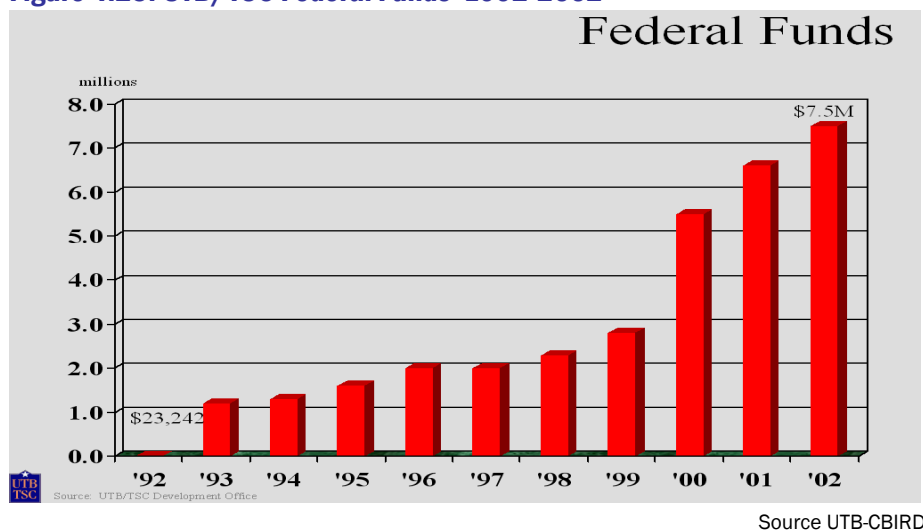




In 1996 UTB received approval for a new degree in Physics which started with the appointment of two faculty members, and has grown to eight. Each faculty member added is the result of aggressive faculty grant writing to provide funds for students to receive stipends to assist the faculty with research and begin their own research careers. Last year, five members of the UTB/TSC physics faculty were chosen to be part of a research grant from the National Science Foundation that allowed them to work with researchers from 10 other universities. Since then this growing group of young physics professors has received a \$5.79 million dollar grant award from NASA to create the Center for Gravitational Wave Astronomy at UTB/TSC.

Figure 4.23 examines the dramatic increase in Federal funds to the UTB/TSC Partnership over the last decade. Major strides have been made in securing Federal funds for special programs and research but more needs to be accomplished.

**Figure 4.23. UTB/TSC Federal Funds 1992-2002**



In Section 5, this report suggests that the South Texas Border Region has potentially globally competitive industry clusters in:

- ⇒ Leading-edge manufacturing and supply chain management linked to the Maquiladoras in Northern Mexico
- ⇒ Transportation and logistics linked to cross-border security and multi-modal efficiencies
- ⇒ Life sciences linked to border healthcare needs and challenges

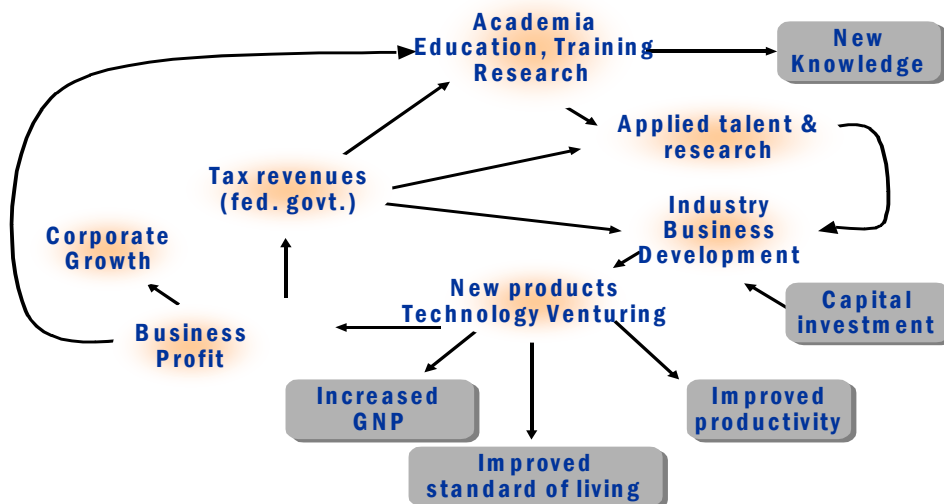
Accelerated development of such industry sectors could “help close the gaps” by providing the tax revenue and corporate gifts to fund quality research and education programs focused on the Border Region’s most critical challenges. These Texas – indeed global – challenges are most pronounced at the international border between Cameron County, Texas and Matamoros, Tamaulipas. A key to such accelerated regional economic development is private and seed investment in quality PhD and MA research programs at UTB/TSC where centers of research excellence could be based on each of the regionally-based and globally unique living/learning laboratories centered on manufacturing/maquiladoras, transportation & logistics, and life sciences each

**If we look to the future education and research needs for Texas in general and the Border Region in particular and we are concerned with “Closing The Gaps” it could be argued that the State needs (and would benefit from) more top tier research universities.**

linked to significant border challenges and accelerated industry cluster development.

Government-industry-academia partnerships for research and education excellence have been central to driving the economies of the United States’ most successful technology growth regions as they have been central to contributing to the national and global excellence of leading U.S. universities. However as noted in the Introduction to this report (Section 1) and binational community survey (Section 3) establishing a viable, unifying vision and action strategies for the Lower Rio Grande Valley has been and continues to be a considerable challenge despite the fact that such “Partnerships for Excellence” are key to leveraging federal, state, and private sector funds to enhance education and research excellence, Figure 4.24.

**Figure 4.24. Government, Industry & University Partnerships for Excellence**



Adapted from Langfitt, Hackney, Fishman & Glowasky (1983), p. 178.

In addition to the items outlined and described above the following are recommended for the productive interface of UTB/TSC with regional economic development:

- ⇒ Have UTB/TSC CBIRD be a catalyst for regional and binational economic development that supports social and economic inclusion leading to shared prosperity
  - Establish a LRGV Center For BiNational Entrepreneurship (CBNE). The Center might consider such a program as the LRGV or Binational Entrepreneur of the Year to foster the visibility of technology entrepreneurship in the cross-border region.
  - Become the State of Texas’ leading “experiential learning laboratory” in cross-border business venturing.
- ⇒ Target UTB/TSC departments and programs whose teaching, research, and service strengths are linked to regional assets and challenges such as:
  - Maquiladoras and World Class Manufacturing.
  - Transportation & Logistics – establish a Binational Transportation & Logistics Research Center (BTLRC).



- Life Sciences – establish centers of research and education excellence that focus on border healthcare needs<sup>1</sup>
- ⇒ Recruit, develop, and retain critical core faculty in areas of emerging areas of regional strength in technology-based businesses, entrepreneurship, and international business.
- Increase budget support for faculty research activities in the form of sabbaticals, reassigned time, and travel funds.
- Work to increase external grants to support research and graduate students.
- ⇒ Establish quality PhD programs linked to regional industry clusters.
- ⇒ Strengthen international programs with other multi- and inter-disciplinary centers throughout the world.
- ⇒ Establish a Visiting Scholars Program in critical border research areas.

### UTB/TSC: At the Crossroads

The Legislative Budget Board’s (LBB) 1998 document entitled *Economic Returns from Higher Education in Texas*, states, “Investing in institutions identified as having service areas that are currently under-served and with high unemployment, low average educational attainment, below average incomes, and have growing student enrollments of more than 50% Black and/or Hispanic students appears an effective and efficient method to generate the greatest economic return.”

The UTB/TSC service area fits the LBB’s description. As Texas funds emerging institutions such as UTB/TSC the entire state moves closer to closing the gaps for students who are most in need of the benefits of education and professional and career development.

**UTB-CBIRD can be one of the catalysts to provide the most essential ingredient to regional economic development: the consolidation and articulation of a regional vision.**

### A UTB-CBIRD PROJECT: THE FALFURRIAS DIALOGUE CLOSING THE GAP: THE REGIONAL CHALLENGE

On June 19, 2002, Ms. Irma Rangel, Texas State Representative District 35 and Chair of the House Higher Education Committee, invited the CEO’s of South Texas regional colleges and universities to participate in a dialogue in the South Texas city of Falfurrias on August 21, 2002. Ms. Rangel’s goal was to elicit feedback and input from the region’s post-secondary educational leadership on the Texas Higher Education Coordinating Board’s Educational Plan, “Closing the Gaps.” Ms. Rangel requested that the staff of UTB’s Cross Border Institute for Regional Development (UTB-CBIRD) assist in the development and facilitation of the one day dialogue.

*Dr. Baltazar Acevedo,  
Executive Director  
UTB-CBIRD, Summer 2002*

<sup>1</sup> See Section 5 for a more complete review of these industries in the Cameron County/Matamoros region.

## RECOMMENDED STRATEGIES FROM THE FALFURRIAS DIALOGUE<sup>1</sup> August 21, 2002

### GOAL 1: Close The Gaps In Participation

The Texas Higher Education Coordinating Board statewide media campaign should reflect the linguistic, social and cultural values and characteristics of each region. In South Texas and the balance of the Border Region the media campaign should be bilingual and should emphasize the availability of financial aid and target parents as an integral part of the education experience at all levels.

The family and business community are essential elements in the success for Closing the Gaps and strategies to involve them should be at the core of any outreach planning and the media campaign, figure 4.25.

**Figure 4.25. Closing the Gaps Requires Shared Vision & Response**



Source: UTB-CBIRD

**GOAL 1:** By 2015, close the gaps in participation rates across Texas to add 500,000 more students.

South Texas is the historical anchor for this great state and its many assets are forever linked to the shared future that all are vested in as Texans.

<sup>1</sup> The Falfurrias Dialogue was the first of what is anticipated to be an ongoing series of interactions among the leadership of the South Texas regional colleges and universities. This event was, by all accounts, the first time that these colleagues and peers had met to discuss and share their perspectives and recommendations for how they can collectively affect the future of the region and the state.

Attendees included: Dr. Francisco G. Cigarroa, President, The University of Texas Health Science Center at San Antonio; Dr. Ramon H. Dovalina, President, Laredo Community College; Dr. Robert R. Furgason, President, Texas A&M University-Corpus Christi; Dr. Juliet V. Garcia, President, The University of Texas at Brownsville & Texas Southmost College; Dr. Rumuldo Juarez, President, Texas A&M University-Kingsville; Dr. Ray M. Keck III, President, Texas A&M International University, Laredo; Dr. Gilbert Leal, President, Texas State Technical College, Harlingen; Dr. Joseph McCormick, Dean, The University of Texas Health Science Center, School of Public Health at The University of Texas at Brownsville and Texas Southmost College; Dr. Kenneth McLeroy, Dean, The School of Rural Public Health at McAllen, Texas A&M University System; Dr. Miguel Nevarez, President, The University of Texas-Pan American, Edinburg; Dr. Santiago Silva, Vice President, Student Services & Development representing Dr. Shirley Reed, President, South Texas Community College, McAllen; Dr. Gustavo R. Valadez Ortiz, President, Del Mar College, Corpus Christi; Dr. Leonel Vela, Dean, The University of Texas Health Science Center's Regional Academic Health Center at Harlingen.

### Numeric Goals

Participation goals should factor in the acute attrition rates in South Texas that diminishes the available pool of students that is able or willing to enroll in a post-secondary institution. The Texas Coordinating Board and the Texas Education Agency should fund a joint research effort to determine the root causes of both public school and post-secondary attrition. There must be realistic definition to guide integrated and collaborative efforts by both public schools and post-secondary institutions to increase the number of graduates that enroll and succeed in a college or university.

The “Closing the Gaps” numeric goals should be revised to include the numbers of non-traditional students that receive training and educational development at regional community colleges and the Texas State Technical Colleges. This will increase their ability to become fully employable members of the community and part of the region’s economic mainstream.

### Family/Business Involvement

PTO’s (Parent Teachers Organizations) in public schools should be given a significant role in the recruitment strategy for “Closing the Gaps.” Every effort should be made to have these organizations work with regional institutions and to have them meet on-campus as part of outreach initiatives. Family and business communities are essential elements in the success for “Closing the Gaps” and strategies to involve them need to be at the core of any outreach planning.

### Funding Goals

High school seniors need to fill out financial aid applications during the fall semester of their senior year as part of their individual development plan with the high school counseling office. This process would provide these students with options if they decide to pursue a post-secondary course of study.

All institutions should make the processes for registration and applying for financial aid less bureaucratic and more customer [student] friendly.

The Texas Second Step Grant Program should be carefully reviewed and implemented as a core of the recruitment and financial aid strategy.

Consideration should be given to waiving all tuition and fees for entering community college students since the majority of proposed “Closing the Gaps” ethnic enrollments are heavily clustered at this level. This action would result in both higher participation and retention rates for the targeted populations.

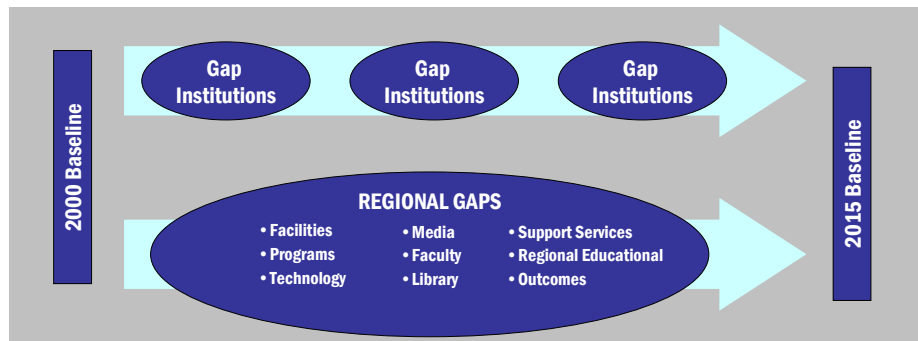
### Capacity Building

The Recommended High School Program should implement a stronger emphasis on reading. This initiative should be anchored in the P-K to Middle School tiers prior to high school entry. For a majority of students, reading shortfalls in public schools is a major impediment to success in the freshman year of the collegiate experience.

Texas should develop and fund regional capacity building collaborative sites at selected colleges and universities to provide continuous capacity building training for faculty and staff, figure 4.26.

**Through a federally funded program, GEAR UP, I meet monthly with the five superintendents from our service area to discuss everything from their need for AP teachers to the number of students that are taking and passing 8<sup>th</sup> grade algebra. We believe these efforts will assist in greatly improving the preparedness and number in the pool of students that are reaching our door.**

**Juliet V. Garcia, Ph.D.  
President, UTB/TSC  
to the House Appropriations  
Subcommittee on Education  
February 19, 2003**

**Figure 4.26. Closing the Gaps: Gap Institutions Model**

Source: UTB-CBIRD

**GOAL 2: Close The Gaps In Success****Funding Goals**

There are important needs to:

- ⇒ Expand collaborations and cross-pollination efforts among federally funded student support services in South Texas such as TRIO, GearUp, Title V.
- ⇒ Develop a state set aside fund to support the post-federal funding transition of programs such as TRIO, GearUp, and Title V so that they may become an ongoing component of higher education institutions.
- ⇒ Provide funding to encourage and support the extra-curricular participation of college and university faculty and staff in Pre-K to 16 outreach initiatives in public schools.
- ⇒ Provide supplemental funding to those regions that carry the majority of the effort to increase the number of under-represented populations. Demographic data indicate that South Texas post-secondary institutions will be responsible for meeting at least 70% of the projected enrollment of Hispanic students to meet the “Closing the Gaps” goals. The same holds true for those urban institutions that will attend to the targeted goals for African-American students.

Regional post-secondary institutions that are developing new instructional and training programs should receive capacity building funding that overlaps the current biennium funding cycle.

**Capacity Building**

There should be a “College Success Orientation Course” available for all entering freshmen in Texas to help socialize them to the higher education experience. Many students drop out because they fail to access the many support and academic resources that can make a difference in their academic development. This course should be on the common course manual and approved for funding by the Texas Coordinating Board.

An incentive program should be considered that would reward regional community colleges and senior level institutions with supplemental funds for attaining targeted outcomes in transfer and retention rates of at-risk students

**GOAL 2:** By 2015, increase by 50% the number of degrees, certificates and other identifiable student successes from high quality programs.

There is a need to develop more masters and doctoral level university and community college instructional certification programs in the South Texas region. Regional community colleges and state technical colleges do not have sufficient graduate training programs to expand the capacity of their faculty and staff to respond to a growing student population that has many special needs.

### GOAL 3: Close The Gaps In Research

Research should be an essential element of all Texas institutions of higher education regardless of their ranking on different research tiers. South Texas and other regional colleges and universities should not be isolated and insulated from the practice of research due to the lack of research funds that have been allocated to these institutions in the past.

#### Capacity Building

A research infrastructure is a critical component of a regional post-secondary institution's role in the development of local economies and sufficient funds should be allocated to implement an achievable research agenda. Among the industries that are impacted by research in the South Texas region are biotechnology, medical technology, healthcare, manufacturing, environmental sciences, transportation & logistics, and cross-border economic development as well as those that attend to the needs of the education of the region's school population.

Research and teaching are part of the training and preparation of certified master and doctoral level professionals to meet the needs of the expanding South Texas regional economy. The development of more stand alone as well as collaborative graduate, masters and doctoral, programs should be funded in South Texas colleges and universities to meet emerging needs for certified professionals to work in the higher education institutions throughout the state.

#### Funding

Research and development collaborations between senior institutions and community and technical colleges should be funded for the development, piloting and validation of instructional and training models and curriculum to address the needs of unprepared and under-represented populations in the South Texas border region.

Research funds should be allocated to the newly created South Texas health and medical training centers as quality medical education is not feasible without a strong research component.

Research institutes along the Texas Border should be allocated state funds to address the region's emerging environmental, infrastructure, labor, economy, technology, housing, educational and health needs. There is a paucity of research on the emerging challenges and opportunities within South Texas and on the border with Mexico.

**GOAL 3: By 2015, increase the level of federal science and engineering research funding to Texas institutions by 50% to \$1.3 billion.**

**Our research production has increased dramatically over the past few years. This fall we were one of only four universities nationally that received \$7.9 million from NASA to establish a Center for Gravitational Wave Analysis that will produce science teachers and researchers.**

**Juliet V. Garcia, Ph.D.  
President, UTB/TSC  
to the House Appropriations  
Subcommittee on Education  
February 19, 2003**

#### GOAL 4: Close The Gaps In Excellence

Excellence is the outcome of a continuous development process that begins in the public schools. All colleges and universities need to be fully vested in their regional Pre-K to high school programs.

Federal support services [Gear-Up, TRIO, Title V] that target at risk and under-represented students should be funded by the state during the last federal cycle so that a plan is put into place that results in a sustainable college and university based program.

Texas should not establish any more under-funded institutions that are facility rich but lack operational funds to serve their constituencies.

Excellence can be achieved only if the other three “Closing the Gaps” goals are successfully attained.

#### Summary

“Closing the Gaps: The Texas Higher Education Plan” presents a blueprint for the future of our Texas’ human capital. It is a plan that should evolve as indicated by the clarifications and recommendations of the Falfurrias Dialogue, as will the capacity of Texas education and training institutions as they respond to the demands of the state’s diverse populations, the 21<sup>st</sup> Century global economy, and the limited resources for meeting identified and unforeseen challenges and opportunities. The perspectives and recommendations offered here should be considered a reflection of the region’s leadership’s commitment to the continuing development of a shared vision for accelerating regional economic, social, educational, and cultural development, Figure. 4.26.

**GOAL 4: By 2015, substantially increase the number of nationally recognized programs or services at colleges and universities in Texas.**

### Changing Perceptions of the Lower Rio Grande Valley Chess Champions from Cameron County

The City of Brownsville has an "epidemic" of chess going on... It all became visible when Morningside Elementary School's Chess Team started winning. This is a disadvantaged school by every measure, where the kids' parents are fortunate to graduate from high school. They are called the "Green Shirts," because that's the school color, and their elementary school teachers are their coaches. Their chess team – kids third grade and under – won the Brownsville City Championship. People were in awe.

They went on to win the Regional Championship, then the Texas State Championship, which meant they went to Nationals (these kids had never been on an airplane before.) They lost the National Championship by half a point to New York's Hunter College Elementary School (a school that only accepts the top three percent of the state's children) whose coach had also coached Bobbie Fischer. The press asked who coached the "Green Shirts," and the kids said, "Well, one day it's Armando, and sometimes it's Jose..."

At that point, people thought this was a one-time thing: an anomaly. But now the Brownsville Texas Chess Team is regularly one of the top five teams in national chess tournaments. Last year, the newly formed UTB/TSC Chess Team went to State and took third place.

What's going on here? I think it is linked to being bilingual from a very young age; it stimulates the brain. Learning chess is just like a third language. Perhaps these skills are also transferable to learning science and math – who knows? But it is interesting to consider in light of all the young bilingual students and talent in the Valley.

*Juliet Garcia,  
President UTB/TSC  
Interview, August 28, 2002*



# SECTION 5

## ⇒ ECONOMIC DEVELOPMENT

This section provides an overview of Cameron County and Matamoros economies as revealed by local and national employment, wage trends, industry cluster analyses, interview data, and industry focus groups. An analysis of these data allows for the identification of strengths and opportunities in the regional economy as well as the recognition of weaknesses and challenges. This section is structured as follows:

- ⇒ Sub-section A: Overview of Cameron County Industry Clusters
  - Cluster & Shift-Share Analysis
  - Wage Analysis by Cluster
  - Income Migration Analysis
- ⇒ Sub-section B: Industry Specific Overviews
  - Manufacturing and Maquiladoras
  - Transportation Services and Logistics & Distribution
  - Health Services & Life Sciences
- ⇒ Sub-section C: Community Networks & Information Technologies
  - Building Community Networks
  - Technology Company Baseline
  - Case Profiles of Technology Entrepreneurship and Digital Networks

### Sub-Section A: OVERVIEW OF CAMERON COUNTY INDUSTRY CLUSTERS

Table 5.1 provides an overview Cameron County's industry including:

- ⇒ Identified clusters
- ⇒ Shift-share classification: Asset, Prospect, Limitation, and Challenge
- ⇒ Numbers of employees and establishments by cluster for Cameron County and Texas
- ⇒ Location quotient (LQ) for each cluster

Relative wages are expressed as percentage of average annual wage in Cameron County. The shift-share classification is as follows:

- ⇒ **ASSET** – Fast regional growth in a quickly growing national sector.
- ⇒ **PROSPECT** – Slow regional growth in a quickly growing national sector
- ⇒ **CHALLENGE** – Fast regional sector growth in a nationally declining or lagging sector.
- ⇒ **LIMITATION** – Slow regional growth in a nationally declining or lagging sector.

To assess the strength of a cluster in a regional economy, the location ratios are calculated by comparing the cluster's share of total local employment to the cluster's national share. This quotient will yield a value generally between 0.00 and 2.00, where 1.00 demonstrates an equal share percentage between the local and national economies. Cluster location ratios greater than 2.00 indicate a strong cluster agglomeration, while those less than 0.50 indicate relatively weak clusters. (Please refer to Appendices C and D for a more in depth description of Civic Economics cluster analysis, location quotient, and shift-share methodologies as well as sources of data.)



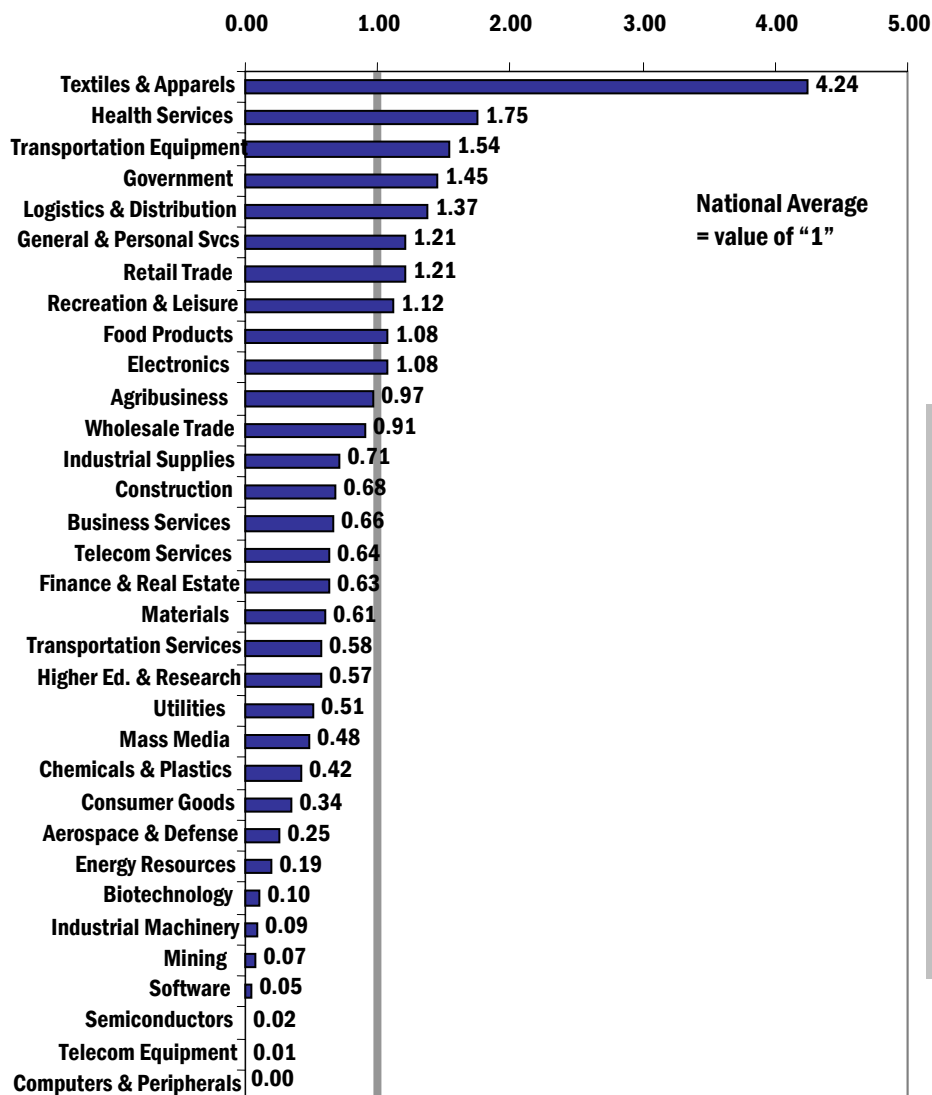
**Table 5. 1. Cameron County and Texas Cluster Employment, 2000<sup>1</sup>**

Cluster Name	Shift-Share	CAMERON COUNTY				TEXAS		
		Jobs	Firms	LQ	Wage Share*	Jobs	Firms	LQ
Textiles & Apparels	<i>Challenge</i>	4,398	30	4.24	91%	53,198	1,499	0.60
Health Services	<i>Challenge</i>	15,845	450	1.75	108%	738,755	34,985	0.95
Transportation Equipment	<i>Challenge</i>	1,954	31	1.54	175%	40,176	795	0.37
Government	<i>Challenge</i>	25,361	4	1.45	NA	1,578,255	502	1.05
Logistics & Distribution	<i>Asset</i>	3,338	287	1.37	122%	244,134	14,051	1.17
General & Personal Svcs	<i>Asset</i>	5,022	644	1.21	66%	344,896	54,971	0.97
Retail Trade	<i>Limitation</i>	13,933	936	1.12	84%	1,073,868	63,915	1.00
Recreation & Leisure	<i>Asset</i>	10,841	600	1.08	54%	844,380	38,397	0.98
Food Products	<i>Limitation</i>	1,549	42	1.08	115%	99,958	1,508	0.81
Electronics	<i>Challenge</i>	693	14	0.97	170%	44,371	870	0.73
Agribusiness	<i>Prospect</i>	1,522	289	0.91	78%	126,000	15,725	0.87
Wholesale Trade	<i>Limitation</i>	4,100	422	0.71	144%	546,327	43,598	1.10
Industrial Supplies	<i>Challenge</i>	1,139	51	0.68	133%	110,676	4,397	0.78
Construction	<i>Asset</i>	4,426	449	0.66	102%	701,855	47,175	1.21
Business Services	<i>Asset</i>	5,971	503	0.64	97%	803,595	53,137	1.00
Telecom Services	<i>Prospect</i>	731	39	0.63	179%	135,329	3,451	1.36
Finance & Real Estate	<i>Prospect</i>	3,736	591	0.61	127%	507,093	45,730	0.97
Materials	<i>Limitation</i>	1,265	40	0.58	136%	149,549	4,167	0.79
Transportation Services	<i>Asset</i>	609	36	0.57	129%	105,726	2,643	1.15
Higher Ed. & Research	<i>Prospect</i>	2,723	24	0.51	NA	335,556	2,852	0.73
Utilities	<i>Limitation</i>	337	20	0.48	238%	73,576	2,655	1.22
Mass Media	<i>Challenge</i>	837	59	0.42	126%	121,157	6,974	0.70
Chemicals & Plastics	<i>Limitation</i>	526	24	0.34	132%	157,744	2,507	1.20
Consumer Goods	<i>Challenge</i>	242	16	0.25	96%	51,223	1,822	0.62
Aerospace & Defense	<i>Limitation</i>	116	3	0.19	347%	54,817	324	1.04
Energy Resources	<i>Challenge</i>	34	6	0.10	197%	171,604	7,754	5.67
Biotechnology	<i>Challenge</i>	61	4	0.09	117%	33,493	793	0.55
Industrial Machinery	<i>Challenge</i>	36	4	0.07	119%	28,570	505	0.63
Mining	<i>Challenge</i>	6	2	0.05	109%	6,555	329	0.61
Software	<i>Prospect</i>	36	12	0.02	172%	150,322	10,358	1.02
Semiconductors	<i>NA</i>	4	1	0.02	122%	48,567	159	2.37
Telecom Equipment	<i>NA</i>	3	1	0.01	93%	36,753	265	1.57
Computers & Peripherals	<i>NA</i>	0	0	0.00	NA	35,757	139	1.42
<b>TOTAL EMPLOYMENT</b>		<b>111,467</b>	<b>5,665</b>		<b>\$19,500</b>	<b>9,562,882</b>	<b>473,705</b>	

Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

Figure 5.1 provides a snapshot of the strength of clusters in Cameron County's economy, ranked by location quotient (**not** by total number of employees or businesses). For example, this graph demonstrates that the Cameron County workforce in 2000 was more than four times as dependent upon the Textile & Apparel manufacturing than was the nation as a whole. Listed in rank order, the share of the local workforce was also higher than the national average for Health Services, Transportation Equipment, Government, Logistics & Distribution, General & Personal Services, and Retail Trade. The share of the local workforce employed in Recreation & Leisure, Food Products, and Electronics is near the national average.

<sup>1</sup> 2000 is the most recent year for which reliable data is available on these statistics.

**Figure 5. 1. Cameron County, Location Quotient – All Clusters, 2000**

Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

In announcing six plant closures in Southern U.S., Levi Strauss said it was becoming a “marketing company,” and that the future production... would be by contract manufacturers... that would take place in 50 countries, including Bangladesh and China [but not including the United States].

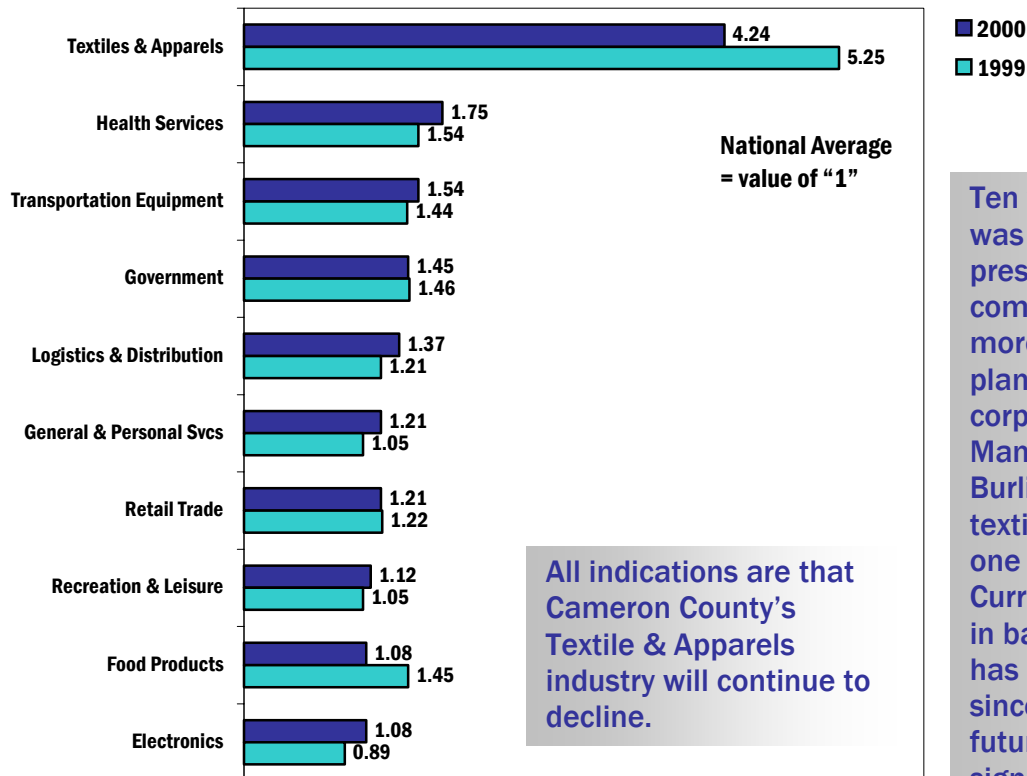
Fred Dickey  
Los Angeles Times<sup>1</sup>

Figures 5.1 and 5.2 show that the most important cluster (by Location Quotient) in Cameron County’s economy has been **Textiles & Apparels** manufacturing. This industry, once an example of America’s technological leadership, has evolved into a fully mature industry in which labor costs are the primary location criteria. The quest for low-wage labor that once drove the industry from the Northeast to the South and eventually into the Rio Grande Valley is now driving it to Asia (primarily China) and to Latin America. In 2000, Textiles & Apparels registered the highest location quotient of any cluster in Cameron County; however the 4,400 workers employed in 2000 is a 22% decline from 1999, Figure 5.2. Major companies have closed their Cameron County operations including Fruit of the Loom (1,000 workers), Allison Manufacturing, William Carter, VF Imagewear, Haggar, and Levi Strauss (630 workers). While Cameron County fared better than the rest of the nation in this industry, regional employment steadily declined from 1995 to 2000. The average annual wage for

<sup>1</sup>Fred Dickey, Los Angeles Times quoted in “Workers Hang On By a Thread,” *Austin American Statesman*, January 12, 2003, p. J1-6.

Cameron County workers in Textiles & Apparels is 91% the average annual wage for all private employment in the country, Table 5.1.

**Figure 5. 2. Top Cluster Location Quotient Change, 1995 – 2000**



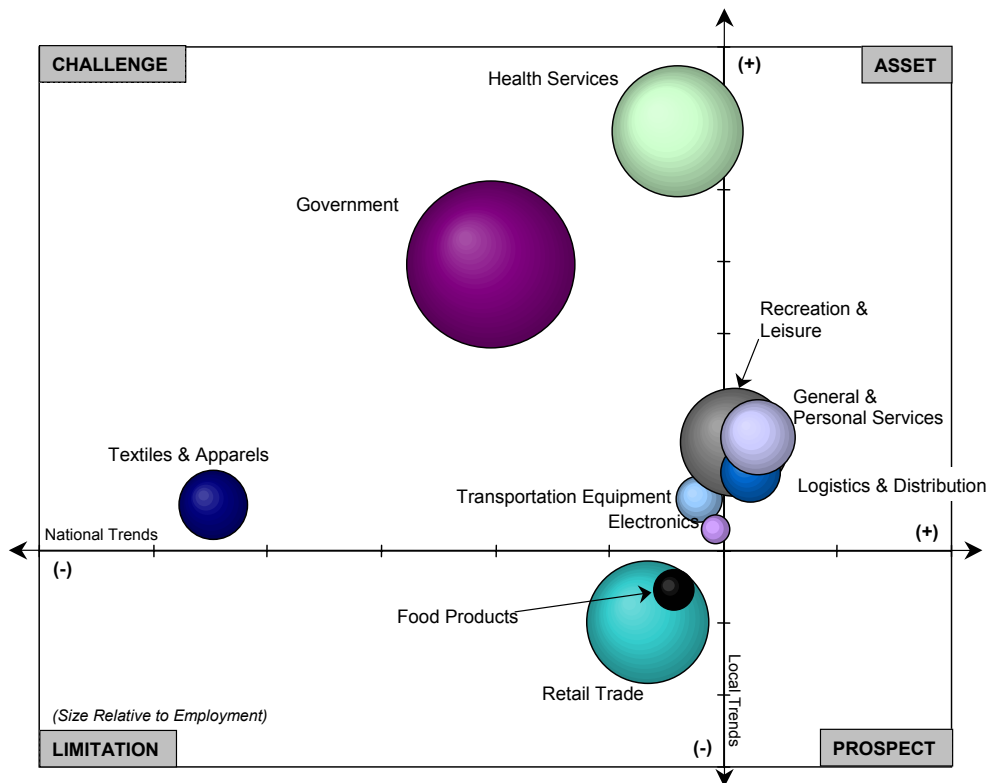
Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

**Health Services** recorded Cameron County’s second highest LQ in 2000 with nearly 16,000 local workers in area medical offices and facilities, an increase of over 4,000 employees from 1995, which was more growth than in any other cluster. However, the region’s 10.5% growth rate was slower than the overall national growth rate of 12.3%, Figure 5.3. Several Cameron County medical centers are counted among the region’s largest employers, including Valley Baptist Medical Center, Valley Regional Medical Center, and Brownsville Medical Center. The average annual wage in Health Services in 2000 slightly exceeded the average wage rate for the county’s private sector, Table 5.1.

The Health Services sector is expected to continue to grow nationally and regionally in the coming years, the challenge will be for Cameron County to leverage its strong binational healthcare industry to include more value-added services, centers of excellence, and perhaps target certain life science sectors. While Cameron County currently serves as the healthcare center for the binational metropolitan area, increased strength for this cluster will depend upon: developing competitive medical research and education centers targeted to specific niche areas and increased numbers of paying customers. (Please refer to the following Health Services & Life Sciences Industry Overview, page 115.)

Ten years ago, Burlington was the biggest and most prestigious textile company on earth with more than 140 U.S. plants, a fleet of corporate jets, and a Manhattan skyscraper. Burlington was the first textile company to reach one Billion in sales. Currently the company is in bankruptcy court and has not made a profit since 1998. For the future, Burlington has signed with 14 Asian mills in Japan, China, Taiwan, and South Korea. As stated by John Englar, Senior VP at Burlington Industries, Inc., “Closing US plants and focusing on overseas production has cost American jobs but it is the only hope US companies have to survive.”

Tony Mecia  
 “America’s Manufacturers  
 Desperately Need New Material,  
 and Nanotechnology’s About to  
 Provide It.,” Knight Ridder  
 Newspapers, *Austin American  
 Statesman*,  
 January 27, 2003, p. D1-6

**Figure 5. 3. Cameron County Shift-Share for Strongest Clusters<sup>1</sup>**

Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

The **Transportation Equipment** cluster is Cameron County's third strongest concentration, employing nearly 2,000 workers. From 1995 to 2000, employment in this cluster grew by nearly 30%, adding 440 jobs. For example, AMFELS Inc., a maker of offshore drilling rigs, employs approximately 650 workers, and Trico Technologies, an OEM supplier of windshield wiper systems, employs approximately 550 workers in Brownsville. In addition, Trico operates a facility in Matamoros as does Delphi Automotive. In 2000, Cameron County's Transportation Equipment workers earned 175% the wages of their neighbors, making it one of the best paying clusters in the county, Table 5.1. Cameron County's Transportation Equipment cluster depends, in large part, upon the presence of Maquiladoras in Matamoros and Tamaulipas.

In 2000, **Logistics & Distribution**, the transportation of products, employed approximately 3,300 local workers. Cameron County's geographic location, the Port of Brownsville, and border traffic across four land bridges supports this cluster. Between 1995 and 2000, 950 jobs were added to this cluster that pays wages 22% higher than the average annual wage for all private sector employees in the county, Table 5.1. This regional cluster is challenged by border crossings

<sup>1</sup> Shift-share analysis highlights potential strengths and weaknesses of a region's employment structure based on the shifts in employment levels over time. By looking at the performance of industries at both the national and local levels, one can imply how successful a region has been in ensuring growth in the industries that are also growing (or not growing) at the national level. This analysis can be beneficial by highlighting areas in which the local economy has been unable to keep pace with national trends as well as indicate industries that can be prospects for future growth see Appendix D.

in Laredo and McAllen, both of which have more direct connections to the Mexican interior and Monterrey. The local share of this industry depends strongly on the strength of Matamoros and Tamaulipas manufacturing/maquiladora industries and cross-border traffic. Please refer to the following Industry Overview on Transportation Services and Logistics & Distribution following, page 101.

Though Cameron County still registers a slightly above average LQ in **Food Products**, the area's competitive advantage weakened considerably during the prior five years. In 1995, Cameron County had 1.49 LQ; but by 2000, Food Products' LQ had fallen to 1.08 as approximately 275 jobs were lost to this cluster. In 2000, Food Products workers earned 15% more than other private sector wage earners in Cameron County, Table 5.1.

Among technology-based manufacturing clusters, **Electronics** recorded Cameron County's strongest LQ in 2000 (.97). While employment in this cluster grew 4.4% from 1995 through 2000, adding approximately 175 jobs, the region did not keep pace with the strong national growth rate of 12.3%. An example of a local company in this cluster is Q.C. Onics, a maker of wire harness & electrical & electronic assemblies, a supplier to the auto industry that employs 280 area workers. Electronics wages were 70% higher in Cameron County than other local private sector industries, Table 5.1. Expansion of this sector depends on the ability to provide a workforce trained and educated for higher value jobs. As of 2002, the electronics sector is not the national and regional growth industry that it was in the 1990's; accordingly it is important to target emerging areas of opportunity where Cameron County and the border region have distinct competitive advantages such as Transportation Services and Logistics & Distribution.

Employment in Cameron County **Agribusiness** fell 15% from 1995 to approximately 1,500 jobs in 2000; however, there is a substantial amount of informal employment in this sector. Agribusiness wages in Cameron County are 22% below average area wages for all private sector workers and employed approximately 250 fewer people than would be expected based on national trends, Table 5.1. Lower Rio Grande Valley agriculture is currently challenged by a long-term drought and water-sharing agreements with Mexico. Sustaining a viable agribusiness in the Rio Grande Valley will require creative solutions and compromises between urban and rural water interests and would also benefit from advanced technologies.

**Business Services** is an area of strong growth for Cameron County as the region more than doubled its employees in this cluster from 1995 through 2000. Indeed, the region added over 2,100 more jobs than the industry's national trends would otherwise suggest. The central question is whether the regional economy is providing key services locally (and becoming more self-sustaining) rather than importing talent. A more complete discussion of Income Migration Analysis begins on page 86.

In 2000, Cameron County **Telecom Services** employed approximately 730 area workers in large part due to the 1999 opening of a call center by Convergys, a provider of outsourced services to the telecommunications and Internet services industries, that initially employed 400 workers. Since then, the company's operations have expanded and employ approximately 950 workers as of 2002. Cameron County's Telecom Services workers earn 179% the wages of other local workers in the private sector, making it one of the best paying clusters in the

county, Table 5.1. However, as of 2002 call centers and the telecommunications industry in general are experiencing a dramatic downturn that includes extensive layoffs and corporate bankruptcies as envisioned growth has failed to materialize.

### At the Crossroads

The strength of at least two of Cameron County’s clusters, Transportation Equipment, and Logistics & Distribution (and indirectly others such as Health Services, Retail Trade, Recreation & Leisure, and Electronics) are closely linked to the strength of maquiladoras located in Matamoros and Tamaulipas. Therefore it is of major concern that many maquiladoras have moved from Mexico to China – these are primarily Mexico’s lowest wage and lowest value-added maquila operations. Stronger more synergistic relations between U.S. firms and Mexican operations are illustrated in the automotive industry with components flowing across the border between related facilities. A more complete industry overview of Manufacturing and Maquiladora begins on page 88.

Also of concern is the reality that Logistics & Distribution along the border is becoming increasingly affected by national and regional security concerns that will impart competition across several points of entry. Border crossings are becoming increasingly efficient and streamlined. Earlier inefficiencies that have benefited some U.S. border communities, like Cameron County, will be eliminated over time. In the future, goods will stop in Cameron County only when there is value to be added. Distribution of trucked goods will take place further north along the I-10 corridor. A more complete industry overview of Transportation Services and Logistics & Distribution begins on page 101.

Cameron County has many Health Service providers resulting in a strong cluster LQ with relatively high wages. However, continued expansion in this sector will require more value-added services and the expansion of the paying customer base – those with reliable employment. Local educational institutions also have a key role to play, as the nation endures a general nursing shortages as well as shortages of rural and bilingual doctors. A more complete industry overview of Health Services & Life Sciences begins on page 115.

### Wage Analysis by Cluster

Economic development strategy frequently focuses on job creation, measured as a total number of new positions, without regard to the wages earned; however, such a focus can lead to *an expanding economy without expanding opportunity*. Low wage or part-time employment is, of course, an essential component of any economy, providing entry-level and flexible opportunities for the young and for those with family or other commitments. However, as a general rule, raising local wage rates needs to be considered a primary goal of any regional economic development strategy.<sup>1</sup>

<sup>1</sup> Using the data provided by IMPLAN, Civic Economics analyzed wage information by cluster and by individual SIC. These analyses were performed only for private-sector employment. Two primary wage comparisons are emphasized:

The first compares the average annual wage paid in each cluster in the County to the overall average wage for the County. This analysis, in combination with location quotients and shift-share, provides information required for the identification of target clusters for recruitment and retention efforts. By developing higher wage sectors, economic opportunity and community prosperity are enhanced.

In the second, the average annual wage paid in each cluster in the County is compared to the average annual wage for that cluster for the State of Texas. This analysis identifies whether the



The average annual wage in Cameron County in 2000 was approximately \$20,000, while for the State of Texas this figure was in excess of \$35,000. Three factors account for most of this disparity.

- ⇒ Cost of living drives wages up in the larger urban markets of the state; these urban areas increase the average without creating upward pressure on wages in less developed labor markets of the state.
- ⇒ Several Cameron County clusters are concentrated in lower value-added activities.
- ⇒ Some clusters, most notably Construction, face downward pressure on wages due to the available labor in the informal economy.

Table 5.2 compares average annual wages in Cameron County, as of 2000, for each cluster to the average annual local wage, and to the average annual Texas wage for each cluster.

The two clusters at the low end (less than 75%) of the local wage structure (**General & Personal Services** and **Recreation & Leisure**) employ a total of 16,000 workers, approximately the same as the employment of the 14 clusters at the high end of the wage scale (125% or greater). This average rate of low wages may be explained in part by the substantial number of part-time laborers in General & Personal Services and Recreation & Leisure. Indeed, wage rates in these clusters are roughly in line with the generalized wage differential between the County and the State. However, 20% more of Cameron County's workforce is engaged in these two low-wage clusters than is the case statewide.

Only one cluster in Cameron County, **Aerospace & Defense**, provides average wages in excess of the Texas average. However, this cluster has only about three regionally-based establishments with small and declining employment. Also important to consider are the growing clusters in Cameron County that pay less than 60% of the state average such as **Business Services and Finance & Real Estate**. For example, these clusters are generally associated with larger urban economies, providing a wide range of services to an active private sector. With the region's multinational manufacturing base, opportunities may be found to expand these clusters, while also increasing local average wages.

**It is estimated by the INS that in October 1996, Texas was home to 700,000 illegal immigrants, which is 14% of the national total. Given the projected annual increase, the total number of illegal immigrants in Texas today is probably around 1,000,000. One million is a large number of people to insert into an “informal” or cash economy. The current workforce in Texas’ “formal” economy is just over 10 million people...**

*Statistics for projections on illegal immigrants:  
U.S. Dept. INS  
“Estimates, Fiscal Year, 2000”*

*Statistics on TX workforce:  
Texas Workforce Commission  
December 2002*

County has developed high value added components of the cluster. The raw data do not account for the lower cost of living in Cameron County, so Civic Economics has classified high and low wage clusters based on 60% and 75% of Texas wages. The actual average annual wage in Cameron County in 2000 was approximately 60% of the statewide average.

It should be noted that this wage data does not, and cannot, account for wages paid in what is known as the informal economy. The informal economy, a reality for thousands of Texans, is made up of those whose earnings are not reported to government agencies. For many, particularly those with limited job skills or undocumented immigration status, the cash economy is the only alternative. For others, a cash economy is chosen in order to skirt taxation or to evade law enforcement. In neither case are their earnings reflected in this data.

**Table 5.2. Cameron County Cluster Wages, 2000**

Cameron County Cluster Wages, Relative to Average Local Wage, 2000					
125% or Greater of Average Cluster		75% - 125% of Average Cluster		Less than 75% of Average Cluster	
	#Emp.		#Emp.		#Emp.
Aerospace & Defense	116	Above Average Wages		General & Personal Services	5,022
Utilities	337	Semi Conductors	4	Recreation & Leisure	10,841
Energy Resources	34	Logistics & Distribution	3,338		
Telecom Services	731	Industrial Machinery	36		
Transportation Equip.	1,954	Biotechnology	61		
Software	36	Food Products	1,549		
Electronics	693	Mining	6		
Wholesale Trade	4,100	Health Services	15,845		
Materials	1,265	Construction	4,426		
Industrial Supplies	1,139	Below Average Wages			
Chemicals & Plastics	526	Business Services	5,971		
Transportation Services	609	Consumer Goods	242		
Finance & Real Estate	3,736	Telecom Equipment	3		
Mass Media	837	Textiles & Apparels	4,398		
		Retail Trade	13,933		
		Agribusiness	1,522		
Cameron County Cluster Wages, Relative to Average Texas Wages, 2000					
75% or Greater of Average Cluster		60% - 75% of Average Cluster		Less than 60% of Average Cluster	
	#Emp.		#Emp.		#Emp.
Aerospace & Defense	116	Recreation & Leisure	10,841	Business Services	5,971
Transportation Equip.	1,954	Logistics & Distribution	3,338	Transportation Services	609
Textiles & Apparels	4,398	Industrial Supplies	1,139	Mining	6
Materials	1,265	Electronics	693	Wholesale Trade	4,100
Agribusiness	1,522	Food Products	1,549	Finance & Real Estate	3,736
Retail Trade	13,933	Health Services	15,845	Utilities	337
		Consumer Goods	242	Construction	4,426
		General & Personal Services	5,022	Energy Resources	34
		Telecom Services	731	Industrial Machinery	36
		Nonclassifiable	73	Chemicals & Plastics	526
		Mass Media	837	Software	36
				Biotechnology	61
				Semiconductors	4
				Telecom Equipment	3

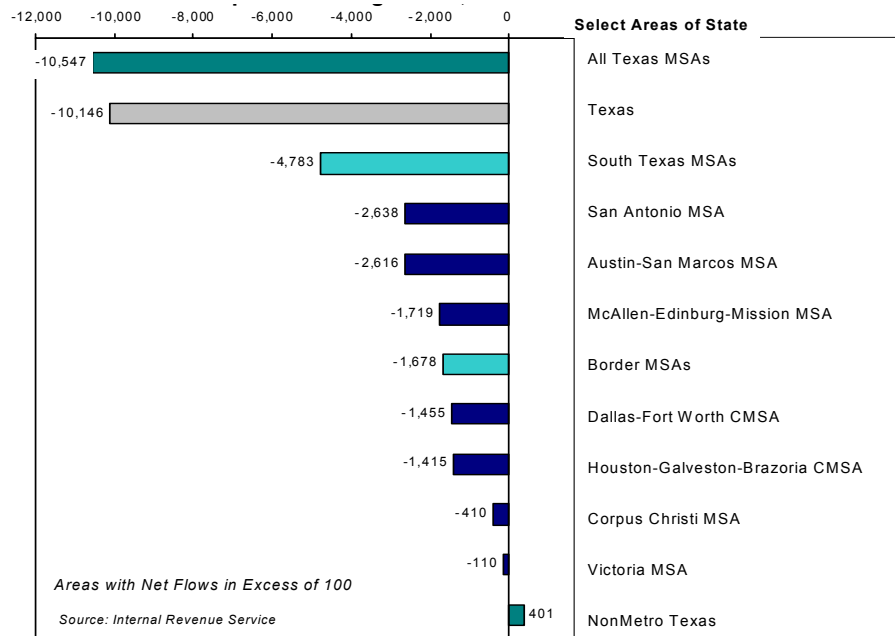
Source: IMPLAN



## Income Migration Analysis<sup>1</sup>

**Population migration** for Cameron County reflects the total incoming minus the total outgoing of tax-paying individuals over 1992 – 2001, Figure 5.4. **Income migration** reflects the net gain or loss of annual household income, using 2000 values, Figure 5.5. For example, the net loss of population in Figure 5.4 indicates that more tax paying people moved from Cameron County to other Texas MSA than moved to Cameron County and this net loss of income indicates the total household income of the out-migrants was greater than that of the in-migrants (Figure 5.5).

**Figure 5. 4. Cameron County Population Migration 1992 – 2000**



**Cameron County attracts low-wage, often low-skill labor that the region trains and then exports north while the region often imports high-wage, high-skill labor.**

During 1992 – 2000 Cameron County lost 10,547 tax paying citizens to all Texas MSAs including 2,638 to San Antonio, 2,616 to Austin-San Marcos, and 1,719 to McAllen-Edinburg-Mission. In terms of total annual income generated by these migrants Cameron County lost about \$36 million dollars to Austin-San Marcos, \$32 million to San Antonio, and \$27 million to McAllen-Edinburg-Mission.

Out-migration from Cameron County to the rest of Texas accounted for the loss of over 10,146 residents from 1992-2000. However, this out-migration was more

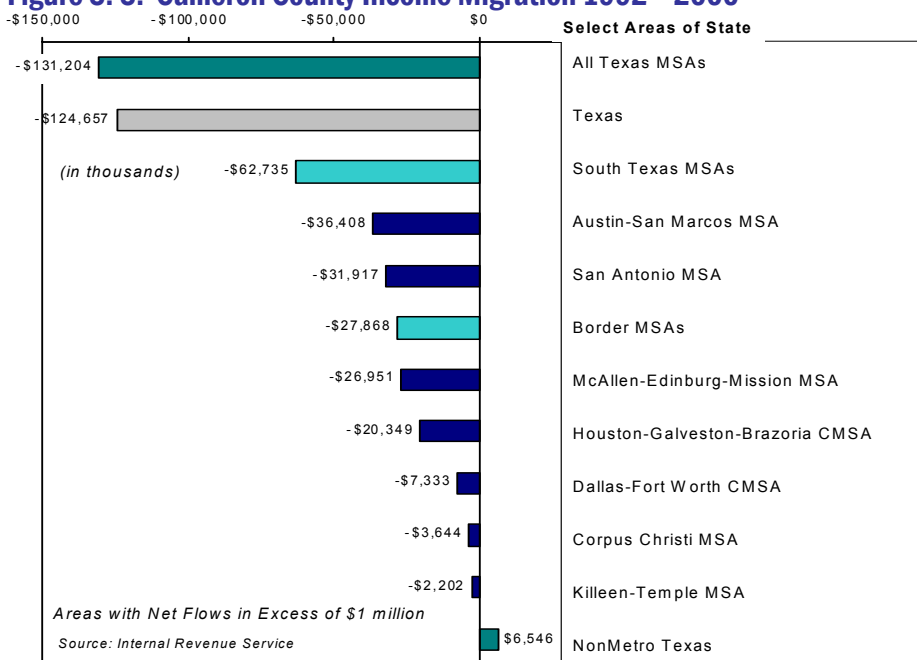
<sup>1</sup> Each year as Internal Revenue Service returns are processed, computers record the migration patterns of every filing American. Data recorded includes the total annual income of the filer, the number of dependent or exempt individuals in the household, and the county of residence at the time of filing. Often overlooked, this rich source of data provides a reliable indicator of the movement of people and income within the United States on an annual basis. Census data provides a more accurate accounting of the movement of individuals, but it is updated only every ten years and provides only estimates of the income associated with those migrants.

For this analysis of Cameron County income migration, Civic Economics did not directly collect and manipulate IRS data. Rather the analysis is built on the work of Professor Emeritus Robert Cushing of the University of Texas at Austin and Dr. Michael Oden, Research and Policy Advisor to the firm. Data available reflects the migration of people and income into and from Cameron County to the rest of Texas. For readability, counties have been grouped into the state's Metropolitan Statistical Areas (generally urbanized areas with a population of 50,000 or more) and into non-metropolitan area (generally all rural counties). The Cushing analysis uses IRS returns from 1992-2001.

than made up for by in-migration from Mexico and other nations. Indeed, this pattern may simply reflect Brownsville's role as a gateway to the United States, as thousands of newcomers move on after residing, for a while, in the county. This theory is reinforced in a comparison of the average household incomes of immigrants and out-migrants.

Though Brownsville has suffered significant losses of gross income to all of Texas' major metropolitan areas, the picture is reversed at the level of the individual household. For example, during 1992-2000, 2,215 households representing 5,145 people moved from the Dallas-Ft. Worth MSA to Cameron County while 3,061 households representing 6,600 people moved in the opposite direction. While the gross income loss to Dallas-Fort Worth exceeds \$7 Million per year, the arriving households actually enjoy substantially higher incomes than those leaving, a difference of over \$5,500 per year.

**Figure 5. 5. Cameron County Income Migration 1992 - 2000**



### At the Crossroads

On the one hand, as long as binational immigration patterns remain as they are, Cameron County will continue to provide a gateway to new residents determined to work in the U.S. despite the challenges. Once these immigrants have established a foothold and a degree of mobility in Cameron County, the tendency is to move to cities further from the border in search of greater opportunity and higher wages.

On the other hand, Cameron County faces a classic opportunity for import substitution. Rather than an issue of input commodities, though, the region appears to suffer a shortage of the high-wage, high-skill workers needed to run regional businesses. Evidence of this shortage is found in the continuing immigration of higher wage workers from Austin, Dallas, and San Antonio to Cameron County. Additional evidence is found in the relatively low wages available in otherwise high wage clusters such as Business Services, Wholesale

**With sufficient educational resources and direction, Cameron County can slow the exchange of labor presently taking place and provide opportunities for its own citizens to climb the economic ladder locally.**

Trade, and Finance & Real Estate. The opportunity to educate local residents to fill these needed and desirable positions is clear.

## Sub-section B: INDUSTRY SPECIFIC OVERVIEW

### MANUFACTURING & MAQUILADORAS

Table 5.3 provides an overview of the strength of Cameron County's manufacturing base by cluster (as of Texas Labor Market 2000 data) and includes the following information:

- ⇒ Description of manufacturing jobs by cluster
- ⇒ Shift-share classification of each cluster
- ⇒ Numbers of employees and establishments, or businesses, in each cluster
- ⇒ Relative wages, expressed as a percent of the average annual private wage in Cameron County
- ⇒ Information about the concentration of manufacturing jobs in each cluster in the Texas economy

Of the 111,467 jobs in Cameron County in 2000, 12,701 were manufacturing-related. As previously noted, the share of the local workforce employed in Textiles & Apparels and Transportation equipment is above the national average while Food Products and Electronics hovered at the national average. The share of the local workforce employed in manufacturing overall is below the national average with the region having no meaningful employment numbers for the bottom five clusters of semiconductors, telecommunications equipment, agribusiness, energy resources, and computers and peripherals.

**Table 5.3. Manufacturing Jobs, 2000: Cameron County and Texas**

Cluster Name	Shift-Share	CAMERON COUNTY				TEXAS		
		Jobs	Firms	LQ	Wage Share	Jobs	Firms	LQ
Textiles & Apparels	Challenge	4,398	30	4.24	91%	53,198	1,499	0.60
Transportation Equipment	Challenge	1,954	31	1.54	175%	40,176	795	0.37
Food Products	Limitation	1,549	42	1.08	115%	99,958	1,508	0.81
Electronics	Challenge	693	14	0.97	170%	44,371	870	0.73
Industrial Supplies	Challenge	1,139	51	0.68	133%	110,676	4,397	0.78
Materials	Limitation	1,265	40	0.58	136%	149,549	4,167	0.79
Construction	Asset	198	8	0.43	110%	47,185	1,040	1.20
Mass Media	Challenge	523	26	0.40	115%	76,252	4,096	0.68
Chemicals & Plastics	Limitation	526	24	0.34	132%	157,744	2,507	1.20
Consumer Goods	Challenge	242	16	0.25	96%	51,223	1,822	0.62
Aerospace & Defense	Limitation	116	3	0.19	347%	54,817	324	1.04
Biotechnology	Asset	56	3	0.11	114%	22,084	401	0.50
Industrial Machinery	Challenge	36	4	0.07	119%	28,570	505	0.63
Semiconductors	Asset	4	--	0.02	122%	48,567	159	2.37
Telecom Equipment	Asset	3	--	0.01	93%	36,753	265	1.57
Agribusiness	NA	--	--	0	NA	4,467	123	0.49
Energy Resources	NA	--	--	0	NA	26,194	514	8.96
Computers & Peripherals	Limitation	--	--	0	NA	35,757	139	1.42
<b>Manufacturing Jobs</b>	<b>Limitation</b>	<b>12,701</b>	<b>294</b>	<b>0.84</b>	<b>\$24,400</b>	<b>1,087,541</b>	<b>25,131</b>	<b>0.84</b>
<b>Total Jobs All Sectors</b>		<b>111,467</b>	<b>5,665</b>		<b>\$19,500</b>	<b>9,562,882</b>	<b>473,705</b>	

Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

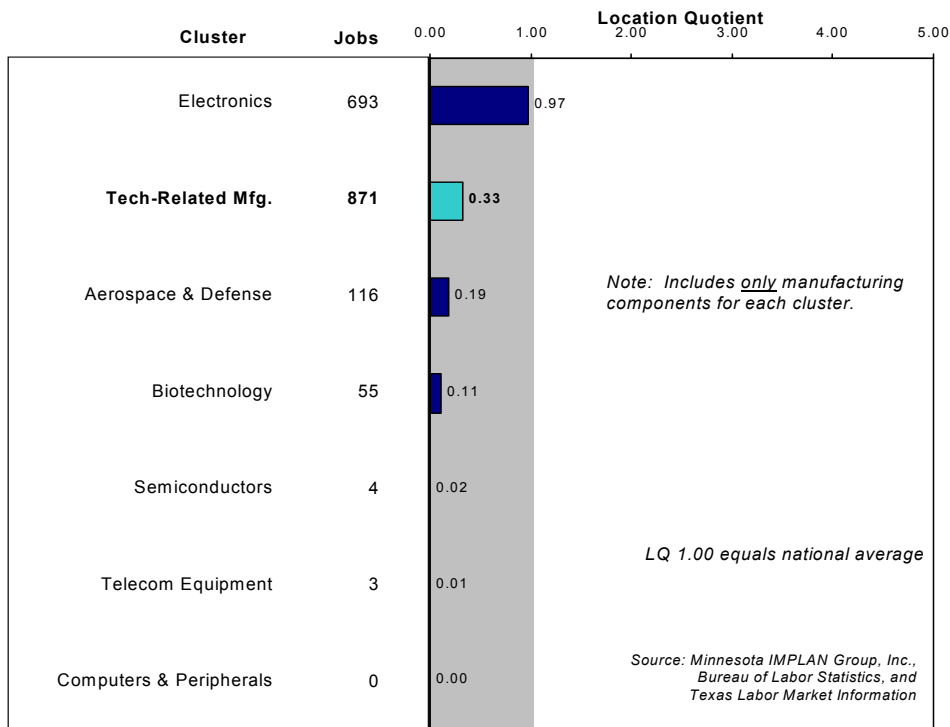
**Figure 5. 6. Manufacturing Employment by Technology Cluster, 2000**

Figure 5.6 illustrates there were 871 manufacturing jobs in technology-related clusters in Cameron County in 2000, one-third of what would be expected given national employment trends. The great majority of these jobs were in the Electronics cluster (693) which registered a near average LQ of .97 for year 2000. Aerospace & Defense and Biotechnology Manufacturing registered very small employment numbers and semiconductor, telecommunications equipment, and computers & peripherals did not register a measurable number of employees.

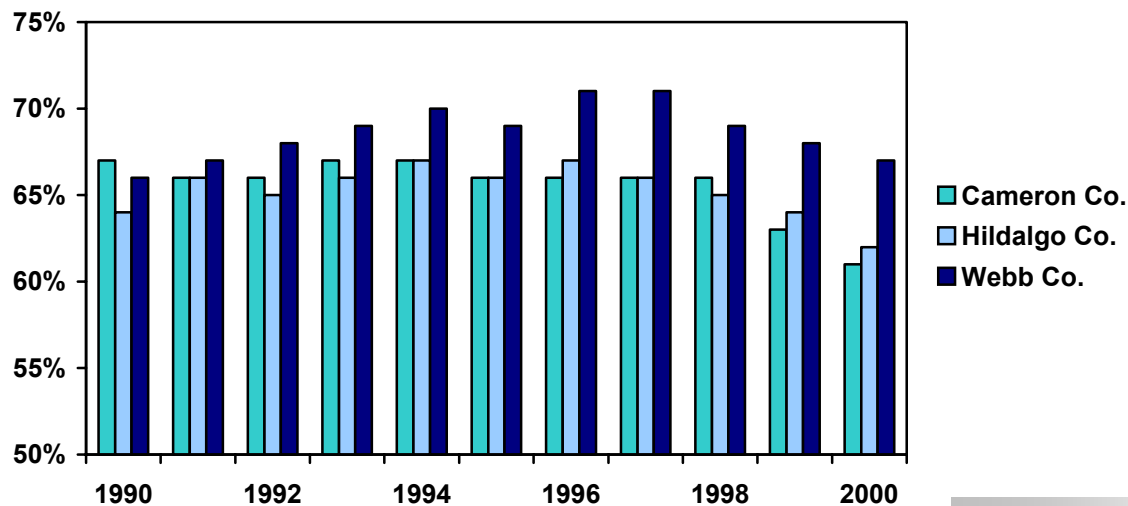
Essential to economic growth in any community is access to a readily available labor force. Table 5.4 illustrates that while Cameron County's population expanded rapidly during the 1990s (at 29%); it did so at a slower rate than nearby Hidalgo (49%) and Webb (45%) counties. Despite Cameron County having a low median age, it suffers like its neighbors from a low labor force participation rate. As noted in a previous section of this report, educational attainment levels in Cameron County severely lag Texas and the US. **In short, compared to its regional counterparts, Cameron County possesses no significant advantage in the competition for low skilled manufacturing employment and perhaps more important for manufacturing jobs to be sustainable if not grow, they need to be more value-added using a skilled workforce.**

**Table 5. 4. Labor Force Demographics**

	Cameron Co.	Hidalgo Co.	Webb Co.	Texas	US
<b>Population</b>	<b>335,227</b>	<b>569,463</b>	<b>193,117</b>	<b>20,851,820</b>	<b>281,421,906</b>
<b>% Growth, 1990-2000</b>	<b>28.9%</b>	<b>48.5%</b>	<b>44.9%</b>	<b>22.8%</b>	<b>13.2%</b>
<b>Median Age</b>	<b>29.0</b>	<b>27.2</b>	<b>26.5</b>	<b>32.3</b>	<b>35.3</b>
<b>Population 25 Years and Over</b>	<b>187,064</b>	<b>304,670</b>	<b>101,182</b>	<b>12,790,893</b>	<b>182,211,639</b>
<b>HS Graduate or Higher</b>	<b>103,259</b>	<b>153,858</b>	<b>53,626</b>	<b>9,682,706</b>	<b>146,498,158</b>
<b>Bachelor's Degree or Higher</b>	<b>25,067</b>	<b>39,302</b>	<b>14,064</b>	<b>2,967,487</b>	<b>44,459,640</b>
<b>% HS Graduate or Higher</b>	<b>55.2%</b>	<b>50.5%</b>	<b>53.0%</b>	<b>75.7%</b>	<b>80.4%</b>
<b>% Bachelor's Degree or Higher</b>	<b>13.4%</b>	<b>12.9%</b>	<b>13.9%</b>	<b>23.2%</b>	<b>24.4%</b>
<b>Population 16 years and Over</b>	<b>234,211</b>	<b>389,868</b>	<b>130,196</b>	<b>15,617,373</b>	<b>217,168,077</b>
<b>Civilian Labor Force</b>	<b>122,909</b>	<b>204,783</b>	<b>69,000</b>	<b>9,830,559</b>	<b>137,668,798</b>
<b>CLF Participation Rate</b>	<b>52.5%</b>	<b>52.5%</b>	<b>53.0%</b>	<b>62.9%</b>	<b>63.4%</b>

Source: U.S. Census Bureau

Further evidence for the general lack of regional competitiveness based on low wages is depicted in Figure 5.7. Despite possessing the lowest average wage among regional competitors, Cameron County's growth rates during the last decade have been lagging Hidalgo and Webb Counties.

**Figure 5. 7. Average Wage per Job as Share of U.S.**

Source: US Bureau of Economic Analysis

**Shift-Share Analysis**

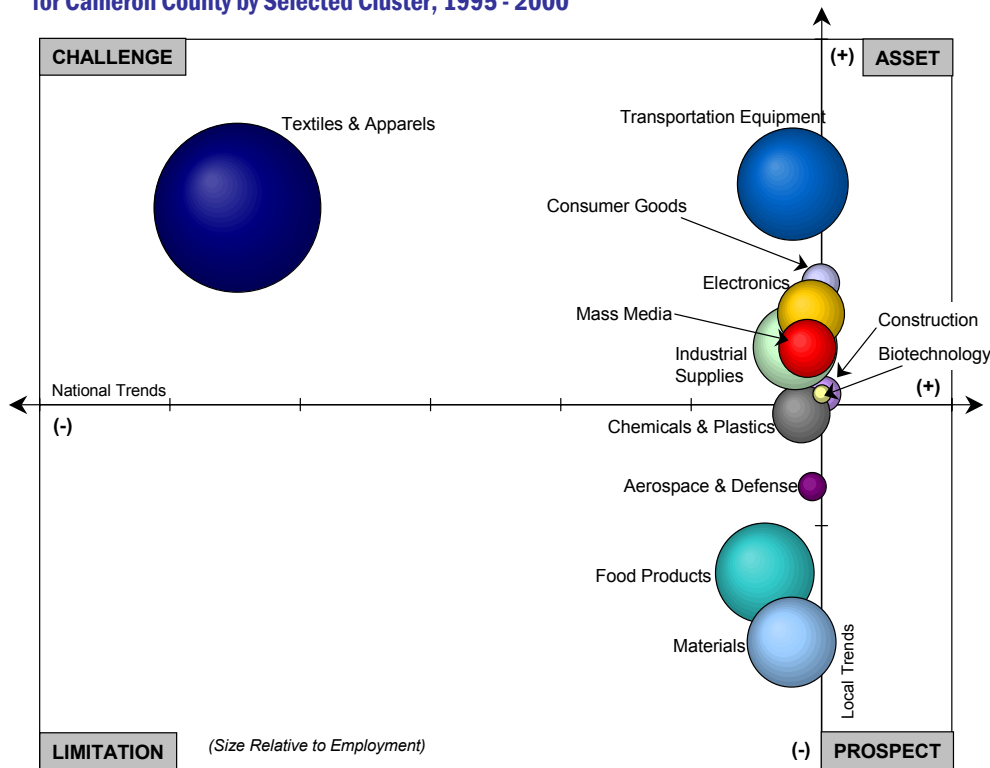
Figure 5.8 illustrates the economic performance of Cameron County manufacturing clusters whose components employed more than 50 workers in 2000. The chart clearly demonstrates that of those clusters with a significant manufacturing presence in Cameron County, none would be considered an obvious asset or prospect. While these clusters posted modest gains in employment, all but two (Construction and Biotechnology) posted slower gains than the nation as a whole. The **Textiles & Apparels** cluster, while employing the most workers, suffered the worst performance, shedding nearly 500,000 jobs nationally, highlighting that this industry is in decline as a result of global competition.

**My take-home pay is 14¢/hour and my dream is to doubly my income to 30¢/hour. That would mean chicken in our rice maybe once a week.**

**Lisa Rahman**  
19 year-old garment worker  
supporting parents & relatives  
Dhaka, Bangladesh<sup>1</sup>

<sup>1</sup> "Workers Hang On By a Thread" in *Austin American Statesman*, January 12, 2003, p. J1-J6

**Figure 5. 8. Shift-Share for Manufacturing Employment for Cameron County by Selected Cluster, 1995 - 2000**



Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

**Transportation Equipment**, Cameron County's second strongest manufacturing cluster is considered a challenge according to shift-share methodology. This industry grew 29% locally from 1995 and 2000. Nationally, Transportation Equipment employment grew only 5%. The sluggish pace of at the national level can be attributed to the industry's shipping more operations to less expensive offshore manufacturing locations. Cameron County's close proximity to Matamoros and its Auto Parts maquiladoras is an advantage if Mexico can retain these plants during competition with emerging nations such as China.

Manufacturing of **Construction Equipment** employment growth rates exceeded both the national and expected local overall growth rates from 1995 to 2000 and is therefore classified as an asset. Nationally, this industry added almost 75,000 jobs, attaining a 15.5% growth rate. Locally, manufacturing employment in this cluster increased 26.9%. However, Cameron County retains a weak LQ of 0.43 as it employs approximately 200 workers in this cluster.

Manufacturing employment in the region's small **Biotechnology** cluster is also considered a potential asset, having posted some growth locally and major growth nationally. In 2000, Cameron County employed 55 workers in this industry segment, resulting in a low LQ of 0.11. Attracting and growing this industry in the Lower Rio Grande Valley will face extreme competition as many technology-based communities, nationally and globally, have targeted this area for accelerating their regional economic development. Please refer to the industry specific overview on Health Services and Life Sciences, which starts on page 115.

The apparel industry is chasing low-cost labor in a long distance shuffle that is a race to the bottom of the wage scale and Mexico is in the rearview mirror. Hourly apparel wages [are as follows]:

Guatemala: 37¢/hour  
China: 28¢/hour  
Nicaragua: 23¢/hour  
Bangladesh: 13 - 20¢/hour

Fred Dickey  
Los Angeles Times<sup>1</sup>

<sup>1</sup> Fred Dickey, Los Angeles Times quoted in "Workers Hang On By a Thread," *Austin American Statesman*, January 12, 2003, p. J1-J6

Although Cameron County does not hold a high LQ in **Industrial Supplies**, the growing importance of this industry to the local economy should be considered. Shift-share analysis indicates that this cluster is a challenge due to its rapid local growth but sluggish national growth. Industrial Supplies provides inputs into several heavy manufacturing industries. With the overall decline in national manufacturing employment from 1995 to 2000, it is not surprising that this cluster remains nearly stagnant. Cameron County, however, is again uniquely positioned to take advantage of its location and low operating costs to provide value-added input to the maquiladora plants in Matamoros.

The **Electronics** cluster, the tech-related manufacturing cluster with the greatest concentration in Cameron County, increased employment by only 4.4% from 1995 though 2000, adding approximately 175 jobs. And regional electronics growth lagged the nation's overall growth rate. Current economic realities indicate that this cluster is no longer the vehicle for growth that it once was. Although not in decline, Electronics is not likely to be the substantial driver of regional economic development that it once was for rapidly growing high tech areas in the U.S.

### Matamoros Manufacturing Clusters

Table 5.5 provides an overview of Matamoros' manufacturing base relative to the US economy by cluster as of 1999, the most recent year for which reliable data are available. Of the 92,743 jobs in Matamoros in 1999, 59,340 were in manufacturing related clusters as compared to the approximate 12,700 in Cameron County, Table 5.5. *[The reader, however, should keep in mind that these figures only reflect Matamoros' formal, recorded economy.]*

Industrial Machinery and Electronics are Matamoros' largest manufacturing clusters. The LQs for both these industries are over 22, signifying that if Matamoros were part of the US, it would have 22 times as many employees in Industrial Machinery and Electronics manufacturing than would be expected. Other manufacturing clusters in Matamoros with elevated LQs include Textiles & Apparels, Consumer Goods, Chemicals & Plastics, and Transportation Equipment.

**Table 5.5. Matamoros Manufacturing Clusters, U.S. Industry Base, 1999**

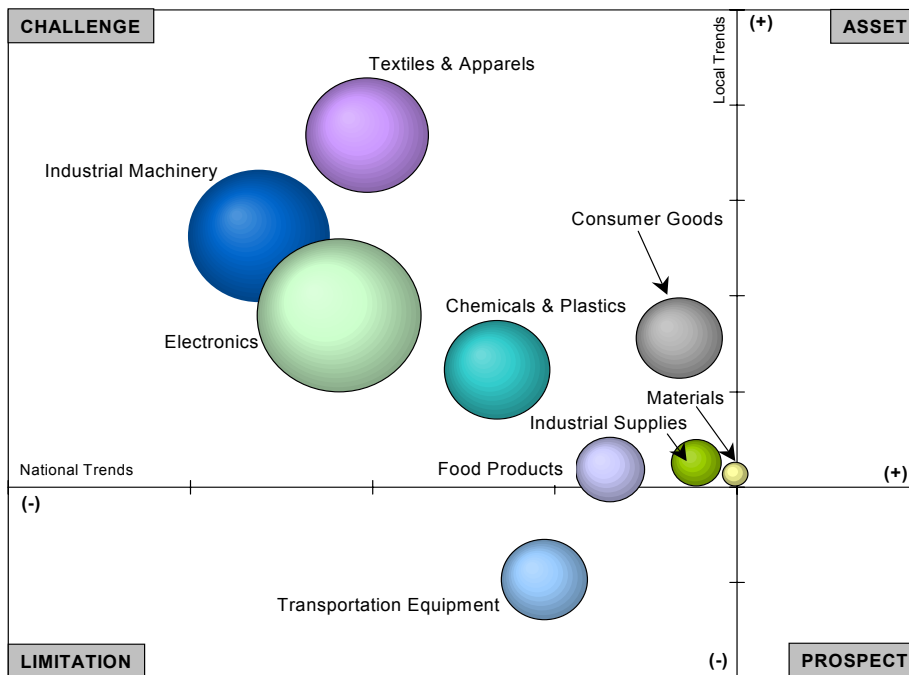
Cluster Name	Jobs	LQ	Shift-Share
Industrial Machinery	12,463	22.15	Challenge
Electronics	16,816	22.09	Challenge
Textiles & Apparels	9,219	8.43	Challenge
Consumer Goods	4,654	4.61	Challenge
Chemicals & Plastics	6,738	4.20	Challenge
Transportation Equipment	4,523	3.39	Limitation
Food Products	2,989	1.98	Challenge
Industrial Supplies	1,544	0.89	Challenge
Materials	384	0.17	Challenge
Telecom Equipment	0	0	NA
Computers % Peripherals	0	0	NA
Semiconductors	0	0	NA
<b>TOTAL MANUFACTURING EMPLOYMENT</b>	<b>59,340</b>		
<b>TOTAL EMPLOYMENT</b>	<b>92,743</b>		

Source: UT-Brownsville



Figure 5.9 pictures the economic performance of Matamoros' manufacturing clusters relative to the US economy from 1994 to 1999. Only one Matamoros-based cluster, Transportation Equipment, is lagging in overall growth. All clusters, however, are lagging growth when compared to the overall US economy, especially Industrial Machinery, Textiles & Apparels, and Electronics, which are Matamoros' largest manufacturing clusters.

**Figure 5. 9. Matamoros Shift-Share for Manufacturing Clusters '94-'99  
(Against U.S. Employment Base)**



Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

The recent loss of a large number of low-wage manufacturing jobs in Mexico to Chinese competitors has a message for the developing world; relying on cheap labor will not ensure economic growth. In 2001 more than a quarter million jobs left Mexico and 70% of these moved to China.

Eduardo Moncada  
"Made in China:  
Educational Lessons for Mexico"  
*Houston Chronicle*  
November 17, 2002

Table 5.6 shows that the **Auto Parts** and **Electronic & Electric** industries comprise the largest maquila operations. Mexico-US border maquiladoras are currently suffering from considerable international competition – primarily from Asia and, in particular, China. Thousands of jobs were lost from Mexico-US maquiladora operations in 2002, especially in the low-end manufacturing of textiles and component parts, where labor costs directly impact production costs. The border region is finding it extremely difficult to compete with China's low wages - \$3.00/hour in Matamoros as compared with \$1.50/day in China – and other maquiladora attracting policies. As of 2002 it is estimated that 77% of high labor intensive Maquiladoras have moved to China.

A "Matamoros-Based Light Manufacturing Focus Group" was held at UTB/TSC, Cameron County in Summer 2002 to discuss the future of Mexico's maquiladoras. The conclusions were as follows:

- ➔ Low-value assembly type maquiladoras (e.g., textiles) need to move to the southern part of Mexico, or deeper into Latin America, for lower labor costs to be responsive to competition from China.
- ➔ Maquiladoras located in the border need to upgrade their operations from assembly to higher value-added manufacturing and they need to be more

4,500 apparel jobs have disappeared from Piedras Negras in the past three years, and wages have dropped from \$4.00/hour to 80¢/hour...

Julia Quinonez, Head  
Border Committee of  
Women Workers  
"Workers Hang On By a Thread"  
*Austin American Statesman*  
January 12, 2003, p. J1-J6.

<sup>1</sup> "Workers Hang On By a Thread" in *Austin American Statesman*, January 12, 2003, p. J1-J6



innovative in products and processes.

- ⇒ There needs to be better integration of the region’s education and technical training with the regions manufacturing and Maquiladora operations. This includes linking TSTC technicians with the engineering programs at UTB/TSC and with the engineering- and technology-related education and training programs in Matamoros.
- ⇒ Improved training programs are needed to enhance the career options of maquiladora labor required for the 21<sup>st</sup> century and wages need to increase with this training.
- ⇒ Maquiladoras should invest in R&D and innovation to retain existing industries and to attract new ones on both sides of the border.
- ⇒ Light manufacturing /maquiladora regional clusters need to be created by integrating electronics, stamping, and plastic industries that will enable the production of final products and highly-integrated components.
- ⇒ Logistics and distribution need to be more efficient and flexible. There is a need to decrease transportation costs, decrease time, and increase efficiency. U.S./Mexico Customs brokers are disorganized and inefficient. The border needs to be seamless and not have trucks stop to offload their cargo. There needs to be better leveraging of Matamoros-Cameron County’s multi-modal transportation.

**Table 5.6. Major Matamoros Maquiladoras, 2001**

Name	Industry Category	Total Emp.	Mex. Emp	US Emp.
Deltronicos De Matamoros, S.A.DE C.V	Auto Parts	5,696		
Kermet de Mexico I, S.A. DE C.V.	Other Industry	2,629	2,528	101
Delphi Componentes Mecanicos De Matamoros	Auto Parts	2,581		
Condura I, S. DE R.L.DE C.V.	Auto Parts	2,570 or 1,872	2,500	70
Trico Componentes, SA DE CV	Industrial Service	2,150	1,650	55
Lucent Technologies Microelectronica de Mexico	Electronic and Electric	2,135	2,125	10
Delphi Rimir, S.A. DE C.V.	Auto Parts	1,208 or 1,722		
Teccor de Mexico, S DE RL	Electronic and Electric	1,178	1,165	13
Sunbeam Oster de Matamoros	Electronic and Electric	1,106	1,100	6
Cepillos de Matamoros	Other Industry	1,104 or 6,537	1,100	4
Auto Trim De Mexico, S.A. DE C.V.	Auto Parts	1,103	1,100	3
Ranco De Mexico S DE RL	Auto Parts	1,005	900	105
Custom Trim De Mexico, S.A. DE C.V.	Textiles	929		
Airpax Ve Mexico, S.A.DE C.V.	Auto Parts	922	900	22
Formitec, S.A. DE C.V.	Other Industry	850		
Federal Mogul De Matamoros	Electronic and Electric	848		
Ensambls Universales, S.A.	Auto Parts	840		
Controlles Latinoamericanos	Electronic and Electric	825		
Amfels De Tamaulipas-Mexico	Industrial Service	675	200	475
Eagle OGP Matamoros, S.A.	Other Industry	653		
Ensambladora De Matamoros	Electronic and Electric	602		
Fabricacion Tecnologica De Mexico	Other Industry	534		

Source: CNIME

The only way for Mexican-US border Maquiladoras to compete is through more value-added and flexible manufacturing and more just-in-time manufacturing. For this to occur, light manufacturing clusters need to be developed by leading industries such as electronics, plastics, and steel stamping, supported by industries such as software, design and logistics, along with an adequate infrastructure provided by industrial parks and quality technical education as well as more efficient transportation and logistics.

Maquiladoras can be competitive in the global economy if their production and manufacturing operations are assisted with adequate financial support, new technology development, and marketing – these three are needed in addition to quality production and manufacturing. The fastest way to grow is through joint ventures with other companies for access to technology, markets, and capital.

Rolando Gonzalez-Barron, President  
Cansejo Nacional de Maquiladoras de Exportacion de Mexico (CNM)  
August 2002

#### GOBAR SYSTEMS<sup>1</sup>: Growing a Binational Manufacturing Cluster

When brothers Rolando and Abelardo Gonzalez created GOBAR SYSTEMS to manufacture steel stamping parts in 1984 the general idea was to supply parts to US automobile manufacturers. In 1986, in order to fulfill a contract with General Motors GOBAR formed an alliance with Dayton, Ohio-Based Select Tool and Die Corporation. Together with principal stockholder, Bob Whited, they formed a new company named Industrias GOBAR in Matamoros and began stamping metal components for GM, such as steering wheels, dashboards, and defrosted grills for air conditioners. In 1988, manufacturing operations expanded to supply all the metallic radio components to Deltronics. In 1990, Gonzalez-Withed (GW) formed another company within GOBAR SYSTEMS to add value to the manufacturing operations by assembling metal stamped pieces through robotic welding in an automated cell manufacturing system to manufacture air bag canisters for Autolive, Delphi, TRW, and RIMIR to the order of about 3,300,000 pieces a year.

To support the technical training and increased manufacturing and to facilitate the development of new designs and tools, GOBAR SYSTEMS bought 50% of a company named High Tech that was located in Austin, Texas. The company is staffed with US trained engineers and managers most of whom had worked many years at IBM specializing in computerized product and manufacturing design. On the one hand, this alliance has helped accelerate the design and manufacturing software learning curve of GOBAR's engineering and design departments. On the other hand, High Tech has the benefit of GOBAR's manufacturing capabilities and financial resources. This alliance allows both companies to compete not only in design, but also in prototype manufacturing, and in producing sophisticated manufacturing machinery for the electronics market.

Almost all of GOBAR's engineers have received their degrees from Matamoros Tech; however, Rolando insists that they also receive two years of on-the-job

Integration into a cluster type organization through strategic alliances with world-class firms specializing in innovation are the strategic competencies of GOBAR SYSTEMS.

<sup>1</sup> The GOBAR SYSTEMS case was developed during several interviews with Rolando Gonzalez-Barron, President, Cansejo Nacional de Maquiladoras de Exportacion de Mexico (CNM), conducted by Professor Pablo Rhi Perez, College of Business, UTB/TSC during summer and fall 2002.

training. The objective is to make the more theoretically-trained Mexican engineers more like technicians through on-the-job training programs that emphasize manufacturing and technical aspects of such jobs as machine operator, welding, software programming, machine maintenance, and die repair. The company has established a rotating learning system including extensive travel to Dayton, Ohio and Austin, Texas where GOBAR has operations and to other countries such as Germany where additional knowledge can be acquired.

GOBAR manufacturing output requires a logistics system that meets just-in-time Maquiladora requirements. To this end, GOBAR SYSTEMS ASSOCIATED formed (1) Asesoria y Gestoria al Comercio Exterior (AGASE) a Customs Agency under the Marco's custom patent in 1991, and (2) a trucking transportation company named GALA in 1992. Both companies were created to facilitate the movement of components parts, supplies, and final products across the border as well as to provide these transportation services to other clients. To integrate the manufacturing process even further and to cover other unsatisfied markets, the GOBAR SYSTEMS group created Recubrimientos Industriales Fronterizos (REINFRO) in 1994 to finish steel stamping and plastic products. In 1995, Brownsville Products Corporation was created to supply dies and molds to South Texas. After a series of problems created by the lack of available technical labor, the Brownsville-based company focused on steel stamping – mainly low volumes of small-specialized pieces required in very short periods. The more value-added manufacturing of dies and tools has been moved to Gonzalez-Withed in Matamoros.

In order to continually add more value to GOBAR's manufacturing operations, Rolando formed Silicone Technology (SILTECH) in 1996 to add the electronics component. This company was the result of a contract with ITT to manufacture electronic key pads of plastic compression and inter-phase electronic controls for Caterpillar, John Deere, and others. Expected sales, for this company, by mid 2003 are in the order of 35 million dollars.

Rolando's vision of a company where different component groups are fully integrated was more fully realized with the formation of GOBAR, MID SOUTH, and SELECT TOOLS AND DIES (GMS) in 2001. These Matamoros-based companies use plastic injection and design for the manufacturing of molds and dies, all the different components needed to manufacture automobile baby safety seats. Twelve plastic injection machines ranging from 175 to 1 ton capacity will be fully operational by 2003 to produce the contracted output of 1 million seats.

Rolando believes in the concept of developing new technologies and would like to see Mexican Maquiladoras move from assembly to manufacturing to creating new products and manufacturing processes. As he states:

**In the new world order, the border region needs to develop new ideas, new products, new processes. You get new markets and higher profits by being leading edge – producing a value added idea. Others can copy your idea and, over time, produce it cheaper – but you have to stay out in front.**

Rolando's objective is to bring more value-added and just-in-time processes to his maquiladora operations by integrating components into finished products or integrated components under GOBAR's brand name. Rolando is able to have GOBAR employees design and manufacture a robot for \$50,000 that would cost upwards of \$350,000 if purchased from the U.S., Japan, or Europe.

**"Our (Mexican) engineers need to increase their experience and awareness of other ways of doing things."**

*Rolando Ganzalez-Barron  
President, CNM  
August 2002*

**Matamoros needs to transition from a manufacturing to more of a technology- or knowledge-based city.**

*Rolando Ganzalez-Barron  
President, CNM  
August 2002*

Following the same growth patterns they used in Matamoros-Brownsville-Austin, GOBAR SYSTEMS has established firms to manufacture specialized equipment for the maquiladora maintenance market, product and manufacturing system designs, and manufacturing dies and tools in Cd. Juarez, Chihuahua and Nuevo Laredo, Tamaulipas. But to build globally competitive technology-growth regions all along the border, Rolando believes other supporting infrastructure is required such as:

- ⇒ Industrial Parks
- ⇒ Intelligent warehousing and distribution systems
- ⇒ Consulting firms: Marketing and finance
- ⇒ Housing and transportation
- ⇒ Quality technical and educational facilities
- ⇒ Business services: legal, accounting, and general administration

**We need research and ideas linked to industry needs to invest in our universities and technical schools on both sides of the border, and these institutions need to be better linked to the regional manufacturing clusters. We need policy that stimulates the knowledge base and innovation. We have to work to increase quality and make our engineers more technical. It is more than producing products.**

*Rolando Gonzalez-Barron, President  
Consejo Nacional de Maquiladoras de Exportacion de Mexico (CNM)  
President, GOBAR SYSTEMS*

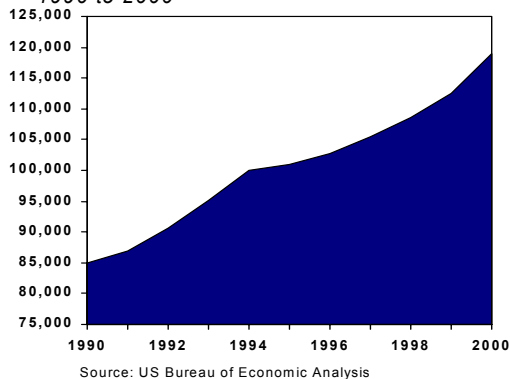
**As the US textile industry fades under the crush of imports, old-line companies are embracing new business models that emphasize technology and niche markets. "When you bring cutting-edge science to a mature and stodgy industry you can make leaps and bounds of progress because the industry has been so-long neglected," David Sloane, Founding Director of Burlington Nano-Tex that is set to develop the next miracle fabric.<sup>1</sup>**

### The United States: At the Crossroads

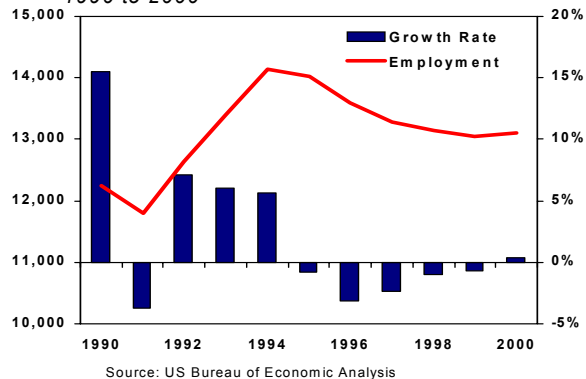
Long-term trends clearly point to the decline of the US manufacturing sector. Between 1970 and 2000, the nation lost approximately 580,000 manufacturing jobs (-3%) as firms sought to lower their costs by transferring operations overseas and introducing advanced manufacturing processes that required fewer production workers. However not all U.S. regions or states have experienced similar manufacturing declines. For example, during the same period Texas gained over 375,000 manufacturing jobs, a 50% increase. Despite losses at the national level, total wage and salary employment increased 77% in Texas during these three decades.

**Figure 5.10. Cameron County Wage, Salary/Manufacturing Employment, 1990-2000**

**Cameron Co. Wage & Salary Employment  
1990 to 2000**



**Cameron Co. Manufacturing Employment  
1990 to 2000**



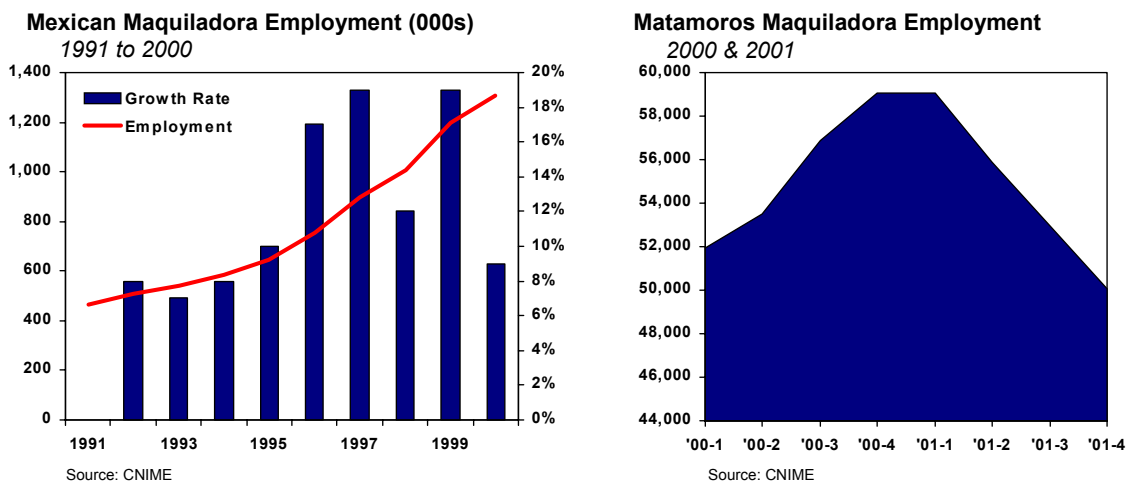
Cameron County wage and salary employment trends for the 1990s indicate that its overall employment increased at a compounded annual rate of 3.4%, making it the 28<sup>th</sup> fastest growing metropolitan area in the nation. During the early part of the last decade, Cameron County enjoyed rapid employment growth thanks to the area's booming manufacturing sector.

In 1978, Cameron County's manufacturing sector provided employment opportunities to nearly 20% of area workers in private sector firms; however, by 2000, that share had fallen to just over 11%. After having generated nearly 2,000 manufacturing jobs between 1990 and 1994, Cameron County shed over 1,000 manufacturing jobs by 2000, Figure 5.10. During this latter part of the decade, the local manufacturing sector posted job losses in all years, except 2000. The majority of those losses appear to have been a result of heavy employment decreases in Textiles & Apparel, as both local and national production has shifted to more inexpensive international labor markets. In short, Cameron County, like the state and nation, will become less dependent on a strong manufacturing sector for employment.

### Mexico: At the Crossroads

Between 1991 and 2000, employment in Mexican maquiladora plants increased at a compounded annual growth rate of 12%, during which time employment grew from approximately 470,000 to 1.3 million, Figure 5.11. Since the end of 2000, however, maquiladora employment has decreased by approximately 10%. Maquiladora plants located in Matamoros have not remained immune to these losses. From the end of 2000 to the end of 2001, employment in local plants fell 15%, a loss of 9,000 jobs.

**Figure 5.11. Maquiladora Employment: Mexico and Matamoros**



While recent employment declines at maquiladora plants can be partially attributable to the recession in the US economy, increased competition from developing nations is a contributing factor. Of particular note is China's emergence as an industrial power and its role in the loss of competitive advantage once held by Mexican maquiladoras. Chinese labor costs are estimated to be only 10-15% of those in Mexico. In addition, China is providing extraordinary incentives to attract foreign investment and companies located in China do not confront strong labor union and social unrest, making the labor force a more reliable production input. In short, China is undergoing a transition

from a primarily agrarian economy to becoming one the principle worldwide competitors in labor-intensive industries.

### Summary

Cameron County manufacturing sector as a whole and Matamoros maquiladoras in particular, can no longer compete in the global economy solely on the basis of inexpensive labor. If current trends continue, the Lower Rio Grande Valley region will continue to see increasing competition for emerging industrial powers, especially those in Southeast Asia and China. As a result, the Cameron County-Matamoros region needs to devise a cluster-based strategy built on cross-border cooperation targeting higher-value added niche industry clusters and components. Without adequate numbers of highly skilled labor, the region will stagnate and fall further behind in its ability to create wealth and higher value jobs and to employ and retain its young workforce.

The Cameron County/Matamoros border region is at a crossroads, and despite the best efforts of the region, the coming years will include a painful transition with further job losses in labor-intensive industries such as Textiles & Apparels. In addition to the following discussions centered on (1) Transportation Services and Logistics & Distribution, (2) Health Services & Life Sciences following are brief snapshots of niche manufacturing industries that possess the potential to ease that transition.

### Construction Machinery & Equipment

- ⇒ A component of the Construction cluster, Construction Machinery & Equipment includes establishments engaged in manufacturing heavy machinery and equipment of a type used primarily by the construction industries, such as bulldozers, concrete mixers, cranes, conveyors and conveying equipment, and hoists.
- ⇒ Both nationally and locally, this component cluster is growing at a rapid rate. From 1995 to 2000, Construction Machinery & Equipment added 15,000 jobs, producing a 10% growth rate, fueled by the nation's booming real estate sector. Although locally employment in this component cluster remains limited, employing fewer than 100 workers, rapid population growth throughout the Lower Rio Grande Valley and northern Mexico is expected to drive demand for all components in Construction. In addition, local wages in Construction Machinery & Equipment are 66% higher than the average private wage in the county.

### Metal Works & Stampings

- ⇒ A component of the Industrial Supplies cluster, Metal Works & Stampings includes establishments engaged in manufacturing die-castings of aluminum (including alloys), nonferrous die-castings, fabricated plate work, sheet metalwork, iron and steel forgings, metal stampings, and electroplating.
- ⇒ While this component cluster employed only 160 workers in Cameron County in 2000, it is part of the much larger Industrial Supplies cluster. Products manufactured in this component cluster supply parts to other heavy manufacturing industries. Wages in Metal Works & Stampings exceed Cameron County's average private wage by nearly 70%.

### Tools & Machine Parts

- ⇒ A component of the Industrial Supplies cluster, Tools & Machine Parts includes establishments engaged in the manufacture of special dies and tools, cutting tools, machine tools, pumps and pumping equipment,

**Cameron County-Matamoros region needs to devise an economic development strategy built on cross-border cooperation targeting higher-value added industry clusters and components.**

**We need to invest in our universities and technical schools on both sides of the border, and these institutions need to be better linked to the regional manufacturing clusters. We need policy that stimulates the knowledge base and innovation. We have to work to increase quality and make our engineers more technical. It is more than producing products. We need research and ideas linked to industry needs.**

*Rolando González-Bacón, President  
Consejo Nacional de  
Maquiladoras de Exportacion de  
Mexico (CNM)  
President, GOBAR SYSTEMS  
2002*



packaging machinery, relays and industrial controls, current-carrying wiring devices, and electrical equipment for internal combustion engines.

- ⇒ Within Cameron County, Tools & Machine Parts employs nearly 1,000 local workers at a salary exceeding the county's average private salary by approximately 30%. Products manufactured in this component cluster supply parts to several industries, including the automotive industry. Although employment growth both nationally and locally remained slow from 1995 to 2000, the Tools & Machine Parts component cluster appears to have good potential for serving the automotive-related maquiladoras in Matamoros.

#### **Miscellaneous Transportation Equipment**

- ⇒ Miscellaneous Transportation Equipment includes establishments primarily engaged in manufacturing vehicular lighting equipment, motor vehicle parts and accessories, and transportation equipment, not elsewhere classified.
- ⇒ In 2000, this component cluster employed approximately 850 workers in Cameron County. Nationally, employment within Misc. Transportation Equipment increased only 8% from 1995 to 2000, largely due to an increasing reliance on the maquiladora industry. With an established base in this component cluster and close proximity to several Auto Parts maquiladoras across the Rio Grande, this industry may provide good prospects for future employment increases in the region. In addition, local wages in Misc. Transportation Equipment exceed the region's average private salary by 117%, providing good paying jobs to local citizens.

#### **Electronic Components**

- ⇒ The Electronic Components sub-cluster includes establishments engaged in manufacturing electron tubes, printed circuit boards, electronic capacitors, resistors, coils, connectors, and other electronic equipment and components not elsewhere classified.
- ⇒ The Cameron County Electronic Components sub-cluster enjoyed a 33% growth rate between 1995 and 2000, while national employment in this industry grew 11%. Much of Cameron County's strength in this sector is undoubtedly related to its proximity to neighboring maquiladora plants. In addition, wages in Electronic Components were 71% higher than overall private wages in the county.

## TRANSPORTATION SERVICES AND LOGISTICS & DISTRIBUTION

“Because of geography, economic development and commerce on both sides of the border, Texas is the funnel through which the majority of land-based U.S.-Mexico trade *must pass*. For this reason, we must do all we can to strengthen Texas roads and their *connections* to our water ports, airports and rail lines.”

*Kay Baily Hutchison*  
U.S. Senator of Texas, 2002

“There are a lot of opportunities out there for the State of Texas. I think Texas is uniquely located to do work in border security –that’s one area we should take a hard look at.”

*Dan Burck*  
University of Texas Chancellor, 2002

By analyzing Cameron County’s Transportation Services and Logistics & Distribution clusters the region’s transportation/distribution network is taken as a whole and examined for its current and potential economic impact.

**The Transportation Services cluster** includes employment in all modes of transportation that involve the movement of people both internal and external to the region: both public and private transportation by land, sea, and air. Cameron County employed approximately 600 people in this cluster in 2000 double the 300 employees of 1995.

**The Logistics and Distribution cluster** is made up of the employment in establishments that transport goods through all modes including air, sea, and land as well as pipelines. This cluster includes employment at facilities involved with the transport of goods but does not include any wholesale operations. Over 3,340 were employed in this cluster in Cameron County in 2000 – an increase of nearly 1,000 from 1995.

The Lower Rio Grande Valley region has a distinctive combination of attributes that are unique when compared with other international transportation and logistics centers worldwide. Cameron County’s geographical location on the Mexican border and the Gulf of Mexico provides alternative international ports of entry with a transportation infrastructure consisting of (Figure 5.7):

- ⇒ A deepwater port
- ⇒ Intra-coastal ports
- ⇒ Rail systems
- ⇒ Air-cargo terminals
- ⇒ International land bridges
- ⇒ Warehousing and Storage

**The Lower Rio Grande Valley domestic and international transportation and logistics industry sector is an asset that could and should be further developed for the State of Texas and the nation.**



**Table 5. 7. Transportation Services and Logistics & Distribution Clusters, 2000**

Standard Cluster		CAMERON COUNTY				TEXAS		
Small Cluster	Shift-Share	Jobs	Firms	LQ	Wage Share	Jobs	Firms	LQ
<b>Logistics &amp; Distribution</b>	<b>Asset</b>	<b>3,338</b>	<b>287</b>	<b>1.37</b>	<b>122%</b>	<b>244,134</b>	<b>14,051</b>	<b>1.17</b>
Railroad & Freight	Challenge	1,569	154	1.17	134%	122,807	8,742	1.07
Water Transportation	Challenge	315	17	2.75	84%	15,291	427	1.55
Air Transportation	Asset	331	13	0.56	134%	54,838	1,080	1.09
Warehousing & Storage	Asset	436	33	2.56	129%	17,573	1,519	1.2
Other Fixed Facilities & Services	Asset	687	70	3.07	103%	33,625	2,283	1.75
<b>Transportation Services</b>	<b>Asset</b>	<b>609</b>	<b>36</b>	<b>0.57</b>	<b>129%</b>	<b>105,726</b>	<b>2,643</b>	<b>1.15</b>
Highway & Local Transit	Asset	443	14	1.14	129%	23,250	815	0.7
Water Transit	NA	6	1	0.27	74%	485	28	0.26
Air Transit	Prospect	76	4	0.16	188%	68,761	164	1.67
Other Transit Services	Limitation	84	17	0.47	82%	13,230	1,636	0.86
<b>Transportation &amp; Logistics</b>	<b>Asset</b>	<b>3,947</b>	<b>323</b>	<b>1.13</b>	<b>123%</b>	<b>349,860</b>	<b>16,694</b>	<b>1.16</b>
<b>Total Employment</b>		<b>111,467</b>	<b>5,665</b>		<b>\$19,500</b>	<b>9,562,882</b>	<b>473,705</b>	

Source: Minnesota IMPLAN Group, Bureau Labor Statistics, and Texas Labor Market Information

## Challenges

Current political and economic realities are transforming the manner in which U.S. and Mexican international transportation resources and logistics & distribution operations are being conducted. These changing realities are motivated by two seemingly competing forces: National security and trade expansion.

**National Security** – The terrorist attacks of September 11, 2001 have heightened security concerns at the nation's international ports. Increased scrutiny is focused on the control and monitoring of the movement of persons and cargo as well as mode of transportation.

**Trade expansion** – Trade expansion continues to place an increasing strain on the nation's transportation infrastructure and multi-modal connectivity that facilitates the movement of cargo. Since the 1994 implementation of the North American Free Trade Agreement (NAFTA), trade between the U.S. and Mexico has almost tripled. Cross-border trade now averages more than \$650 million dollars a day, and two-thirds of that comes through ports of entry in Texas.<sup>1</sup>

The U.S. Customs Service, U.S. Immigration and Nationalization Service, U.S. Department of Transportation, and other federal and state government agencies are reevaluating and reorganizing their operations to meet the challenges brought on by trade expansion and heightened national security. New requirements are being placed on the private sector to provide government agencies with detailed data on personnel, clients, points of origin and destination, modes of transportation, and cargo. This creates a critical market need for intelligent transportation systems, integrated database systems, and collaborative transport management systems.

**State-of-the-art process and data management technology need to be developed to lessen the congestion at international ports of entry.**

*Rob Harrison  
Director of Center for  
Transportation Research  
The University of Texas at Austin  
Interview, July 2002*

<sup>1</sup> Interview with Rob Harrison, Director, Center for Transportation Research, the University of Texas at Austin, by Richard J. Rodarte, July, 2002.

## Assets

Cameron County and Matamoros possess a competitive advantage over many regions of the U.S. because of the region's international border and Gulf of Mexico location where a unique combination of transportation infrastructure, inter-modal transportation connectivity, and geographical location supports multidimensional networks in international transportation and logistics. This transportation infrastructure and inter-modal connectivity provides the area with access to domestic and international markets, an attractive location in which to transport and conduct trade. However, the potential ability to transport internationally has not been fully realized by the region's maquiladora and other manufacturing sectors.

Another asset of the region is its young bicultural workforce with high potential for technological training. Seventy-five percent of the regional workforce speaks both English and Spanish.<sup>1</sup> Complementary assets are the area's universities, colleges, and technical centers which provide the basis for education and workforce training. UTB/TSC also provides a natural location to conduct research and development focused on transportation, logistics and distribution needs for the 21<sup>st</sup> century.

## Overview

Challenges of increased crossings at international ports of entry have been aggravated by national security concerns, inhibiting trade expansion and the unfettered movement of goods and services toward enhanced global economic integration. This report suggests that the Cameron County/Matamoros region could:

- ⇒ Be a global leader of transportation and logistics technology development and implementation
- ⇒ Be seen as a model multi-modal port of preference
- ⇒ Capture global business transport opportunities that would facilitate the growth of other regional industries as well as the sustainability of the region's maquiladoras.

In recent years, Cameron County/Matamoros trucking, warehousing, and other regional transportation services have benefited from expanding national and state economies as well as from increasing trade with Mexico. In 2001, while the U.S. and Texas economies were challenged, trade with Mexico remained fairly resilient through much of the year. The current U.S. recession is taking its toll on border trade, and Texas-based employment in trucking and warehousing was down 2.6%, or 3,700 jobs, by April 2002. Yet overall projections remain strong and industry growth is expected to accelerate by 4% in 2003.<sup>2</sup>

Transportation and public utilities account for five percent of total employment in the Brownsville-Harlingen Metropolitan Statistical Area (BHMSA). This is compared to four percent in the McAllen MSA and seventeen percent in the Laredo MSA. Table 5.8 provides a comparison of the number of firms and employees of transportation industries in Cameron, Hidalgo, and Webb Counties. Cameron County shows a strong Air Transportation industry for both scheduled and non-scheduled flights: Thirteen firms support a workforce of 380. While Webb County has fourteen firms in this industry, these companies support a smaller workforce of 254. Cameron County also leads in water transportation, in

<sup>1</sup> Census Bureau, City County Data Book 2001, Cameron County, Texas

<sup>2</sup> Carole Keeton Rylander, Texas Comptroller, Texas Regional Outlook: The South Texas Border Region, June 2002, page 13.

both the number of firms and employees. Webb County has the largest number of firms in freight transportation (512), trucking and courier services (280), and scheduled air transportation (10). Hidalgo County has the regions' largest number of firms in passenger transportation (20) and is comparable to Webb County in trucking and courier services. Hidalgo has 43 public warehousing & storage firms that support 277 employees, while Webb County's 42 firms support a larger workforce of 601.

**Table 5. 8. Number of Firms and Employees for Transportation Industries**

Industries (4 <sup>th</sup> quarter average for 2000)	Cameron County Firms	Cameron County Employees	Hidalgo County Firms	Hidalgo County Employees	Webb County Firms	Webb County Employees
Air Transportation, Nonscheduled	4	46	3	14	4	15
Air Transportation, Scheduled	9	334	4	321	10	239
Airports, Flying Fields, & Services	4	54	3	71	4	108
Freight Transportation Arrangement	62	658	73	701	512	6,672
Misc. Transportation Services	6	28	5	76	9	73
Passenger Transportation Arrangement	17	83	20	150	12	73
Public Warehousing & Storage	33	471	43	277	42	601
Trucking & Courier Services, Ex Air	149	1,549	270	2,311	280	3,642
Trucking Terminal Facilities	N/A	N/A	5	26	4	31
Water Transportation Of Freight, NEC	N/A*	N/A*	N/A	N/A	29	1,953
Water Transportation Of Passengers	N/A*	N/A*	N/A	N/A	28	570
Water Transportation Services	2	317	N/A	N/A	4	41

\*Confidential

Source: TWC Tracer

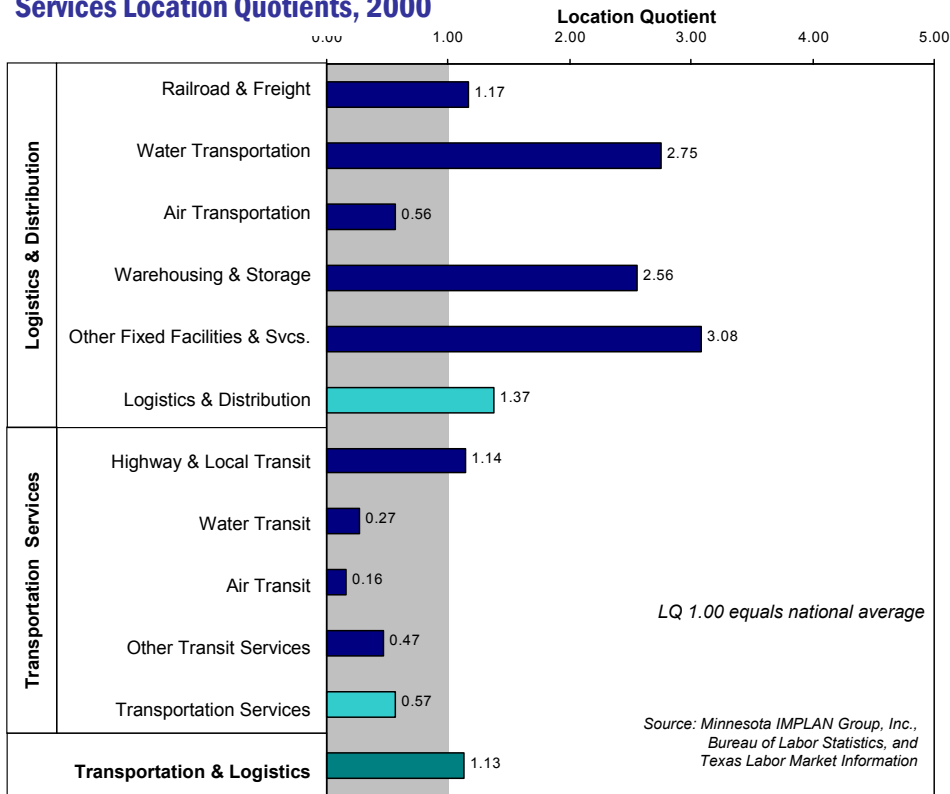
### Shift-Share Analysis

Overall, Cameron County shows a Logistics & Distribution Location Quotient (LQ) of 1.37 (close to the national average) for employee growth, however the region shows a higher-than-national-average LQ for water transportation (2.75), warehousing and storage (2.56), and other fixed facilities and services (3.08), Figure 5.12. In total, the Logistics and Distribution cluster added 550 jobs from 1995 to 2000.

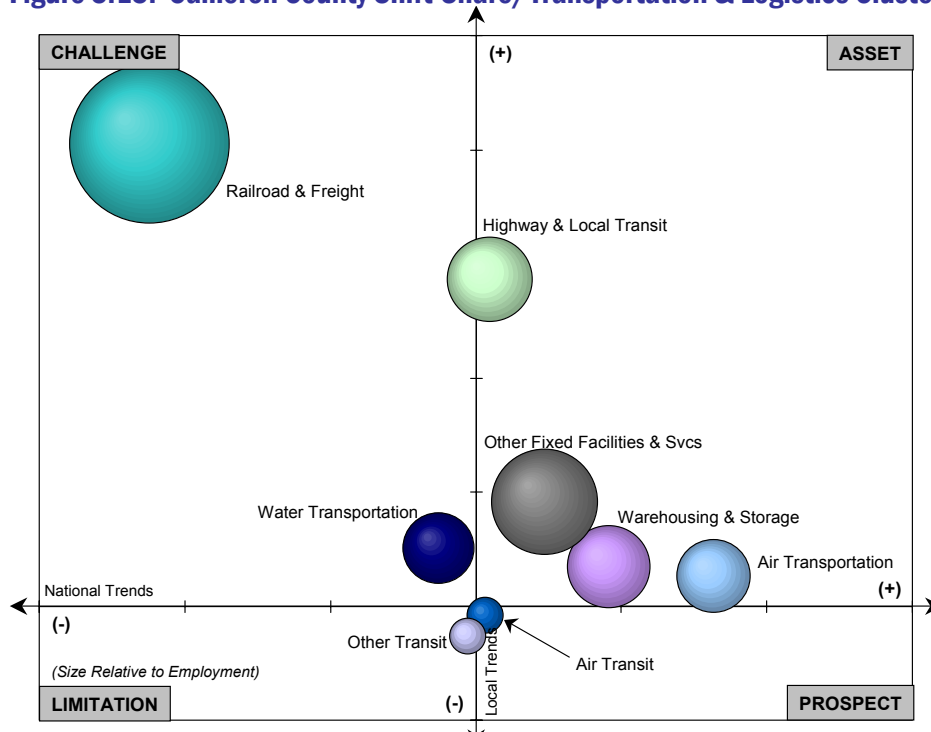
Overall Cameron County is competitive in the Logistics & Distribution and Transportation Services industry sectors as all but two regional sub-sectors (Air Transit and Other Transit) have grown faster than would have been expected based on national trends, Figure 5.13. The largest employer of these sub-sectors, railroad and freight, falls into the challenge category due to its declining national influence while still gaining local employment. A majority of sub-sectors (highway and local transit, warehousing and storage, air transportation, and other fixed facilities and services) fall within the asset quadrant, which is defined by increasing local and national employment.

The LQ for Transportation Services (Figure 5.12) was 0.57 in 2000, a slight increase from 0.34 in 1995. Employment in this cluster doubled from 300 to 600, 1995-2000. The only Transportation Services cluster that has an LQ above 1.00 is Highway and Local Transit (1.14).

**Figure 5.12. Cameron County Logistics & Distribution and Transportation Services Location Quotients, 2000**



**Figure 5.13. Cameron County Shift-Share/Transportation & Logistics Clusters**



Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

Employment in this sector is almost entirely attributed to the 260 employees in Inter-City and Rural Bus Transportation (SIC 4131) which has an LQ of over 13.00 meaning that the region serves as a large center of bus transportation. Air transportation is under-represented in terms of employment in Cameron County for both passengers and cargo. Passenger air transportation records a lower LQ (.16) than cargo transport (.56).

Cameron County experienced significant employment increases within transportation industries from 1996–2001, Table 5.9. When examining each SIC title separately, it is possible to distinguish the contribution to *absolute change* in employment from the national share, industry mix, and local share. For example: trucking and warehousing display an *absolute change* of 672, which is a combination of national share 153, industry mix 57, and local share 462. In all four industries the local share provided the largest contribution to the *absolute change*. This indicates that nationwide, Cameron County has demonstrated formidable strength in attracting and growing transportation industry employment.

**Table 5.9. Transportation Sector Shift Share Analysis for Cameron County**

SIC CODE	SIC TITLES	1996 1 <sup>st</sup> Qtr.	2001 1 <sup>st</sup> Qtr.	Nat'l Share	Industry Mix	Local Share	Absolute Change
42	Trucking & Warehousing	1404	2076	153	57	462	672
44	Water Transportation	318	404	35	13	38	86
45	Transportation by Air	309	474	34	25	106	165
47	Transportation Services	537	801	59	25	181	264
	<b>Totals</b>	<b>2568</b>	<b>3755</b>	<b>281</b>	<b>120</b>	<b>787</b>	<b>1187</b>

Source: Texas Workforce Commission, 2001

### Industry Wages

Cameron County transportation industry wages have been historically low when compared to the state and nation. Tables 5.10 and 5.11 provides a brief comparison of the Brownsville-Harlingen MSA and Texas 2001 Occupational Employment Wages.

**Table 5.10. Brownsville-Harlingen MSA 2001 Occupational Employment Wages**

SIC CODE	OCCUPATIONAL TITLE	Annual Wage/1	Mean (Hourly)	Median (Hourly)
43-5011	Cargo and Freight Agents	\$17,040	\$8.19	\$7.39
53-1031	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle	\$30,910	\$14.86	\$14.21
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	\$15,960	\$7.67	\$6.88
53-6051	Transportation Inspectors	\$26,780	\$12.88	\$13.64
11-3071	Transportation, Storage, and Distribution Managers	\$44,610	\$21.45	\$20.34
53-3032	Truck Drivers, Heavy and Tractor-Trailer	\$24,260	\$11.66	\$10.72
53-3033	Truck Drivers, Light or Delivery Services	\$16,650	\$8.00	\$7.69

Source: Texas Workforce Commission, 2001

**Table 5.11. Texas 2001 Occupational Employment Wages**

SIC CODE	OCCUPATIONAL TITLE	Annual Wage/1	Mean (Hourly)	Median (Hourly)
43-5011	Cargo and Freight Agents	\$27,848	\$13.39	\$12.80
53-1031	First-Line Supervisors/Managers of Transportation & Material-Moving Machine and Vehicle	\$41,676	\$20.04	\$18.51
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	\$18,529	\$8.91	\$8.30
53-0000	Transportation and Material Moving Occupations	\$24,593	\$11.82	\$9.67
53-6051	Transportation Inspectors	\$46,160	\$22.19	\$23.11
11-3071	Transportation, Storage, and Distribution Managers	\$57,387	\$27.59	\$24.75
53-3032	Truck Drivers, Heavy and Tractor-Trailer	\$30,501	\$14.66	\$13.69
53-3033	Truck Drivers, Light or Delivery Services	\$22,989	\$11.05	\$9.90

Source: Texas Workforce Commission, Labor Market, 2002

Table 5.12 lists the wages for the transportation-related clusters in Cameron County in comparison with Texas and the United States. The average wage in Logistics and Distribution kept pace with the county average and Transportation Services doubled the county's wage growth over the five-year period by 28%. The average wage in Transportation Services grew faster in Cameron County than in Texas as a whole.

**Table 5.12. Wage Comparison, Transportation-Related Clusters 1995-2000**

Cluster	Cameron County		State of Texas		United States	
	1995	2000	1995	2000	1995	2000
Logistics & Distribution	\$20,879	\$23,806	\$27,498	\$33,057	NA	\$34,267
Transportation Services	\$19,573	\$25,214	\$36,302	\$44,711	NA	\$35,345
Overall	\$12,848	\$12,682	\$21,567	\$28,908	NA	\$28,698

Source: IMPLAN

Table 5.13 provides transportation sector employment projections for Cameron County in the year 2005 using Texas Workforce Commission (TWC) employment data and the percent change from 1997-2001. The data indicates that the change in employment for trucking and warehousing is 47%, water transportation 36%, air transportation 40%, and transportation services 23%. If the present growth rate continues, employment projections for 2005 indicate that trucking and warehousing would gain 976 jobs, water transportation 146 jobs, air transportation 191 jobs, and transportation services 183 jobs, for a combined total of 1,496 new jobs within Cameron County.

**Table 5.13. Transportation Industry Employment Projections for Cameron County**

SIC CODE	SIC TITLES	1st Quarter Employment		Percent Change '97-'01	Base 2001	Projection 2005	Absolute Change '01-'05
		1997	2001				
42	Trucking & Warehousing	1412	2076	47.03	2076	3052	976
44	Water Transportation	297	404	36.03	404	550	146
45	Air Transportation	338	474	40.24	474	665	191
47	Transportation Services	652	801	22.85	801	984	183
	Totals	2699	3755			5251	1496

Source: Texas Workforce Commission

These employment projections are supported by TWC Tracer "future employment outlook" for statewide projections indicate that from 1998-2008, Texas transportation sector employment should increase between 7% to 38% depending on the specific SIC Title, Table 5.14. Projected to experience the largest increases are: miscellaneous transportation services at 38%, air transportation (nonscheduled) at 35%, freight transportation arrangements at 34%, and water transportation of freight (NEC) at 30%. Projected to experience the lowest increase in employment by 2008 are airports, flying fields, and services at 7%, and water transportation services at 6%.

**Table 5.14. TWC Tracer "Future Employment Outlook" for Texas in 2008**

SIC TITLES	1998 Estimated Employment	2008 Projected Employment	1998- 2008 Total Change	1998- 2008% Change
Air Transportation, Nonscheduled	5,020	6,791	1,771	35.00%
Air Transportation, Scheduled	90,959	105,457	14,498	16.00%
Airports, Flying Fields, & Services	12,546	13,403	857	7.00%
Freight Transportation Arrangement	19,578	26,305	6,727	34.00%
Misc. Transportation Services	5,095	7,015	1,920	38.00%
Passenger Transportation Arrangement	13,183	15,862	2,679	20.00%
Public Warehousing & Storage	13,983	16,863	2,880	21.00%
Trucking & Courier Services, Ex Air	115,695	133,508	17,813	15.00%
Trucking Terminal Facilities	1,938	2,247	309	16.00%
Water Transportation Of Freight, NEC	2,244	2,906	662	30.00%
Water Transportation Of Passengers	325	394	69	21.00%
Water Transportation Services	12,081	12,759	678	6.00%
Average Percent Change				21.58%

Source TWC Tracer

Logistics is important for people to be able to communicate and conduct business. We don't have a regional logistics system in place; everyone does their own logistics work. One of the things that holds us back is the fact that people do not want to share information and are unwilling to say 'let's all work together, what can we do to help each other. It is important to work together; this is what it is all about.

An obstacle to overcome and a challenge for the Lower Rio Grande Valley is the thinking of the people. They believe that somebody will take their business unless they keep information close to the vest. This is something that has to be overcome. People don't realize that by sharing information they will get more business.

*Raul A. Besteiro  
Port Director and CEO  
Port of Brownsville, 2002*



**Logistics and Distribution / Manufacturing and Maquiladoras<sup>1</sup>**

**“Manufacturers who have multiple operations in Asia, Mexico, and Europe agree that manufacturing production costs are nearly equivalent at any location. The main difference is the cost of logistics: not just transportation but the complete logistics supply chain management of raw materials, manufacturing, inventory, warehousing and transportation.”**

Roland Gonzales Barron  
President, Consejo Nacional de Maquiladoras, Mexico, 2002

Both the Manufacturing/Maquiladora and Logistics & Distribution clusters have the potential of increased synergies that could benefit both industries, in terms of regional and global competition.

A competitive advantage for any region is being able to support just-in-time (JIT) manufacturing. According to Mr. Gonzales, there are a number of maquiladoras that could benefit from employing JIT manufacturing and maquiladoras that employ JIT inventory management are the ones that will remain in Matamoros: However, these operations are often inhibited by regional trucking, which increases time and cost, defeating the benefits of JIT.

**Mexico's Transportation Infrastructure<sup>2</sup>**

Mexico's geographical location serves as a gateway to multiple foreign markets and this gateway function provides an opportunity to capture global trade: north and south through the Americas, east to Asia and west to Europe. However, globally competitive transportation infrastructure (both physical and logistical) is required. Physical infrastructure – roads, rail, ports, and air – is utilized in the physical movement of trade. Logistical infrastructure consists of the communication and documentation that facilitate processes. The development of both types of infrastructure will provide enhanced opportunities for Cameron County/Matamoros.

The Mexican Chamber of Commerce is focusing on establishing Mexico as a transoceanic logistical distribution platform for China, Asia, North America, South America and Europe. In order for Mexico to capitalize on its geographical location and to become a world-class global trade center, public and private leaders need to address the nation's lack of infrastructure. Globally, Mexico is the 7th leading country in exports but is 41st in infrastructure ranking. There is a general lack of understanding concerning the implementation of strategic infrastructures such as railroads, new highways, truck weight rules, customs rules and new airports. The lack of strategic vision creates limitations and disadvantages to Mexico's infrastructure development. However, the lack of a national strategic vision and implementation plan within Mexico may also present an opportunity for Cameron County/Matamoros to develop their own

**It is the efficiency of logistics that will allow us to compete with global competitors such as China.**

Rolando Gonzales Barron,  
President, Consejo Nacional de  
Maquiladoras, Mexico, 2002

**To compete globally, it is essential that we add value to our customers, or we will lose them to our competitors.**

Manual Gomez, President,  
National Trucking Companies  
Association (CANACAR), Mexico,  
2002

<sup>1</sup> The majority of this information is based on a Transportation and Logistics Focus Group that was held at UTB/USC on August 13, 2002. Participants of the focus group included Ing. Rolando Gonzalez Barron/Transportes Gala and Presidente del Consejo Nacional de Maquiladoras; Lic. Manuel Gomez/Transportes GOR and Presidente Nacional de CANACAR; Sergio Tito Lopez, Yonik Lopez and Presidente de CANACAR-MATAMOROS; Benito Garcia, Transmaquila; Fernando Sanchez, Valley Trucking; Enrique Saenz, Sea Horse Trucking; German Rico, Port of Brownsville; Francisco Machuca, IMPLAN=Matamoros; Dr. Pablo Rhi Perez/UTB-CBIRD and BDA representative; Dr. David Gibson, Richard Rodarte and Mark Gipson/IC<sup>2</sup> Institute, The University of Texas at Austin.

<sup>2</sup> Ibid.



regional binational strategy. Because Cameron County is the nearest point in the U.S. to maquiladora centers it is well positioned geographically to compensate, in part, for the lack of Mexico’s infrastructure development within the country’s interior. However, for this to occur, regional maquiladoras need to create binational strategic alliances with cross-border transportation and logistics entities to facilitate multi-modal transportation and more efficient manufacturing supply chains.

### Port of Brownsville

The Port of Brownsville has signed an agreement with the Port of Lazaro Cardenas located on Mexico’s Pacific coast to create a land bridge via rail in order to compete with the rail land bridge from the Port of Long Beach, California to the Port of Houston, Texas. Land bridges are designed to facilitate transoceanic trade. The cost of moving a container from the Port of Lazaro Cardenas to the Port of Brownsville via rail is approximately \$800 per container. This represents a forty percent reduction in shipping cost compared to the Port of Long Beach to Port of Houston. In addition, the Port of Lazaro Cardenas to Port of Brownsville land bridge is estimated to reduce transoceanic shipping time by 2-3 days. These are significant competitive advantages.

The Port of Lazaro Cardenas is the best choice for the Port of Brownsville due to the availability of two modes of land bridge transportation (truck and rail). Mexico’s TFM Railroad provides connectivity from port-to-port. The key strategic objective is to increase the volume of container and cargo traffic while reducing the time needed for moving through transportation corridors by competing for and attracting transoceanic shipments, thereby capturing market share from the established Port of Long Beach to the Port of Houston transoceanic corridor that moves billions of dollars of container and cargo business a year. Two to three thousand containers per week are required to support the fixed and variable cost associated with operating the land bridge.

### Supply Chain Management

Transportation and logistics, data communication, and telecommunications systems need to be developed to allow for reliable and real-time access to trade-related information at the lowest cost. Systems integration needs to allow for real-time business-to-business and public/private sector interfacing. Logistics & Distribution supply chain management from point-of-origin to destination has two seemingly contradictory objectives:

- ⇒ **To maximize national and local security**
- ⇒ **To enhance speed, efficiency, and transparency**

Supply chain management systems have been developed and implemented that are able to identify and track individuals, cargo, documents, and modes of transportation. However, these systems are usually designed for specific supply chain functions and their integration as larger systems is limited.

Multi-modal Transportation Logistics (MTL) infrastructure that can efficiently link highway and rail systems with sea and air transport along with advanced telecommunications are key to promoting speed and agility along the entire supply chain thereby linking business services, manufacturing, and distribution. MTL features express customs clearance procedures to speed international sourcing and exporting processes. MTL benefits from state-of-the-art inter-modal and electronic data interchange (EDI) technologies that provide rapid global access and other competitive advantages, by accelerating materials handling and transfers among factories, aircraft, trucks, rail cars, and ships. Through R&D

**Each border crossing is competing against the other. Those regions that are more efficient are the ones that are going to get more business and be more successful.**

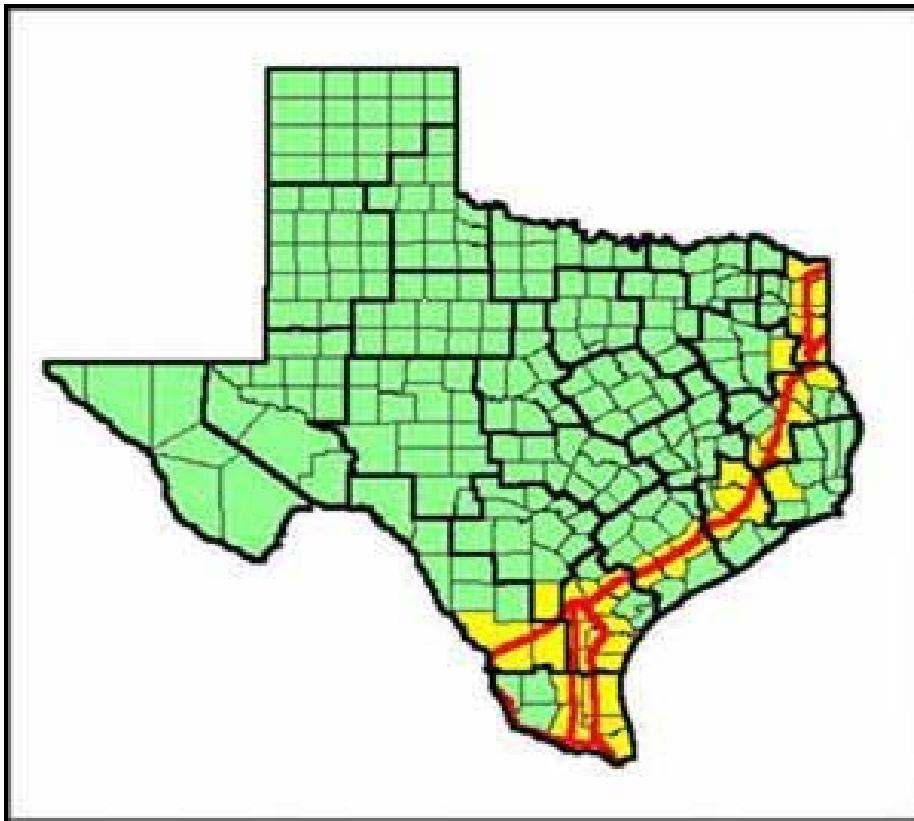
**The development of transoceanic logistics infrastructure is considered important to facilitate the movement of cargo within the Americas and to/from the Pacific and Atlantic oceans.**

and process development, there is an opportunity to lower production and implementation costs, integrate systems, provide training, facilitate test product implementation, and lower the cost of production. Considerable economic opportunities exist for logistics technology that can service, monitor, and secure the transportation of cargo and persons domestically and internationally.<sup>1</sup>

### At the Crossroads

The transport of trade goods between Texas and Mexico, has set record highs every year since the passage of NAFTA in 1994. This has resulted in employment gains in Cameron County's Transportation Services and Logistics & Distribution clusters.

**Figure 5.14. The Interstate 69 Corridor in Texas**



The Internet can provide an “electric highway” for sales from around the globe. But it takes concrete roadways to facilitate the delivery of goods.

U.S. Highway 77 and U.S. Highway 281 will soon become part of U.S. Interstate 69 system. I-69 will become the most direct interstate connecting top U.S., Canada, and Mexican border-crossing ports with top trading states and provides direct entry to Mexico's economic heartland, Figure 5.14. Interstate 69 will link with existing and planned Mexican and Canadian highway infrastructure and provide improved interregional trade and transportation. Interstate 69 is poised to link economic centers, serve hemispheric trade, and build economic development regionally and internationally including Canada, North America, Mexico, and South America, see Appendix E.<sup>2</sup>

<sup>1</sup> The Department of the Treasury, U.S. Treasury Advisory Committee on Commercial Operations of the United States Customs Service, Subcommittee on Border Security, Technical Advisory Team Report on “Improving U.S. Border and Supply Chain Security.” January 21, 2001.

<sup>2</sup> Interstate 69 Texas, Web site: <http://www.i69texas.org/>, Accessed April 21, 2002

Given the importance of the transportation industry to Cameron County's economy, the transportation infrastructure of highways and bridges is crucial to economic success. Traffic flow becomes indicative of economic success, and increased congestion reflects more than a matter of inconvenience: It epitomizes decreased trade and a loss of income to the region.

As the border becomes more transparent and as congestions inefficiencies are eliminated or scaled back, Cameron County/Matamoros will lose workforce advantages that it gains from current international border inefficiencies. As more goods become pre-cleared and do not need to be off-loaded at border checkpoints and as trucks are able to pass freely between Mexico and the United States, there will be no need to operate storage and related facilities in the border region, particularly not in any but the main trade gateways such as Laredo.

Currently, Laredo receives the majority of border traffic to the extent that its congestion has provided overflow traffic to Cameron County and other locations along the border. As Laredo's cross-border transportation inefficiencies are lessened, its shorter route will once again gain traffic. This can be expected to lower traffic (and thereby business) at other border crossings such as the ones located in Cameron County. The extension of Interstate 69 through Cameron County brings the region a “window” of opportunity.

The Port of Brownsville International Commercial Bridge and highway extension will also provide a number of benefits:

- ⇒ Allow the direct flow of goods between the Port and Mexico
- ⇒ Allow more efficient flow of vehicle traffic on existing Cameron County international bridges and streets
- ⇒ Enhance industrial competitiveness and development of the region
- ⇒ Generate additional jobs

### **Creating a Binational Transportation and Logistic Research Center (BTLRC)**

This report advocates the creation of a Binational Transportation and Logistics Research Center (BTLRC) in Cameron County designed to capitalize on existing transportation and logistic infrastructure challenges and opportunities. The BTLRC would promote global, ethical, seamless intermodal transportation and logistics systems through educational programs, research projects, and outreach activities and serve as a “think and do tank” in partnership with industry, professional services, government, and the community. BTLRC programs could be designed to provide educational, employment, and business opportunities in a wide range of areas including:

- ⇒ 2+2 transportation and logistics programs
- ⇒ Port of entry security technologies, procurements, and management
- ⇒ Customs laws, trade regulations, international transactions and negotiations
- ⇒ Intelligent transportation procurement, operations, and management
- ⇒ Transportation marketing and advertising
- ⇒ Shipping and warehousing logistics and management
- ⇒ Data systems integration and management
- ⇒ Cargo surveillance systems
- ⇒ Automated commercial systems
- ⇒ Supply chain management
- ⇒ Public/private partnerships

**There would seem to be no better place than Cameron County, to locate a research center for transportation and logistics... no better place to research home security measures. The fact that this would also drop a needed economic keystone into a struggling region would seem to add further weight to this choice.**

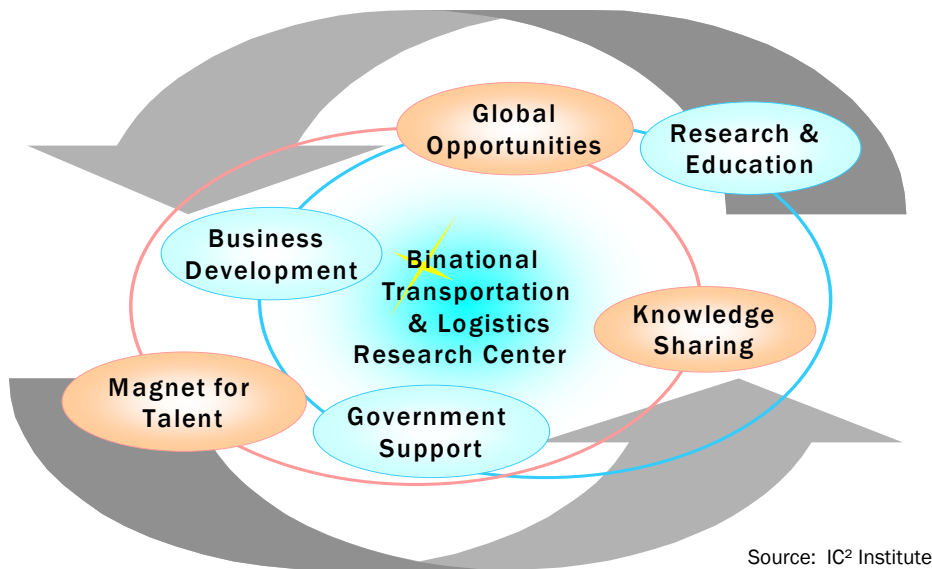
**What better place could there be – for the region, and for the benefit of the nation?**

The development of a Binational Transportation and Logistics Research Center would provide a huge advantage against other border regions including Laredo... Laredo is extremely strong because the customs brokers, the chamber of commerce, and the municipalities work together as one, on both sides of the border. That is something we do not have here in the Cameron County/Matamoros region. The region has to develop binational public and private sector committees to create strategic alliances with strong leadership. The way to attract more customers is to improve time and cost.

*Manuel Gomez, President  
National Trucking Companies Association  
(CANACAR) in Mexico*

Cameron County’s transportation infrastructure allows for intermodal connectivity to a “**five modal transportation network**” linking truck, rail, air, ship, and barge. Taken together the regions’ geography, alternative international ports of entry, established transportation infrastructure, and available intermodal connectivity create a unique multidimensional experiential “living laboratory” in which to observe the functionality of an international transportation and logistic operations system.

**Figure 5.15. Binational Transportation and Logistics Research Center (BTLRC)**



Source: IC<sup>2</sup> Institute

BTLRC programs would help establish the Cameron County/Matamoros region as a leader in logistics and distribution industry research and development, technical training, and management. BTLRC would increase workforce skills, improve employment opportunities, and promote business development through multilateral public and private sector partnerships that would provide regional economic competitive advantages in the global marketplace, Figure 5.15. The BTLRC could be a model for developing, implementing, and testing the knowledge infrastructures in the transportation industry to enhance business productivity as it facilitates the exchange of knowledge, opportunities and talent among businesses, universities, and other public and private institutions regionally, nationally, and globally.

The creation of a **BTLRC** could prompt the formation of “centers of excellence” as part of UTB/TSC’s International Trade and Technology Center (ITTC) to develop and support innovative transportation and logistics technology and processes. The ITTC is being organized to provide training in transportation technology and business incubator services. The BTLRC could be a component of the ITTC and strengthen Cameron County’s ability to provide transportation and trade industries with competitive logistics and process technology innovations and workforce training. The ITTC could stimulate the transfer of innovative transportation and logistics technologies and methods from BTLRC to the regional and binational transportation network, thereby creating a collaborative environment to support accelerated technology development, application, and integration.<sup>1</sup>

**“A regional logistics center would help regional and binational business work more efficiently. Right now there are a lot of companies that have their own systems. We are all working as individuals trying to get what work we can. A logistics center could link us together. Maybe if we were tied to a logistics center we would be more likely to cooperate. A lot of things could be improved – we are at the beginning.**

**A regional logistics center might be hard to get started, but in the future we will be asking ‘Why did we wait so long?’ Maybe a regional logistics center will cost us something in the beginning, but we will gain down the road in the future from the openness, we will have things that other people don’t have and they will see how we are growing. A regional logistics center would link the whole community and tie us to the world – this is what is important. The Port of Brownsville is very supportive of a regional logistics center in whatever role we can play”**

*Raul A. Besteiro  
Port Director and CEO  
Port of Brownsville, 2002*

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<sup>1</sup> A UTB-CBIRD sponsored Binational Transportation Focus Group that met at the Brownsville campus (summer 2002) agreed that the development of a binational research logistics center could help improve trade in the region and promote binational involvement in logistics planning to create collaborative promotion and marketing plans. The group also noted the importance of developing transportation logistics corridors with servicing manufacturing regions and supported by the Port of Brownsville land bridge initiative would provide a systematic approach to determine time and cost preferences.

## HEALTH SERVICES & LIFE SCIENCES

The Texas Healthcare & Bioscience Institute (THBI) has – for over two years – engaged state leaders in academic, business, and government sectors to determine... **the critical actions necessary for Texas to lower transaction costs, remove barriers to entry, attract talent and capital, and otherwise hasten growth and innovation in the State’s life science cluster in the 21<sup>st</sup> Century.**<sup>1</sup>

Texas has over 500 life-science companies that generate \$6.5 billion in annual sales. THBI considers Dallas-Fort Worth, Houston-Galveston-The Woodlands and San Antonio as main regional contenders for emerging life-science clusters because of the location of university-based educational and research excellence and associated medical facilities. Statewide, the life-science industry employees over 50,000 Texans with an average annual salary of \$48,000; however, the THBI states that Texas is at a pivotal juncture. Critical issues to be faced include the lack of needed:

- ⇒ **Infrastructure** – While Texas has exceptional research facilities and innovation accelerators (incubators) there is a lack of wet-lab and other flexible space needed to nurture life-science companies.
- ⇒ **R&D funding** – Baylor College of Medicine with \$222 million is ranked #15, among all US universities, in terms of NIH research funding in biology. The University of Texas Southwestern Medical Center is ranked #26 with \$145 Million, MD Anderson #39 with \$102 Million and University of Texas at Houston #50 with \$84 Million.
- ⇒ **Innovation** – The Commercialization of intellectual property generated by Texas-based R&D in health-sciences: Texas is a net exporter of intellectual property (IP), and Texas Universities create barriers to commercialization.
- ⇒ **Capital Formation** – Because of high capital needs and length of time required for an exit strategy, the life-science industry is not well-understood or appreciated within Texas’ Venture Capital community as an investment opportunity.
- ⇒ **Collaborative partnering** – There needs to be more statewide coordination among research universities and medical facilities.

As a result of these and other challenges, technologies developed within Texas academic and medical institutions are leaving the state to be commercialized in regions with more relevant infrastructure support, large and small bio- and medical-oriented companies, and where venture capital is more knowledgeable about, and likely to invest in, start-up life science companies. In short, in terms of generating wealth and high value jobs through technology venturing in the life sciences, even the most favored institutions and regions within the state of Texas are facing major challenges.<sup>2</sup> It is realized that while excellence in education and research are necessary components of a successful and sustainable life science cluster, they are not sufficient for a region to excel as a globally competitive center. Equally important is the ability to commercialize the knowledge and innovations developed and this requires access to capital and

**National and global competition in the life science industry is increasing. THBI counts 28 US regions as having significant strategies to accelerate the growth and wealth generating capacity of their life science industries.**

<sup>1</sup> The Texas Healthcare and Bioscience Institute (THBI) is a non-profit, public policy research organization, comprised of biotechnology, medical device, and pharmaceutical companies; academic and private research institutions and support institutions and organizations that provide goods and services to core organizations. The THBI strives to create broad understanding and support for the continued growth of healthcare and bioscience R&D and manufacturing state-wide. [WWW.THBI.COM]

<sup>2</sup> “Science and Cents: Exploring the Economics of Biotechnology,” Conference focused on the technology venturing and economic aspects of health sciences in Texas, sponsored by the Federal Reserve Bank of Dallas, April 2002.



business and entrepreneurial know-how including manufacturing, marketing, sales and distribution (Smilor, Gibson, and Kozmetsky, 1988).

The leading U.S. centers in life science educational, research and commercialization are located in California and the North East. In response, Texas launched a Biotech Initiative and Governor Perry established a Council on Science and Biotechnology Development. Significant funds are being committed to research and laboratory expansion at the state’s major universities and funds are being dedicated to enhance technology transfer, product development, and small business development.

Given major global, national, and statewide initiatives in the development and commercialization of life sciences what is the most reasonable strategy for Cameron County and the Lower Rio Grande Valley?

While the Lower Rio Grande Valley currently has little life science infrastructure including large and small firms, R&D funding and innovation, and capital formation, the region is perhaps one of the world’s premiere “laboratories” to research and treat a broad range of healthcare challenges. The healthcare needs of the region are great and urgent. Healthcare problems and conditions that exist in the Lower Rio Grande Valley would be considered a public health crisis in most other regions of the developed world. These healthcare challenges reflect the peculiarities of the local population: its age composition and race structure, its employment opportunities and per capita income, and its geographic location. Poverty, malnutrition, infections and parasitic diseases, low education attainment, lack of needed quantities of fresh water, and inadequate housing all impact the existing healthcare system.

Proximity to the Mexican border is an important factor affecting regional healthcare. More people cross the U.S. Mexico border than any other border in the world. There are over 8 million legal border crossings from Mexico into the United States each year and, last year, over one million undocumented Mexican migrants were apprehended while attempting to enter the United States illegally. As traffic backs up waiting for clearance through customs, vehicular exhaust accumulates. These fumes combine with those from the many industrial activities clustering near the border, and have a damaging impact on the air quality and the environment. Further, the high level of border crossings facilitates the transmission of infectious diseases by travelers into the border region and the interior of either country (Warner and Hopewell, 1999).<sup>1</sup> Bio-terrorism is especially relevant to the border region as one can imagine such highly infectious diseases as smallpox traveling across the border posing grave implications for a first line of defense.

The potentially explosive healthcare situation on both sides of the border, especially for the young and elderly, is exacerbated by a fast growing binational, bicultural population that tends to be undereducated and underemployed. Older Americans or “Winter Texans” as they are commonly called, attracted by the temperate climate, recreational opportunities, and low cost of living, have retired to the Valley. Simultaneously, immigration from Mexico and beyond brings younger people north to the border region. The healthcare needs of the elderly, while the subject of continuing national debate, often benefit from paid

**In general, the socioeconomic conditions, life-style characteristics, and disease categories of the border region reflect agrarian third world conditions rather than those of one of the world’s most modern nations.**

**When you couple that thought with Cameron County’s multi-modal entry point to the nation and the related implications to homeland security... it would seem extremely desirable – militarily strategic, if you will – to have a major medical research facility here.**

<sup>1</sup> David Warner and Jillian Hopewell, “NAFTA and United States Mexico Border Health: The Impact on Health Resources and Services Administration (HRSA)-Sponsored Programs” Center for Health Economics and Policy, The University of Texas Science Center at San Antonio, 1999.



insurance systems that have given rise to growth in home-healthcare services. The young, on the other hand, represent a different set of healthcare needs that are too often unmet due to a lack of education and financial resources.

On the one hand, U.S.-to-Mexico migration across the border for healthcare services is common. Mexican-Americans often prefer Mexico's physicians, dentists, and pharmacists due to cultural familiarity and relatively low cost as well as a lack of U.S. healthcare insurance. In addition many U.S. residents travel to Mexico for medical and dental care and pharmaceutical purchases. On the other hand, while the Mexican Constitution defines healthcare as a right of citizenship, and while Mexican state and federal employees are ostensibly provided with comprehensive coverage, the reality is different. Public hospitals in fast-growing Matamoros have been unable to keep up with increasing demand and have seen budget cuts in recent years. As a result, middle and upper income Mexicans frequently look across the border to the U.S. for medical care and for every Matamoros resident who can afford American health services many more do not receive adequate preventive care and, as a result, are treated in U.S. hospital emergency rooms. Cameron County is providing healthcare services on a regional basis and much of the patient load is coming from Mexico.

While the State of Texas has more serious healthcare challenges than most of the U.S., South Texas has the most serious challenges of any region in the U.S. The border population has:

- ⇒ A higher percentage of residents under 18 and over 65 years old
- ⇒ Over 6 times the average regional Hispanic population of the US
- ⇒ Almost double the U.S. poverty rate – per capita income is about two-thirds the national figure.
- ⇒ A percentage of persons with private insurance that is lower than elsewhere in the state and, in most counties, there is no local indigent care program for adults whose incomes exceed 22% of poverty.<sup>1</sup>
- ⇒ 12% fewer high school graduates and 4% fewer baccalaureate degrees on average
- ⇒ Higher unemployment and double the US percentage of population on food stamps

Health indicators of particular concern are higher rates of tuberculosis and the emergence of drug-resistant tuberculosis, increasing numbers of HIV/AIDS cases, and high rates of Hepatitis A and Diabetes as they represent serious healthcare challenges for a large population of poor adults and children with limited access to medical care. The prevalence for Type II diabetes, in adults under 65, is three to four times the national rate.

*Colonias* and binational mobility are complicating factors for the delivery of adequate healthcare.<sup>2</sup> The historic growth of the *maquiladora* industry, on the Mexican side, along with explosive population growth and extreme fiscal tightening, have increased and continue to increase water infrastructure and wastewater needs in the region. Lack of adequate sanitation and water supply

**The economic demographics of the region – low wages, high unemployment, large families – these all present barriers between the general populace and adequate health care.**

<sup>1</sup> *ibid.*

<sup>2</sup> “NAFTA and United States/Mexico Border Health: The Impact on HRSA-Sponsored Programs,” by David Warner and Jillian Hopewell, Center for Health Economics and Policy, The University of Texas Health Science Center at San Antonio, December 1999. The study area included eleven Texas counties: Cameron, Hidalgo, Starr, Willacy and Zapata in the Lower Rio Grande Valley, and Dimmit, Kinney, Maverick, Val Verde, Webb, and Zavala in the Mid-Rio Grande Area. The two areas are commonly referred to as Rio Grande Valley. They border nine “*municipios*” of the Mexican States of Tamaulipas and Coahuila.

leads to greater incidence of hepatitis A and other illnesses. These conditions are particularly onerous because they are associated with limited access to treatment. In 1995, the Texas Water Development Board estimated that 340,000 Texas residents lived in *colonias* (Chapa and Eaton, 1996). Within the LRGV most of the *colonias* are located in Cameron, Hidalgo, Webb, and Starr Counties. In short, because of inadequate water and sewage, *colonia* residents face many health hazards. These are usually combined with strong barriers to accessing health prevention and care services.<sup>1</sup>

**Table 5.15. Healthcare Challenges for the U.S., Texas, and South Texas**

Challenges	U.S.	Texas	South Texas
Population Below Poverty (% of Total 1990 Population)	14.0	18.0	27.0
Population Below Poverty (% of Total 1999 Population)	13 (1997)	16.0	27.0
Unemployment Rate (1998)	6.0	5.0	8.0
Births per 100,000 Population (1997)	1,455.30	1714.3	1977.1
Diabetes Deaths per 100,000 Population (1997)	23.2 (1996)	24.4	32.7
Tuberculosis Cases per 100,000 Population (1997)	8.7 (1995)	10.2	11.4
Hepatitis A Cases per 100,000 Population (1997)	12.1 (1995)	23.2	56.8
TANF Recipients (% of 1998 Population)	NA	2.0	5.0
TANF Payments per Capita (1998)	NA	\$15.62	\$29.37
Food Stamps Recipients (% of 1998 Population)	7	9.0	17.0
Food Stamps Expenditures per Capita (1998)	\$62.30	\$72.72	\$141.75
<b>To Meet These Challenges</b>			
Per Capita Income	\$25,874	\$24,228	\$18,483
At Least High School Graduate (% of 1990 Population over 24)	75	72	63
At Least Baccalaureate Degree (% of 1990 Population over 24)	20	20	16
Physicians per 100,000 Population (1999)	247+ (1995)	165	158
Primary Care Physicians per 100,000 Population (1999)	106 + (1995)	71	71
Registered Nurses per 100,000 Population (1999)	823 (1997)	735	672
Dentists per 100,000 Population (1999)	61 (1996)	37	32
Pharmacists per 100,000 Population (1999)	NA	74	62
Non-Federal Hospitals (1999)	5,911 (1996)	514	76
Non-Federal Hospital Beds per 100,000 Population (1999)	373 (1996)	368	344
Medicaid Eligibles (% of 1998 Population)	13 (1994)	6.0	11.0

Sources: U.S. Census Bureau, TX State Comptroller's Office, TX Health & Human Services Commission, US Bureau of Economic Analysis, TX Workforce Commission, TX Department of Health, TX State board of Medical Examiners, Board of Nurse Examiners for the State of TX, TX State Board of Dental Examiners, TX State Board of Pharmacy, TX Dept. of Human Services.

The employment status of Cameron County residents directly influences their ability to purchase health insurance coverage and to generally access quality healthcare services. Due to recent layoffs (mostly in the apparel industry) Cameron County's double digit unemployment figure is again on the rise. The high rate of uninsured residents is partially due to the prevalence of small businesses and the reliance on low-wage jobs in the region. Together with other Texas border counties (such as Brooks, Culberson, Dimmit, Duval, El Paso, Frio, and Hidalgo), Cameron County has a higher average number of uninsured

**Medicaid eligible residents in border counties are more than double the rate for Texas as a whole.**

<sup>1</sup> Zavaleta, Antonio N. 2000, "Do Cultural Factors Affect Hispanic Health Status?" An article prepared for The University of Texas Health Sciences at Houston School of Public Health satellite center at Brownsville. Article available online at <http://ntmain.utb.edu/vpea/elnino/newarticle.html>.

residents (30%) compared to 20% of urban Texans. Thirty percent of Cameron County's population receives Medicaid assistance. Medicaid coverage for the border region is particularly high for pregnant women, children, and the elderly. Compounding the impact, the border region has fewer healthcare resources to face these challenges in terms of primary care physicians, registered nurses, dentists, pharmacists, and hospital beds. In a study by Warner and Hopewell (1999) all counties studied – including Cameron, Hidalgo, Starr, Willacy, and Zapata in the Lower Rio Grande Valley and Dimmit, Kinney, Maverick, Val Verde, Webb, and Zavala in the Mid-Rio Grande Area – were classified as having at least partial shortages of healthcare professionals. In short, U.S./Mexico border residents are living in one of the most medically challenged and underserved regions in the United States.<sup>1</sup>

## REGIONAL HEALTHCARE & LIFE SCIENCE ASSETS<sup>2</sup>

### Health Services Employment

Table 5.16 provides an overview of the strength of Cameron County's health services base by SIC as of 2000, the most recent year for which reliable data is available: Of these 16,000 jobs, more than 13,000 are found in hospitals, doctors' offices, and home healthcare services.

**Table 5.16. Cameron County Health Services Employment, 2000**

SIC	Cameron		Texas
	Emp	LQ	LQ
Offices & Clinics of Drs Of Medicine	2,365	1.48	0.95
Offices & Clinics of Dentists	394	0.7	0.81
Offices & Clinics of Drs Of Osteopathy	9	0.22	1.07
Offices & Clinics of Chiropractors	45	0.58	0.86
Offices & Clinics of Optometrists	54	0.75	1.26
Offices & Clinics of Podiatrists	38	1.55	0.73
Offices & Clinics of Health Practitioners, NEC	121	0.64	1.04
Skilled Nursing Care	946	0.84	0.53
Nursing & Personal Care	273	1.48	2.96
General Medical & Surgical Hospitals	3880	1.29	0.8
Specialty Hospitals, Except Psychiatric	3	0.02	1.44
Medical Laboratories	37	0.28	1.06
Dental Laboratories	5	0.13	0.81
Testing Laboratories	23	0.27	1.51
Home Health Care	6,773	12.9	2.69
Kidney Dialysis Centers	63	1.29	1.2
Specialty Outpatient Facilities, NEC	61	0.34	0.39
Health & Allied Services, NEC	57	0.9	0.96
Residential Care	699	1.05	0.62
Medicinal Chemicals and Botanical	11	0.47	0.12
Pharmaceutical Preparations	11	0.05	0.4
Dental Equipment & Supplies	33	2.55	0.08
Commercial Physical & Biological Research	6	0.03	0.67

Source: Minnesota IMPLAN Group, Inc.

The region does have more to offer a major medical research facility than a “problem pool.”

For example, while women in Cameron County rank very low for receiving pre-natal medical care, infant mortality statistics are very low.<sup>3</sup> Something is happening there... How are these needs being met? Some kind of midwifing structure must exist, whether it is formal or informal... Discovering and defining that structure would be an interesting research study in itself.

<sup>1</sup> Antonio Furino and Don Miller, “Changes in the Healthcare Workforce, The Texas/Mexico Border Region 1996/97-2001” Regional Center for Health Workforce Studies at Center for Health Economics & Policy (CHEP), The University of Texas Health Science Center at San Antonio, June 2002.

<sup>2</sup> Health Services and Related Manufacturing, as defined for this report, include two standard SIC clusters: Health Services and Life Sciences.

<sup>3</sup> Texas Department of Health, Bureau of vital statistics maps indicate: Crude birth rates and inadequate prenatal care are “very high,” Onset of prenatal care within first trimester is “very low,” yet Low Birth Weight Infants is “very low,” and Infant Mortality is “very low.”

Figure 5.17 shows the relative concentration of health services employees in Cameron County is at about the national average for Office Clinics (LQ = 1.18), Nursing Care Facilities (LQ = .82), and Hospitals (LQ = 1.19). On the one hand, health Services with a LQ of 1.75 and Other Healthcare Services with an LQ of 5.17 and nearly 7,000 wage earners is made up primarily of home healthcare workers. On the other hand, Cameron County has very little medical manufacturing in terms of Pharmaceuticals, Medical Devices, and Medical Manufacturing. Manufacturing related to Health Services with a LQ of 1.66 employees the most workers.

**Figure 5.16. Health Services & Medical Manufacturing, 2000**

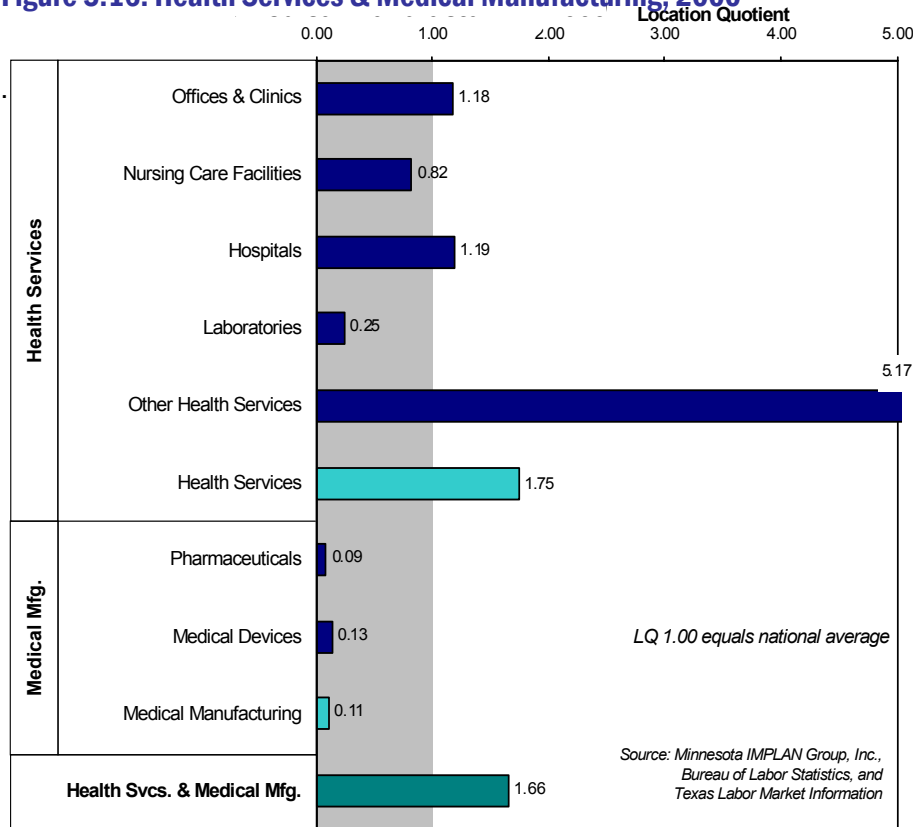
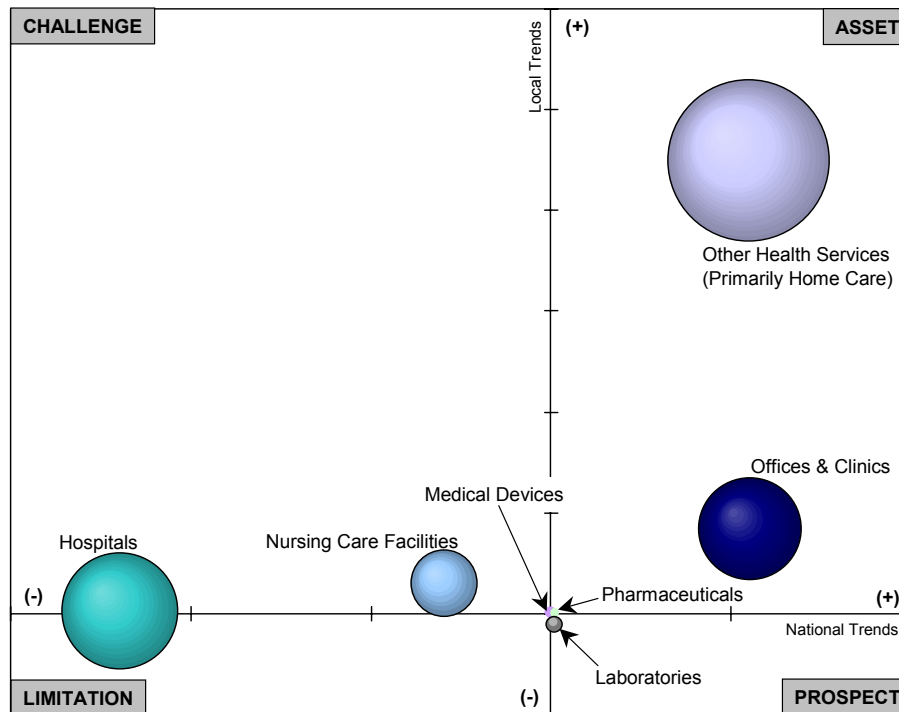


Figure 5.17 shows that, as a share of the total American workforce, the number of employees working in Hospitals is declining while Offices & Clinics and Home Healthcare workers are rapidly expanding. These trends are tied to the preference among coverage providers for outpatient services. Again we see that Health Services related to home care and offices & clinics are the strongest assets in Cameron County and Medical Devices, Pharmaceuticals, and Laboratories are indicated as potential assets.

**Figure 5.17. Shift-Share for Health Services & Medical Manufacturing**



Source: Minnesota IMPLAN Group, Bureau of Labor Statistics, and Texas Labor Market Information

Table 5.17 indicates that regional hospitals and doctors’ offices, beyond their role as community healthcare providers, provide wage structures significantly higher than the rest of the local economy and actually pay wages higher than the state, when adjusted for cost of living.

### Labor Force and Health Services Education

With the expected population growth, a major influx of healthcare providers will be needed to provide adequate services. It is estimated that by 2010, assuming zero net migration, 872 more nurses would be needed to maintain current local population/health professional ratios and 2,049 more nurses to achieve national ratios. If population increases at the current rate, the study area would require an additional 1,772 nurses to maintain the status quo and 4,163 to achieve national levels. For primary care physicians, the requirements for the year 2010 range from an additional 125 practitioners to maintain current ratios – assuming zero net migration – to 358 new doctors under the assumptions of current migration and national parity.

The regional healthcare industry provides an abundance of prospects for lower wage work in health services, while high-skill and high-wage positions are all too often filled by professionals recruited from other regions in the US and abroad.

**Table 5.17. Cameron County Health Wages: Local Share & Texas Share**

Cameron County Health Wages Relative to Average Local Wage, 2000					
125% or Greater of Avg.		75% - 125% of Avg.		Less than 75% of Avg.	
Cluster Description	Emps.	Cluster Description	Emps.	Cluster Description	Emps.
Offices & Clinics of Drs of Osteopathy	9	<b>100%-125%</b>		Dental Laboratories	5
Offices & Clinics of Drs of Medicine	2,364	Medical Laboratories	37	Home Health Care Services	6,773
Kidney Dialysis Centers	63	Testing Laboratories	23		
General Medical And Surgical Hospitals	3,880	Specialty Outpatient Facilities, NEC	61		
Offices & Clinics of Dentist	394	Heath and Allied Services, NEC	57		
Offices & Clinics of Health Practitioners, NEC	121	Offices and Clinics of Chiropractors	45		
Commercial Physical and Biological Research	6	Specialty Hospitals, Except Psychiatric	3		
Dental Equipment and Supplies	33	<b>75%-100%</b>			
		Medicinal Chemicals and Botanical Products	11		
		Pharmaceutical Preparations	11		
		Offices and Clinics of Podiatrists	38		
		Offices and Clinics of Optometrists	54		
		Residential Care	699		
		Nursing and Personal Care Facilities, Not Elsewhere Classified	273		
		Skilled Nursing Care Facilities	946		
Cameron County Health Wages Relative to Texas Health Wages, 2000					
75% or Greater of TX Avg.		60 - 75% or Greater of TX Avg.		Less than 60% or Greater of TX Avg.	
Cluster Description	Emps.	Cluster Description	Emps.	Cluster Description	Emps.
Offices & Clinics of Drs of Osteopathy	9			Offices & Clinics of Optometrists	54
Kidney Dialysis Centers	63	Specialty Outpatient Facilities, NEC	61	Testing Laboratories	23
General Medical & Surgical Hospitals	3,880	Health & Allied Services, NEC	57	Specialty Hospitals, Except Psychiatric	3
Residential Care	699	Offices & Clinics of Doctors of Medicine	2,364	Medical Laboratories	37
Offices & Clinics of Health Practitioners, NEC	121	Home Health Care Services	6,773	Offices & Clinics of Podiatrists	38
Offices & Clinics of Dentist	394	Dental Equipment & Supplies	33	Dental Laboratories	5
Nursing & Personal Care Facilities, NEC	273			Commercial Physical & Biological Research	6
Skilled Nursing Care Facilities	946			Medicinal Chemicals & Botanical Products	11
Offices & Clinics of Chiropractors	45			Pharmaceutical Preparations	11

Source: IMPLAN

The University of Texas at Brownsville (UTB)/Texas Southmost College (TSC) offers certification programs and two- and four-year degrees in a variety of health-related disciplines through the School of Health Sciences. UTB/TSC prepares technicians of emergency medicine and medical laboratory, professional radiological and respiratory therapy technicians as well as undergraduate nursing programs. Graduate studies in the sciences and health-related fields are more limited. The College of Science, Mathematics, & Technology at UTB offers Master of Science on an Interdisciplinary Studies Master's degree with a concentration in biology. The continuing education program at UTB prepares medical assistants and offers course in medical transcription. Distance education facilities provide opportunities to acquire a bachelor degree in nursing and to prepare technicians in respiratory therapy.

Texas State Technical College (TSTC) in Harlingen offers certificates and associate of applied science degrees in health related technological fields such as biomedical engineering technology, chemical technology, dental laboratory technology, emerging medical technology, health information technology, and surgical technology. Through the “College Connections” program TSTC cooperates with local high schools and offers juniors and seniors courses in health science technology, health science occupation, and family health needs. Local medical clinics also have training programs. For example Valley Regional Medical Center has teaching programs for nurses and physicians. Valley Baptist Medical Center trains its employees and offers three-year residency program for family practitioners in cooperation with Su Clinica Familiar.

In short, traditionally, regional health-related educational facilities have trained supportive medical personnel such as technicians, nurses, medical assistants and not medical professionals such as general practitioners or specialists. However, with the recent formation of the Lower Rio Grande Valley Regional Academic Medical Center (RAHC), it is now possible to locally acquire comprehensive skills in internal medicine and obstetrics/gynecology and a program in pediatrics will be launched in 2004.

### Lower Rio Grande Valley Regional Academic Health Center (RAHC)<sup>1</sup>

The Lower Rio Grande Valley Regional Academic Health Center (RAHC) was created to provide state-of-the-art undergraduate and graduate medical education and research opportunities to meet the region's growing need for physicians and other healthcare providers. The RAHC includes three major divisions: A Medical Education Division in Harlingen and McAllen, Medical Research in Edinburg, and Public Health in Brownsville. The UT Board of Regents designated The University of Texas Health Science Center at San Antonio (UTHSCSA) to oversee and operate the Medical Education and Medical Research Divisions while the Public Health Division was designated as a branch of The University of Texas Health Science Center at Houston's School of Public Health.

RAHC's undergraduate and graduate medical education facility, located in Harlingen, currently supports 24 third-year and 24 fourth-year medical students as well as residency programs under the sponsorship of Valley Baptist Medical Center (VBMC) which will afford medical graduates the ability to remain in the

**“The winners here will be the children and the people who are depending on quality healthcare.”**

*State Senator Eddie Lucio Jr.*

**“I was in the ninth grade and I told my father I wanted to be a doctor. When I told him we were out in the fields picking cantaloupe... his response was, ‘Si mijo.’”**

*Dr. Leonel Vela, Dean RAHC*

*native of Pharr and son of a Valley farm worker*

<sup>1</sup> The 75<sup>th</sup> Texas Legislature enacted S.B. 606, authorized The University of Texas System to establish and operate a Regional Academic Health Center (RAHC) to serve the four counties of the Lower Rio Grande Valley (Cameron, Hidalgo, Starr and Willacy). The Legislature appropriated \$30 million of Tuition Revenue Bond Proceeds for construction of the RAHC.

<sup>2</sup> Laura B. Martinez, Valley Morning Star, Valley healthcare to benefit: Physician hopes new facility will inspire more area youths to become doctors, June 23, 2002.



region. The School of Public Health at UT-Brownsville (recently built or currently under construction?), will research such issues as environmental health, epidemiology, preventative medicine and other public health issues as well as provide education and training programs.



**The LRG Valley Academic Health Center, Harlingen:  
The first component of the RAHC to be completed.**

The Medical Research Division, the 3<sup>rd</sup> RAHC component, will be built in Edinburg, adjacent to The University of Texas-Pan American campus, with \$15 million Permanent University Fund (PUF) Proceeds and will serve the four counties of the Lower Rio Grande Valley.<sup>1</sup> A McAllen Branch of the Medical Education Division was also authorized, and \$5 million of PUF Proceeds were designated for construction of this medical education building.<sup>2</sup> The RAHC is expected to contribute \$258 million to the regional economy over the next 10 years.<sup>3</sup> RAHC will be an important catalyst for meeting the Valley's healthcare needs as well as have the potential to accelerate the development of regional Healthcare/Medical Clusters.



**RAHC Research Division planned for Edinburg**

<sup>1</sup> Ibid.

<sup>2</sup> Regional Academic Health Center, on-line: <http://rahc.uthscsa.edu/>, Accessed: June 20, 2002.

<sup>3</sup> Laura B. Martinez, Valley Morning Star, RAHC to stimulate economy, June 26, 2002. According to a Feb. 11, 2001, economic development study by Impact DataSource of Austin.

### At the Crossroads

The clear leader among Cameron County health services occupations is home healthcare. While this sector is located in the “asset” quadrant of the Shift-Share analysis, it nevertheless presents a challenging situation. In the last ten years, home healthcare has experienced a boom in Texas and other states. Changes in the provision of U.S. medical services are generally tied to changes in compensation policy affected by large insurers. The explosion of home healthcare services is no exception. While this may be a welcome trend among patients, it is not an unequivocal positive development. Home health providers earn, on average, only 39% of the average annual wage in Cameron County, reflective of the combination of both low wages and part-time employment situations. Therefore, while employees in this field are providing a valued service to patients, these healthcare providers may themselves be patients who are unable to pay for their own healthcare needs.

Offices and clinics of MDs, on the other hand, are a bright spot in the local economy. The 2,300 employees within this sector earn, on average, more than double the average annual county wage. While this number is certainly weighted heavily with physicians’ compensation, the positive impact on the greater economy is unquestionable. Medical and surgical hospitals present a similar positive scenario, with nearly 4,000 employees earning over 150% of the average local wage. Most of these employees are found at Valley Baptist, Valley Regional, and Brownsville Medical Center.



**Valley Baptist Medical Center, Harlingen**

Health-Related Manufacturing and Life Sciences is not currently a strength in Cameron County. With fewer than 100 employees as of 2000, the industry lacks a solid regional presence. Manufacturing of medical equipment, for example, is a fast moving, high technology business where labor costs are insignificant in comparison to the importance of state-of-the-art R&D, capital costs, and quality control. The expanding pharmaceutical industry also depends less on labor costs than on world-class research. Drug development is a long and expensive process and early stage manufacturing of new drugs typically takes place near a lab where the developers are able to monitor manufacturing processes. Drugs have very low shipping weights and can be easily distributed worldwide significantly lessening the advantage of a border location. As noted, within the U.S. the strongest life science cluster concentrations are in the Northeast and in

Southern California and for Texas they are Houston-Galveston-The Woodlands, San Antonio, and Dallas-Fort Worth.

Cameron County faces many challenges in developing its health services and perhaps life science clusters, particularly the lack of R&D, major medical businesses, challenging demographics, persistent poverty and unemployment, and the presence of a transient border population. The region has attracted retirees from around the nation, while at the same time serving as an immigration gateway to young, legal and not-legal immigrants from Mexico and other Latin American countries. These two expanding demographic groups pose significant and different healthcare challenges that could also provide valuable healthcare research and development “experiential” learning laboratories.

Access to quality education, professional development, and healthcare prevention will play a decisive role. In the past, Cameron County has struggled to provide local labor to fill the high-skill, high-wage positions available in the health services sector. The continuing expansion of healthcare related courses and degrees at TSTC, UTB-TSC and the creation of the RAHC centers in Harlingen, Brownsville, and Edinburg will help correct these deficiencies. The new RAHC residencies in internal medicine, obstetrics and gynecology, and pediatrics promise to help alleviate some of the more pressing healthcare professional shortages in the region.

The Valley experiences unique challenges due to its binational realities. With very different care options on either side of the border, local residents will continue crossing the border in search of lower healthcare costs and/or increased quality and availability. US residents, particularly the elderly, will continue to purchase drugs across the border because of low cost and increased availability. The large medical centers of the region will continue to receive a large numbers of indigent patients from both sides of the border. While cross-border cooperation in healthcare faces many regulatory and financial challenges, the long-term financial health of the regional medical establishment requires creative binational solutions.

NAFTA, by opening some medical care markets and allowing investment in health facilities across national boundaries, has the potential of stimulating much more trade in health services. Eventually, NAFTA will gradually open health insurance markets by liberalizing the terms under which providers may offer services in the neighboring nation. Some exceptions to these liberalizing tendencies have been entered into the annexes of the NAFTA Agreement by affected state medical boards and other interested governmental entities. Due to significant differences in the U.S. and Mexico relative to the training of health professionals, reciprocity in licensing is expected to be achieved at a slower rate than the transferability of credentials already in existence between Canada and the United States.<sup>1</sup>

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<sup>1</sup> David Warner and Jillian Hopewell, “NAFTA and United States Mexico Border Health: The Impact on Health Resources and Services Administration (HRSA)-Sponsored Programs” Center for Health Economics and Policy, The University of Texas Science Center at San Antonio, 1999.

<sup>1</sup> These action initiatives are based on discussions at the *Future of the Region, Regional Forum* – Lower Rio Grande Valley Council of Governments – Healthcare Issues Focus Group. Conference Co-Hosts: Texas Center for Border Economic and Enterprise Development, The University of Texas at Brownsville and Texas South Most College; Texas State Technical College; and Lower Rio Grande Valley Development Council, Harlingen Texas, June 25, 2002.

### Action Initiatives<sup>1</sup>

The U.S./Mexico border has one of the fastest growing populations in the nation and regional healthcare delivery is severely constrained by a longstanding scarcity of physicians, dentists, nurses, and allied healthcare providers. The regions’ transit (e.g., Winter Texans and Mexicans) and resident population presents unique healthcare problems such as binational and bicultural challenges to wellness education, teenage pregnancy, diabetes, drug resistant TB, and cross-border bio-terrorism. However, the population mix also provides a “unique living laboratory environment” for problem-centered R&D and for binational healthcare education and training programs that focus on the unique healthcare needs of the Lower Rio Grande Valley.

There is a lack of world-class research on border healthcare problems and such research activities could establish a new vision of healthcare business and manufacturing growth for the Valley. Perhaps more than any other region of the U.S. the Lower Rio Grande Valley needs to embrace a multi-disciplinary approach to healthcare. Teams of doctors, nurses, and other healthcare professionals need to treat the “Border Patient” in terms of:

- ⇒ The importance of different cultural and ethnic backgrounds on healthcare challenges and cures as well as “Wellness Education” and preventative healthcare
- ⇒ Environmental challenges on the border and how they impact regional public health – including water use in arid lands, pollution, and healthcare issues specific to colonials
- ⇒ Healthcare attitudes and beliefs related to mental health and psychological issues specific to border regions
- ⇒ Healthcare concerns specific to the elderly a fast growing segment of the border population
- ⇒ Healthcare concerns specific to the young – teenage pregnancy, substance abuse, alcoholism
- ⇒ Sexual transmitted diseases, e.g., HIV/AIDS where the fastest growing group is heterosexual females which had an increase of 433% during 2000-2001, it is predicted that there will be a 500% increase in AIDS patients in the border region over the next 60 years
- ⇒ Research on diseases that are most prevalent in the border region such as Diabetes and Drug resistant TB

**The Border Region needs centers of research excellence that focus on border healthcare challenges. The region will not have excellence in healthcare unless it has excellence in research within the region (not located in Houston or San Antonio) and in medical areas that target border healthcare needs.**

### Regional Healthcare

The Lower Rio Grande Valley needs to better link and leverage regional assets on both sides of the border to meet border healthcare challenges and concerns and to link with the regional healthcare clusters including education and training, business retention and development, and other border-specific issues. Regional Healthcare Focus Group<sup>2</sup> Participants noted the following:

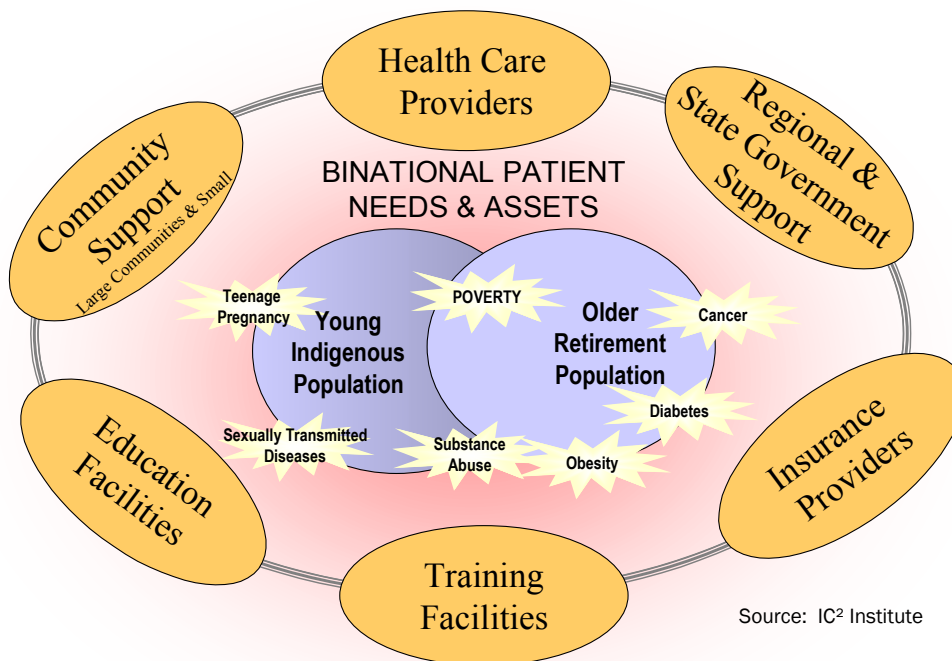
“We are fractionalizing Border healthcare, preventive care, and healthcare delivery. There are too many restrictions and too much compartmentalization. There is a general lack of collaborative efforts by all healthcare providers in the LRG Valley. The State’s medical plan needs to be revamped currently it has

<sup>1</sup> These action initiatives are based on discussions at the *Future of the Region, Regional Forum* – Lower Rio Grande Valley Council of Governments – Healthcare Issues Focus Group. Conference Co-Hosts: Texas Center for Border Economic and Enterprise Development, The University of Texas at Brownsville and Texas Southmost College; Texas State Technical College; and Lower Rio Grande Valley Development Council, Harlingen Texas, June 25, 2002.

<sup>2</sup> Ibid.

conflicting statutes and it is too complex and as a result funds are not applied for or are returned unused. The Valley needs collaborative efforts, at State and County levels, to bring groups together to underwrite risks and crises cases.”

**Figure 5.18. Cross-Border Patient Needs: Developing a Systematic Approach**



In short, the border region needs a healthcare system that has a broader perspective and more of a systematic approach, Figure 5.19. The challenge is to design a healthcare system from the “grassroots,” rather than wait for state legislative action. Business-as-usual will not lead to needed solutions or motivate ways to:

- ⇒ Adequately study major border healthcare challenges
- ⇒ Bring additional needed assets – money and talent – to solve critical healthcare problems of the Border Region
- ⇒ Promote education and training and outreach, better counseling for the young and for adults
- ⇒ Better leverage and coordinate limited resources
- ⇒ Search for increased sources of funding by programmatic area
- ⇒ Motivate creativity and change attitudes
- ⇒ Implement innovative programs and activities

**According to the Healthcare Focus Group, there is a need for:**

**More accountability for established systems in terms of funding** – “We need to go to legislature with a coordinated approach and focus on 3-4 programs/activities so local senators can fight for us. They can go to the State and Federal legislature and say, ‘The Lower Rio Grande Valley is in agreement that we need – this!’ As of now most healthcare funding stops in Dallas, San Antonio, and Houston and it doesn’t make it to the Border Region. Direction for LRG Valley Healthcare needs will NOT come from the State legislature.”



**Coordinated grant writing** – “We need to seek assistance of UTB/TSC and TSTC to better focus on the main problems/challenges and to organize these challenges by categories and rank them in terms of importance whether it be healthcare prevention and education, an integrated system of referrals and treatment; healthcare access, availability, affordability, accessibility, or lack of healthcare professionals, including doctors and allied physicians, nurses, nutritionists, councilors.”

**Establish a “Regional Healthcare Planning Group”** – “We need to meet on a regular basis - to get a broad range of healthcare providers and businesses in one room to

- ⇒ Assess available resources and activities
- ⇒ Explore better ways to communicate and cooperate
- ⇒ Focus on common problems and proposed solutions
- ⇒ Plan strategies for action – short and longer-term
- ⇒ Build on initial successes – even if they are relatively small”

## Sub-Section C: COMMUNITY NETWORKS & INFORMATION TECHNOLOGIES

### COMMUNITY NETWORKS VIA THE INTERNET

In 2001-2002, CBIRD-Texas Regional Action Committee (TRAC) conducted an inventory of telecommunications providers and a needs assessment to describe telecommunications use in Cameron County and Matamoros, Mexico.<sup>1</sup> It was determined that the county has a significant number of local service providers that offer competitively priced, up-to-date telecommunications connectivity.

According to regional Internet Service Providers (ISPs) and economic development leaders, a key challenge is the general lack of awareness of how new computer and information technologies can benefit the region economically and socially. It was also determined that there is a need to enhance border area and long-range fiber infrastructure. While wireless connectivity is being used to bridge the gaps in fiber services and provide Internet services to rural areas, a long-term infrastructure development is needed to include a combination of advanced fiber connections and wireless technologies to better coordinate regional communities' social networks and to more fully utilize the region's physical infrastructure.<sup>2</sup> As the report stated:

**Harlingen, Brownsville and Matamoros need to enhance interconnected bandwidth and community education about the benefits of broadband technologies. This will facilitate new tech-based firms locating to both sides of the border, job creation, and an improved quality of life for the region at large.<sup>3</sup>**

Successful border markets depend on binational cooperation; therefore Matamoros's telecommunications infrastructure challenges are linked to Cameron County's infrastructure challenges. Few fiber connections cross the Rio Grand. Regulations and politics prevent telecommunications companies from meeting “halfway.” Mexican providers focus on connecting Matamoros with Monterrey, Mexico City and central Mexican markets. U.S. Companies are hesitant to install fiber in Mexico, where ownership, control and maintenance become problematic. While some ISPs provide wireless broadband services across the border, manufacturing industries and other businesses on both sides of the border would like to see an increase in binational telecommunications cooperation to:

- ⇒ Increase fiber connections crossing the Rio Grande River
- ⇒ Increase wireless and remote connectivity
- ⇒ Educate industry on the competitive advantages that come from utilizing broadband technologies including Voice over Internet (VoIP), videoconferencing, and supply chain/inventory management

<sup>1</sup> This study was led by Dr. Corey Carbonara, Director, Baylor University's Institute for Technology Innovation Management and a team of researchers from Texas State Technical College (TSTC), Waco, Texas, and TSTC, Harlingen, Texas. Please refer to [www.cbird.org](http://www.cbird.org) for a copy of this report.

<sup>2</sup> Please refer to Appendix F: Communities' Networks, p. 174.

<sup>3</sup> Ibid.



## Creating a Community Network

Communities view improved telecommunications infrastructure as a means towards economic growth and development. Community networks offer one way to enhance this infrastructure and offer additional economic potential by creating social capital, facilitating the exchange of knowledge, uniting community leaders and organizations, and aggregating resources. Technology and society are interrelated and understanding this relationship allows for the most effective use and management of technology in increasingly interdependent and knowledge-oriented societies.

*Jonathan R. Wivagg  
Baylor University, 2002*

Based on the CBIRD-TRAC report, the Harlingen Chamber of Commerce led an initiative to bring advanced Internet services to the community. The Chamber envisioned the positive impact that improved data services would provide, including healthcare, education, and workforce development. The Chamber applied for and won a Texas Telecommunications Infrastructure Fund (TIF) Board grant that financed the construction of a community-owned telecommunications infrastructure for educational programs, computers, hardware, software, and advanced service provisions.

To design and implement their community network the city established a coalition composed of nine partners as follows: Harlingen Chamber of Commerce, City of Harlingen, Texas State Technical College, Harlingen Central Independent School District, Harlingen Public Library, Valley Baptist Medical Center, Su Clinica Familiar, Texas Workforce Centers, and Valley AIDS Council. While members of the coalition each had specific needs, they shared the overarching goal of community, social, and economic development (Figure 5.19).

**Figure 5.19. Harlingen City’s Community Network:**

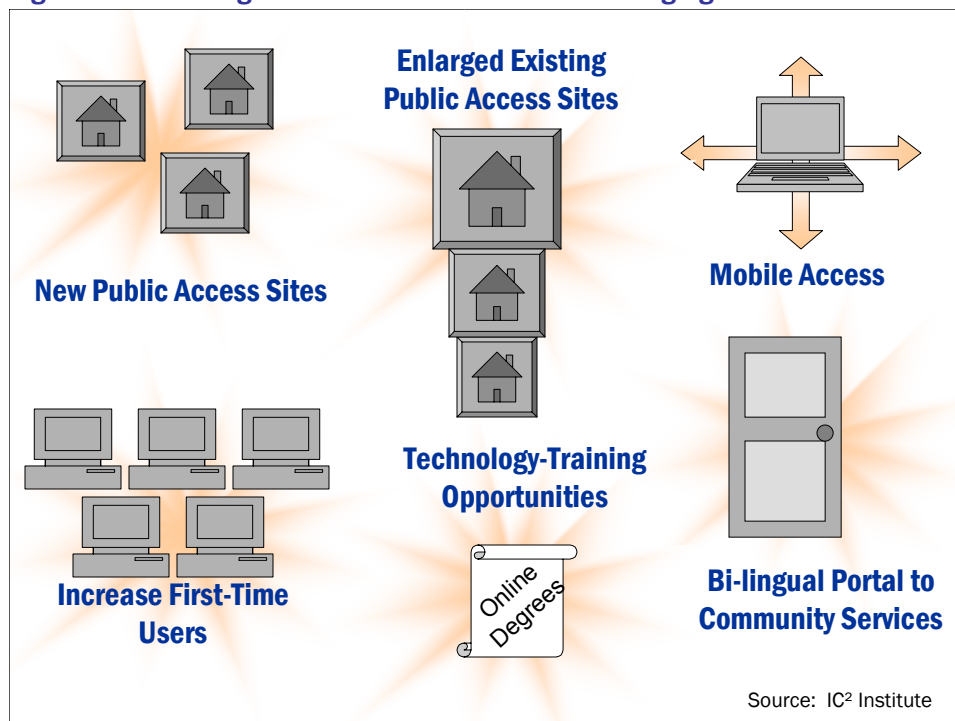


The CBIRD-TRAC technology needs assessment confirms that there are several secondary providers offering high-speed Internet service, but that their ISPs are often unwilling to extend advanced services due to a perceived demand shortfall

among local residents and businesses.<sup>1</sup> At the same time, the study exposed a general lack of awareness among the population as to the benefits of a community network as well as a lack of computer access and basic technology skills training. **This stalemate fully illustrates the edge of the digital divide: While the technology (and perhaps even the infrastructure) may exist, due to lack of education and/or final-end investment, the market is not realized and community needs are not met.**

Goals of Harlingen’s communities’ network are to increase computer use and awareness among the underserved population with aggressive marketing and outreach programs, including mobile computers with wireless Internet access being available for user check-out. (Figure 5.21.) Harlingen’s coalition also plans to sell portions of the network to local ISPs so the Chamber will not be viewed as a potential competitor and to maintain project support from local ISP companies.

**Figure 5.20. Harlingen Communities’ Network: Leveraging Benefits**



In summary, the steps the City of Harlingen and its Chamber are following toward establishing a community network are:

- ⇒ Commitment to a shared vision
- ⇒ Creative Funding
- ⇒ Completion of a needs assessment
- ⇒ Unbiased non-vendor professional consulting
- ⇒ Established goals
- ⇒ Clearly defined responsibilities

<sup>1</sup> Please refer to Appendix C, p. xxx

These same steps are recommended for other South Texas regions so they might establish their own community networks and to connect existing initiatives and networks across communities and regions of the lower Rio Grande Valley.

When we first started talking about telecommunications and community networks, we recognized that it was a regional issue and not just an issue for Harlingen. The vision for a vibrant telecommunications system would be to link all the key institutions in the Rio Grande Valley. Because of TIF every classroom in every school in the region has high speed access, but the key issues are content and having citizens educated about the value of the network as well as having it be available to those who want and need access.

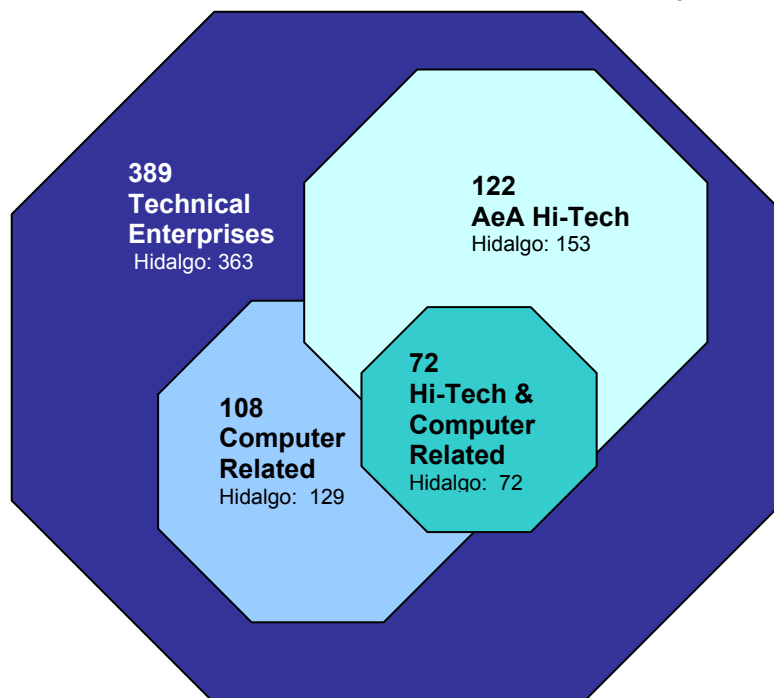
Nanette Fitch

Research and Small Business Council Coordinator  
Harlingen Area Chamber of Commerce, 2002

## TECHNOLOGY COMPANY BASELINE

In 1999, according to InfoUSA American Business Disk, Cameron County had 9,775 technology companies and Hidalgo County had 14,419, Figure 5.21. Using standard SIC codes, 389 of these firms are classified as “Technology Enterprises” in Cameron County and 363 in Hidalgo County. Taking a subset of computer related firms there are 108 in Cameron County and 129 in Hidalgo. The American Electronics Association (AEA) uses a subset of SIC codes to identify “HiTech” firms and according to the AEA classification there were 122 HiTech firms in Cameron County and 153 in Hidalgo. Taking the intersection of computer related firms and AEA HiTech firms shows 72 Hi-Tech/Computer Related firms in both Cameron and Hidalgo Counties.

**Figure 5.21. Number of Tech Firms Located in Cameron County (& Hidalgo County)**



Source: InfoUSA American Business Disk

Table 5.18 lists the number of patents<sup>1</sup> registered in selected metropolitan areas in Texas from 1990-1999. The border MSAs representing Cameron, Hidalgo, Webb Counties show the lowest number of patents: 59, 37, and 14 respectively. On a per capita basis, these figures remain at the low end of the scale: Cameron County registered .176, Hidalgo County .065, and Webb County .072. San Antonio and Austin MSAs have the highest number of total patents, Figure 5.22. These two hi-tech industry cluster centers also have the largest populations of the areas listed, and therefore the largest number of universities, industries, and other infrastructures to facilitate research and new product development.

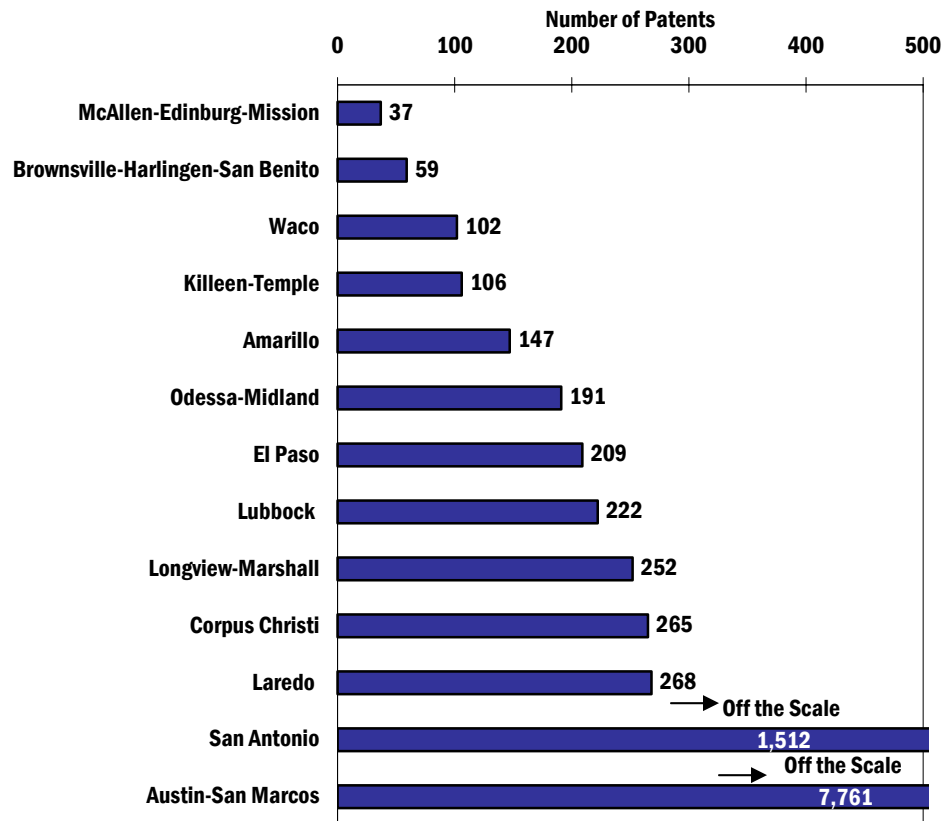
**Table 5.18. Patents 1990–1999, Per Capita Basis** (Total Patents per MSA Population)

	Total Patents	Population (000)	Patents /1,000
<b>Brownsville-Harlingen-San Benito, TX MSA</b> (Cameron Co.)	59	335,227	0.176
<b>El Paso MSA</b> (El Paso Co.)	209	679,622	0.308
<b>Laredo, TX MSA</b> (Webb Co.)	14	193,117	0.072
<b>McAllen-Edinburg-Mission, TX MSA</b> (Hidalgo Co.)	37	569,463	0.065
<b>Amarillo, TX MSA</b> (Potter, Randall Co.)	147	217,858	0.657
<b>Corpus Christi, TX MSA</b> (Nueces, San Patricio Co.)	265	380,783	0.696
<b>Longview-Marshall, TX MSA</b> (Gregg, Harrison, Upshire Co.)	252	208,780	0.696
<b>Lubbock, TX MSA</b> (Lubbock Co.)	222	242,628	0.915
<b>Killeen-Temple, TX MSA</b> (Bell, Coryell Co.)	106	312,952	0.339
<b>Odessa-Midland, TX MSA</b> (Ector, Midland Co.)	191	237,132	0.805
<b>San Antonio, TX MSA</b> (Bexar, Comal, Guadalupe, Wilson Co.)	1512	1,592,383	0.950
<b>Waco, TX MSA</b> (McLennan Co.)	102	213,517	0.478
<b>Austin-San Marcos, TX MSA</b> (Bastrop, Caldwell, Hays, Travis, Williamson Co.)	7761	1,249,763	6.210

Source: Census 2000 PHC-T-3, and <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/county.pdf>

While a large population is not in itself a prerequisite to entrepreneurial inventiveness, the expected population growth of the border region should easily support hi-tech cluster development, if the population is educated in technology sciences and in the transfer of technology to commercial applications. Eliyahu Goldratt, a visionary who helped to develop the Economic Theory of Constraints promotes that *the key to inventiveness is not genius, but the courage to challenge basic assumptions...* and this is a quality with which the border region can choose to abound.

<sup>1</sup> Data is based on utility patents granted from 1990 - 1999 with a first-named inventor who resided in the United States are included in this report. (There is no more recent data than 1999 by county or metro area.) The majority of patents issued by the USPTO are utility (i.e. invention) patents. Other types of patents and patent documents issued but not included in this data are plant patents, design patents, statutory invention registration documents, and defensive publications. The geographic distribution of patents is based on the residence of the inventor whose name appears first on the printed patent.

**Figure 5.22. Total Patents of Selected Metropolitan Areas**

Source: Utility Patent Data <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/county.pdf>

“No exceptional brain power is needed to construct a new science or to expand on an existing one. What is needed is the courage to face inconsistencies and to avoid running away from them just because ‘that’s the way it was always done’... This challenging of basic assumptions is essential to breakthroughs.”

*Eliyahu M. Goldratt,  
“The Goal: A Process of Ongoing Improvement”*

## CASE PROFILES: HI-TECH ENTREPRENEURSHIP

### Brownsville Public Utility Board ([www.brownsville-pub.com](http://www.brownsville-pub.com))

Know-how	Capital	Talent	Infrastructure	Research
Utilities & fiber	Equipment	Skilled labor	Provider	GIS & Lydar

**The Brownsville Public Utility Board (PUB) partnered with The University of Texas at Brownsville/Texas Southmost College and the City of Brownsville to provide broadband Internet access via existing fiber loops. UTB/USC is operating a Campus LAN and a microwave antenna that communicates streaming audio/video to universities in Matamoros.**

“The Brownsville Independent School District would like to use our fiber to connect multiple campuses... Currently, ten to fifteen percent of our network is dark fiber [not in use]. We could use this fiber to enhance access to the Brownsville Public Schools, but to do this we need to enhance our internal Nortel hardware technology to accommodate their needs.” Jose Luis Lopez.<sup>1</sup>

The technical resources and manpower needed to create a Brownsville-based community network currently exist. The PUB is in the process of installing hi-quality

fiber in the outer edges of the city to meet PUB’s internal needs. Jose Luis Lopez, PUB’s director of Information Services, has taught at UTB/TSC and is on the UTB/TSC advisory board. He believes the PUB could work with UTB/TSC to create a website that would focus on a community network. Having taught at UTB/TSC, he is confident that UTB/TSC students have the needed capabilities. He believes in hiring local talent as about half of PUB’s current IT staff was recruited from UTB/TSC.

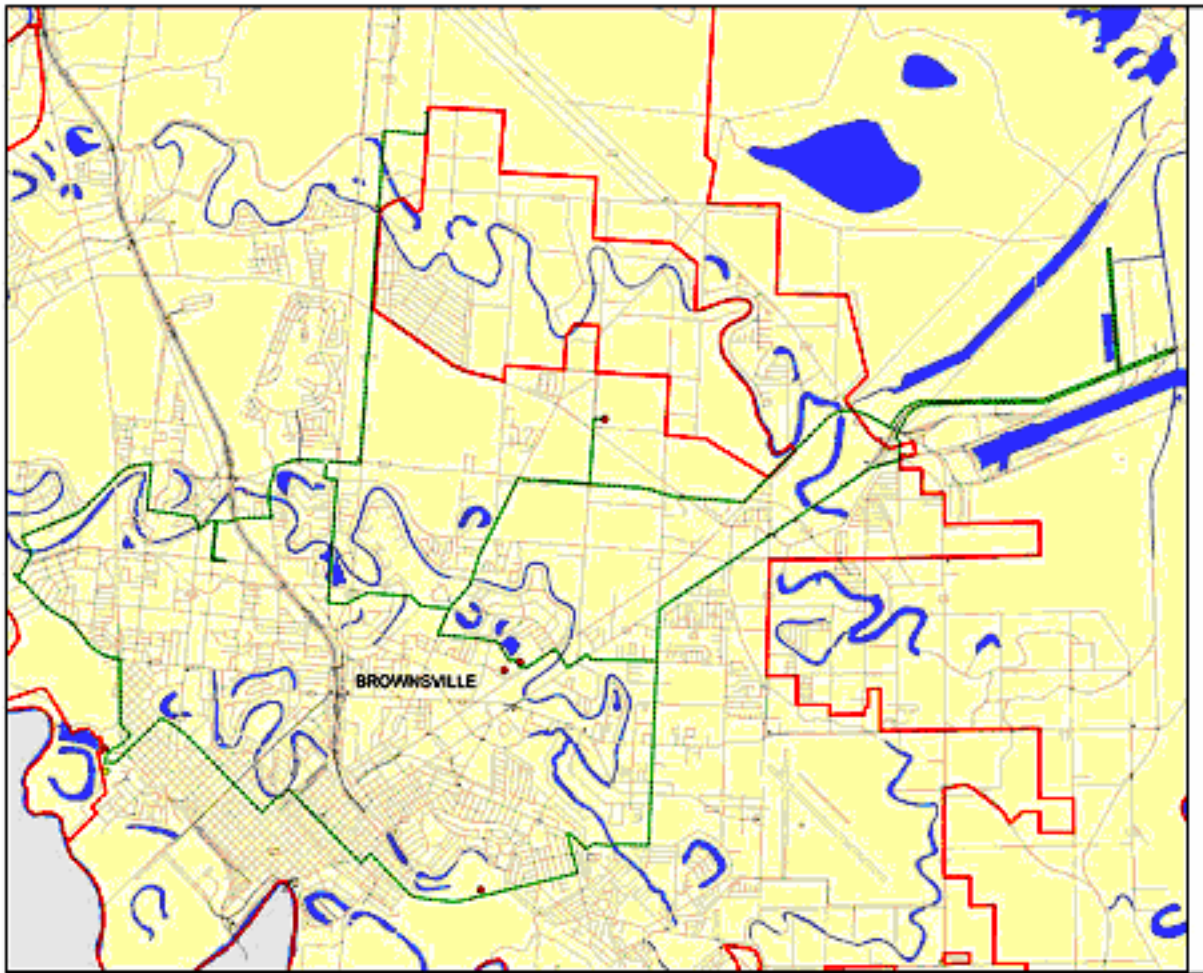
A Linux user group at UTB/TSC maintains a server farm that is on the cutting edge of Linux technologies. With appropriate funding and visionary leadership at UTB/TSC a student project could create a Community Network portal where the PUB could serve the project site with fiber connections that are already serving UTB/TSC.

Figure 5.23 shows PUB fiber in green to illustrate that content development for Brownsville Community Portal could use existing fiber and be hosted within UTB’s existing Linux Open Source Research Center facilities.

**The technical resources and manpower needed to create a Brownsville-based community network already exist.**

<sup>1</sup> Excerpts from interview of Jose Luis Lopez, Brownsville Public Utility Board, conducted by Mark Gipson, summer 2002.



**Figure 5.23. Map of PUB fiber in Brownsville**

**MPC TEXAS ([www.mpctexas.com](http://www.mpctexas.com))**  
**Multimedia Production Center**  
**Brownsville, Texas**

Know-how	Capital	Talent	Infrastructure	Research
Developers	Self-Financed	Programmers	User & Sales	Internet Marketing

By seeking the talent they need, overcoming infrastructure challenges, and serving extremely high quality websites, MPC TEXAS is able to compete and grow in the Rio Grande Valley.

David Watkins founded Multimedia Production Center in 1989. He believes that his company, with 50 clients, is the number one website developer in the Valley in terms of artistic quality and speed. “We were project driven at first. Building our portfolio was the priority -- now we have more clients than I would have



ever imagined.”<sup>1</sup>

Most of MP3’s clients had inadequate web sites when they contracted with MPC. The firm’s belief was that technology in general, and websites in particular, were underdeveloped in the Valley because businesses did not perceive the value of a quality on-line presence. But that perception is fast changing. MPC developed a website for South Padre Island (Sopadre.com) that receives an average of eight million hits per month, with an average of twelve browsing minutes per visitor, building a tremendous amount of advertising exposure.

Mr. Watkins handles company sales personally. “People who are literate enough to sell Internet web development either want too much money or they aren’t personable enough to be in sales: So I’m the client face of the company. Programmers are also hard to find. There is entry-level talent in the Valley but not many people who can build a website from beginning to end. Our programmers are mostly Canadians that moved here when they were young kids. I’m proud of my development crew; we have never been stumped on a project. Technically we can do anything that our clients ask.”

Customers who develop their websites with MPC also contract them as their Internet host. Unfortunately, the valley’s Internet infrastructure is not fully reliable, as Mr. Watkins states, “At one point we had a T1, and we were close enough to the local pop and could get a reasonable rate. But we had consistent outages between here and Houston that would frequently shut us down, making us blind to the world.” Supplying intermittent service was not considered an option. While all clients want high quality service, in some cases lives can hang in the balance. One MPC client, South Texas EMS, employs a custom-built instant messaging program to submit accident reports. This process which previously took fifteen minutes can now occur in seconds. Realizing that a 98% reliability rate was not enough for critical communications between hospitals, MPC contracted with Rackspace in San Antonio: “It’s cheap and reliable with little or no downtime.”

MPC is a strong example of local entrepreneurship:

- ⇒ Sopadre.com is their flagship client with several million hits each month
- ⇒ Westlaco.com chamber of commerce site has large internal intranet and external search features
- ⇒ Valley International Airport provides real time flight updates for travelers
- ⇒ McAllen Chamber of Commerce has an award-winning MPC designed database driven website

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<sup>1</sup> Excerpts from interview of David Watkins, CEO Multimedia Production Center, conducted by Mark Gipson, summer 2002.

**Hi Tech Productions, Inc. (www.cadcam.com)****Computer Aided Design & Manufacturing****Austin, Texas, with alliances in Brownsville, Texas and Matamoros, Mexico**

Know-how	Capital	Talent	Infrastructure	Research
CAD & CAM	VC/Equipment	Skilled Labor	Binational	CAM Software

**Hi Tech Productions was started by Michael A. Molina, Sr. who received his technology education in tool and die design from IBM.**

Like most businesses in today's tech sector, Hi Tech Productions, Inc. is running lean, with 15 employees, but the scope of company services has evolved and expanded to include both Computer Aided Drafting (CAD)

and Computer Aided Manufacturing (CAM). Mr. Molina built the business by (1) understanding what the customer had in mind at the time of design, (2) meeting the end-users' expectations, and (3) producing physical prototypes that could be field tested. Hi Tech customers currently include Motorola, IBM, AMD and DELL.

Computers play a critical role in Hi Tech's ability to rapidly design and test prototype designs. The company's CIT network also allows employees to exchange files across an intranet that connects Hi Tech design workstations across geographically distant locations to the heavy equipment used to produce the finished components. This cuts down the prototype-to-production process timeline as it allows access to past project plans and connects production directly to inventory. This just-in-time strategy also leads to smarter warehousing and less waste of materials.

Hi Tech's success is tied to their alliance with GoBar: a Matamoros-based maquila that is working to create binational light-manufacturing clusters on the border (see page 93.) In addition to GoBar being a key customer for Hi Tech's prototypes it is also the company's key financier and source of venture capital for large equipment purchases. In exchange, Hi Tech provides GoBar's employees with training on many of its more sophisticated CAD/CAM machines and helps keep them on the cutting edge of manufacturing software and related tools.

Hi Tech Productions' success is based on their ability to create a test product (with or without pre-existing plans) and build a physical model within days. The company recently created a machine that improves the time and cost of making silicon wafer circuits for microprocessors: A success for Hi Tech Austin and a success for GoBar's manufacturing facility in Matamoros. In addition to Hi Tech taking its patented machines to market, the plan is to expand regionally to create a network of production centers, each with its own specialization and educational capability. The company has based its future on integrating excellent craftsmanship with cutting-edge technology and rapidly disseminating the products and knowledge created in this process.

**For the first three years Hi Tech created prototypes, then they began to increase their ability to mass produce products. This ability provided the resources to increase the number of employees and to bring lite-manufacturing and design experience to the company.**

**The ideal worker in this cluster is an engineer who can think like a technician... or a technician who can think like an engineer.**

*Michael Molina, Sr.  
CEO, Hi Tech Productions, 2002*

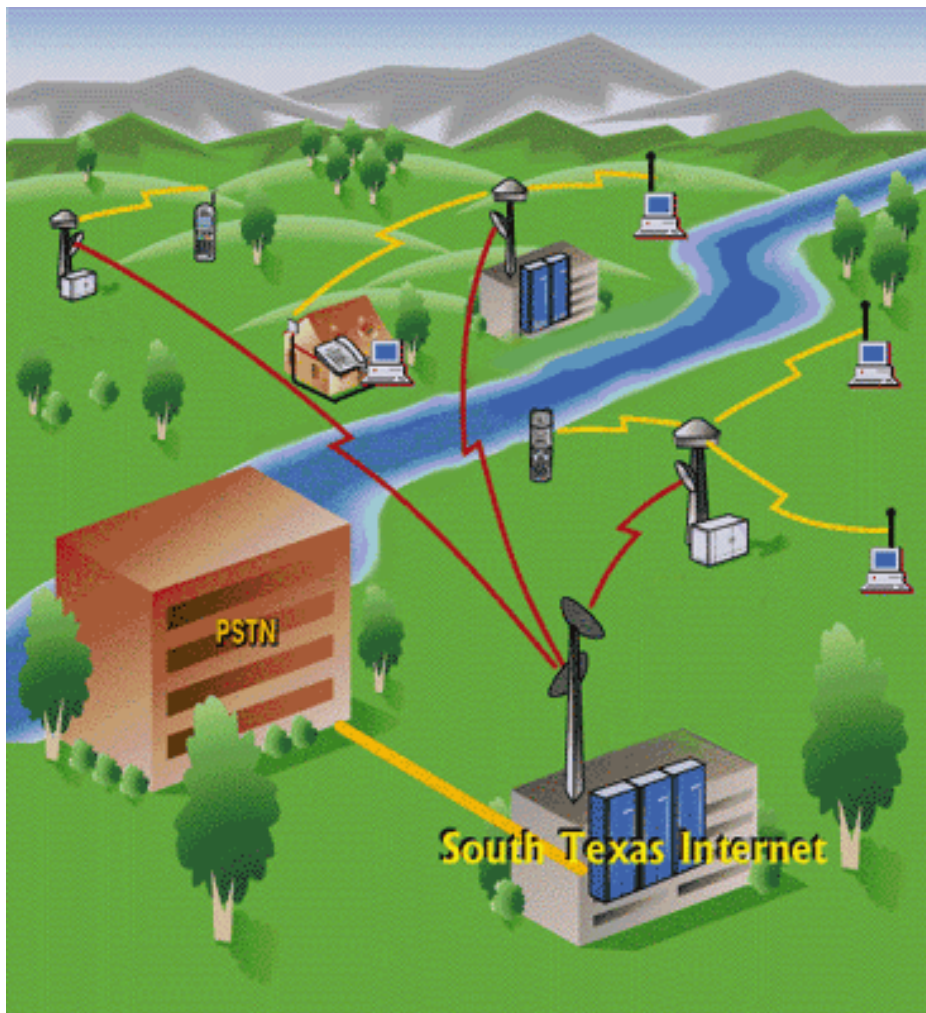
**South Texas Internet/STI ([www.ies.net](http://www.ies.net))**  
**Brownsville, Texas**

Know-how	Capital	Talent	Infrastructure	Research
Networking	Equipment	Skilled Labor	Provider/Sales	Infrastructure Applications

STI has approximately 400 broadband clients, 5% being residential. The company offers DSL, wireless internet access, IP telephony, WebPage development, and virus-checking email.

South Texas Internet (STI) has fiber connections that run along Route 77 to Houston and they also have a redundant T3 to UUnet, in Dallas. If cut, their connection reroutes to the Internet so their customers are never offline.

**Figure 5.24. Wireless Coverage Area Along the Border Corridor**



The key to expanding this cluster is to continue to enhance public education action initiatives at UTB/TSC, and TSTC that will foster entrepreneurship in Computer Aided Manufacturing and to share innovations across the educational system and into industry clusters seamlessly.

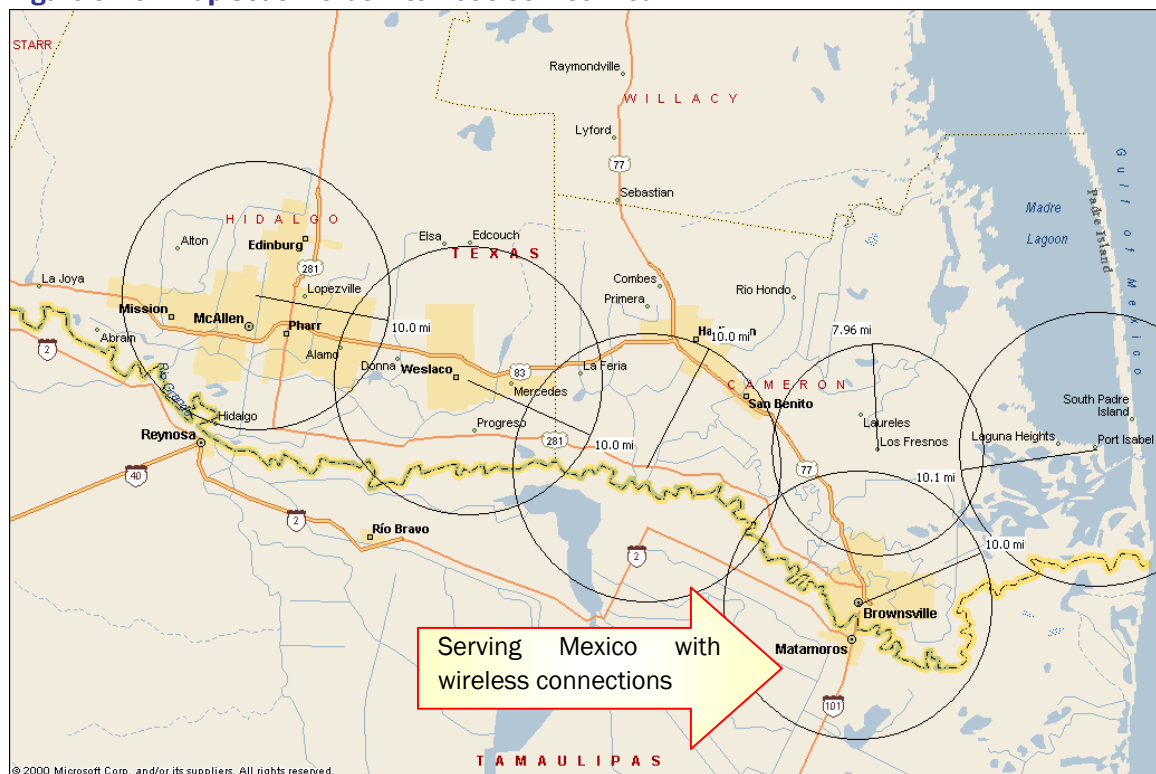
*Doug McGee, CEO  
 South Texas Internet*

TIAA, South Texas Internet has added three cell sites to service Weslaco, Los Indios and McAllen, and Los Fresnos. They also have clients in Matamoras that are primarily maquiladoras and residential accounts tied to maquiladora management.

One frustration CEO Doug McGee faces is the lack of a qualified local workforce: "We have to import people who know technology, because the educated people we need aren't here." In an effort to raise CIT consciousness in the area, South Texas Internet hosts the yearly Brownsville High School web competition. "Education is the key to it all. The Valley has more potential than any place I've ever lived. Kids here need to be taught hands-on... not in a didactic way. We need to educate the barrios out of existence."

South Texas Internet plans to improve and enlarge their infrastructure; but such solutions are often made difficult or impossible by larger industry competitors. The key challenge, according to Doug McGee, is to increase the number of competitive local exchange carriers in the Valley and prevent Southwestern Bell from dividing communities into separate calling areas that inhibit local ISPs from entering the dial-up market without substantial equipment cost in each calling area. According to Mr. McGee, "Because they are the monopoly, SWB is able legislate competition out of existence. However, there is no lack of good ideas here; the challenge is how to move forward."

**Figure 5.25. Map South Texas Internet's Service Area**



Source: South Texas Internet: STI's service area



### Aventura Entertainment Digital Maquila Creation

Know-how	Capital	Talent	Infrastructure	Research
Media/Software	VC/Incentives	Skilled Labor	User	3D Animation

**Brian Godinez was born in Houston and grew-up in the Rio Grand Valley near the city of Pharr. He has 30 years of professional experience: 21 years devoted to media and entertainment in Hollywood, followed by 9 years as an Austin Technology Incubator (ATI) entrepreneur where he started two successful .COM companies. He lives in Austin, but works in the Rio Grand Valley five days a week.**

Brian Godinez has a unique perspective on starting a high tech business in the Valley. It centers on an understanding of regional hi-tech resources, binational industry advantages, Hollywood business experience, and the "track record" of being a successful entrepreneur. He believes that within twenty years the RGV could become a global media center, if a successful shift into the digital economy can be achieved.

**Within twenty years the RGV could become a global media center producing high quality digital animation for games, television, feature films, and similar markets.**

Aventura Entertainment was started in 2001 to develop video games and animation content with Latino themes for Spanish television. Traditionally the majority of animation is outsourced to overseas companies in Asia, to which Mr. Godinez responds, "Why not create digital maquilas in the Rio Grande Valley to manufacture Latin American and Mexican media here instead of Asia?" Aventura plans to corner the lucrative Latino animation market by building an industry for the creation of digital content. Mr. Godinez's business model is focused on two main goals: Creating significant return for the investor, and creating new media jobs throughout the South Texas border region and Mexico.

Mr. Godinez believes in the regional importance of higher education and he is currently working with both UTB/STC and TSTC to link course offerings to Aventura Entertainment projects. Digital imaging media programs at TSTC in Harlingen have an enrollment of 270 and Mr. Godinez states, "In three to four years, the program should produce students with state-of-the-art programming skills who are also competent in the creative aspects of media production."

Aventura Entertainment is not relying 100% on Valley talent. The company is also recruiting animators in Mexico City and increasing industry awareness in greater Mexico. The plans are to locate this digital media maquila on the U.S. side of the border and connect to Mexican operations via fiber to establish and maintain binational partnerships.

One obstacle to nurturing such a digital animation cluster in the Valley is the need for "regional smart infrastructure" that specifically relates to digital media/entertainment including legal services that can address intellectual property issues. The key challenge, however, has been to raise venture funds. But as more businesses come into the creative content cluster it will spawn more companies coming to the region. The thought that Hollywood companies might bring their competition to the LRGV leaves Mr. Godinez undaunted. "I would love to see Sony or Disney come to the Valley and set up their own digital maquila. As an entrepreneur, it would be beautiful to see this region become a star in the digital arena."

**"The region needs to have local angel investors. While regional investors are accustomed to investing in maquila deals, digital media is new to them. If these investors are educated and organized, they should find the digital media industry an exciting new opportunity with tremendous potential returns. This is not a dot com or a software company. I'm talking about a fast growing segment of the video and digital gaming industry. There are huge opportunities for investors."**

Brian Godinez  
President, Aventura  
Entertainment, 2002

## HI-TECH FUTURE: AT THE CROSSROADS

Key to building regional and binational networks is connecting a range of existing initiatives. Harlingen and Brownsville could lead such an effort by bringing together existing organizations such as the Digital Brownsville project and the Harlingen Community Network, as well as the Valley Information Alliance (VIA) Consortium. Once the community consolidates its existing resources, they can better serve the regional needs. Establishing the hardware is only the start; the larger challenge is sharing regional knowledge to:

- ⇒ Provide facilities to help train network users
- ⇒ Educate vendors to the needs of the community
- ⇒ Educate regional industries to the advantages technology can provide
- ⇒ Provide an online presence for regional technology firms
- ⇒ Facilitate web development for social and civic entrepreneurship and non-profits
- ⇒ Create a database of key individuals and champions
- ⇒ Link academic, business, and government entities for enhanced social inclusion
- ⇒ Monitor the network as to metrics for success and employ follow-up activities as needed

Building a Regional Knowledge-Network Portal would help catalyze the current technology sector and would be an opportunity to virtually show Cameron County to the world. Suggestions for portal content focus on the theme of inclusion by identifying ways to profile local technology-ventures and facilitate the dissemination of IT knowledge throughout the binational region. One goal of creating an online presence would be to facilitate public awareness of challenges and solutions to high-tech growth. Hosting threaded discussion forums on business plan development and leadership/management mentoring would provide a framework for communication between the technology, education, industry, government and citizen sectors. Such a Knowledge-Network Portal would also be a resource for outside companies to gather information critical to guiding new companies into the area.

**Building a Regional Knowledge-Network Portal would help catalyze the current technology sector and would be an opportunity to virtually show Cameron County to the world.**

The Internet brings new possibilities to the Cameron County/Matamoros region, from improved delivery of education and training, healthcare services, to greater civic engagement and new economic opportunities. The Cameron County/Matamoros region also brings new possibilities to the Internet, as binational community leaders can build new models for cross-border knowledge sharing, leveraging of resources, and problem solving. A willingness to tolerate multiple approaches needs to be accompanied by a willingness to apply lessons learned. The South Texas/Northern Border region has a unique opportunity to build a binational model of wealth creation and prosperity sharing that other international binational and border regions will seek to emulate.

# SECTION 6

## ⇒ CONCLUSIONS & RECOMMENDATIONS

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A key organizing principal of this report has been that the border region in general and Cameron County and Matamoros in particular is at a crossroads in terms of business and industry development, education and workforce training, regional leadership, and maintaining and enhancing an accessible quality of life for all the region's inhabitants.

By highlighting select demographics, Section 2 emphasized regional challenges of high unemployment, birthrate and population growth, and children in poverty coupled with low per capita income, annual pay, and growth rate in annual pay.

Section 3 reported Cameron County and Matamoros community leaders' opinions on current and future challenges to regional economic development including the key importance of quality education and workforce training, providing needed support for entrepreneurs, and the lack of regional and binational cooperation.

Section 4 emphasized the contributions of The University of Texas at Brownsville/Texas Southmost College; Texas State Technical College; and Tech Prep Rio Grande Valley are making to meet regional workforce and community needs for the 21<sup>st</sup> Century (despite limited financial resources).

Section 5 presents Cameron County and Matamoros regional and binational industry assets and challenges as indicated by cluster analysis, wage rates, worker migration, and focus group discussions.

Three industry clusters are targeted because of their unique growth potential for the border region:

- ⇒ Value-added Maquiladoras including state-of-the-art supply chain management
- ⇒ Transportation Services and Logistics & Distribution with a focus on border security
- ⇒ Health Services and Life Sciences focused on border healthcare challenges and bio-terrorism

Based on these data and analyses, this report concludes with the following four initiatives that are at the center of the crossroads and which are targeted to bring academic, business, and government leaders and citizens together to for enhanced regional and binational prosperity.

1. Regional and binational collaboration on targeted technology-based industry clusters for **accelerated economic development**
2. **Education, training, and research** that is linked to regional and binational economic development
3. Fostering regional and binational technology, social, and civic **entrepreneurship**
4. Developing regional, binational, and global **value-added partnerships** for accelerated development of targeted technology-based industry clusters



## INITIATIVE 1: ACCELERATED ECONOMIC DEVELOPMENT

In this report's binational community survey (Section 3), leaders from both Cameron County and Matamoros report that future job growth will come from established service-based industries including healthcare, education, and conventions/tourism/entertainment. Emerging technology-based industries considered important are medical, advanced telecommunications, computer & information systems, environmental conservation, and energy efficiency and conservation.

Service sector industries do not produce wealth -- rather they depend on and grow based on the strength of such “wealth producing” industries as manufacturing, life sciences, and computer & information technologies. As of early 2003 telecommunications, computers, and information technologies are not, and are not likely to be in the near future, the wealth generating industries they were during the past decade as these industries are currently characterized by layoffs, bankruptcies, declining stock prices, and shrinking profit margins.

### Strategies for Action

Because of their centrality to the border region in a manner that is unmatched by other national or global locations, this report suggests four targets for regional and binational collaboration for accelerated economic development:

- ⇒ Manufacturing and Maquiladoras
- ⇒ Transportation Services and Logistics & Distribution
- ⇒ Health Services and Life Sciences
- ⇒ Border Security

### Manufacturing and Maquiladoras

Maquiladora operations that focus on labor intensive and low value-added operations are moving from Mexico to Asia, primarily China and India. The message is clear, neither Cameron County nor Matamoros and the surrounding border region can rely on low wage workers to attract and retain manufacturing industry. As emphasized in Section 5, the best way for area manufacturing to compete in the 21st Century is through more value-added and just-in-time manufacturing. As stated by the President of Consejo Nacional de Maquiladoras de Exportación de México (CNM), manufacturing clusters need to be developed in such industries as electronics, plastics, and steel stamping supported by such industries as software, design, and logistics along with supportive infrastructure including quality technical education, industrial parks, and professional services of finance, marketing, and technology development.

Public/private Cameron County and Matamoros community leaders should consider the development of a Maquiladora Incubator Network that would link both sides of the border to (1) nurture and grow locally-based Maquiladoras suppliers and (2) accept spin-off technologies and processes from Maquiladoras as they become more technology-intensive. Facilitating the growth of regional suppliers as start-up companies on both sides of the border would also benefit the Maquilas as they work to become more just-in-time efficient to compete with China and other offshore locations.

Improved Logistics & Distribution efficiencies -- decreasing time and cost -- are crucial to the sustainability and growth of Maquiladoras. These increased

**The shared borders of the U.S. and Mexico figure prominently into the new cabinet-level Department of Homeland Security (DHS) and all the relevant agencies along the border will be affected... with all border agencies reporting to the same management chain... increased enforcement should be synonymous with increased facilitation as we are likely to see more staffing, technology, and improved facilities at the border... Port inspection functions... will also move to the new DHS, a sign of the governments concern with bio-terror agents traversing our shared borders.**

Garrick Taylor  
Director of Policy Development  
Border Trade Alliance  
Industrial Community,  
January 2001, p. 7

efficiencies will also impact associated support services and suppliers located at border crossings.

### Transportation Services and Logistics & Distribution

The Cameron County/Matamoros Region has significant geographic and logistical assets to build a world-class research and testing laboratory for multi-modal transportation for the 21st Century. These assets include:

- ⇒ Cameron County and Matamoros being bicultural and binational neighbors with the greatest U.S. proximity to major Mexican cities and areas of manufacturing
- ⇒ The location of the Port of Brownsville and near-by Mexican inter-coastal ports
- ⇒ Adjacent railroads with access to the U.S. and Mexican interiors
- ⇒ Near-by air cargo and passenger terminals
- ⇒ Four international gateways, a proposed land bridge connecting Mexico with the Port of Brownsville, and expanding international highway systems

This unique set of binational assets and the relative small size of the associated facilities provides an ideal setting for research and innovation on cutting-edge transportation and logistics technologies and processes associated with such cross-border issues as enhanced supply chain management, trade expansion, and national security.

This report advocates the formation of a Binational Transportation and Logistics Research Center (BTLRC), perhaps to be housed at UTB/TSC's International Trade and Technology Center. The BTLRC would promote global and seamless inter-modal transportation and logistics systems through education programs, research, and outreach activities. It could serve as a “think and do” tank in partnership with regional, national, and global industry in such areas as:

- ⇒ Port of entry security technologies
- ⇒ Supply chain management
- ⇒ Data systems integration and management
- ⇒ Cargo surveillance systems
- ⇒ Building binational and regional partnerships and the leveraging of assets

### Health Services and Life Sciences

On the one hand, the Lower Rio Grande Valley lacks important life science infrastructure including significant numbers of large and small firms, R&D funding and innovation, and professional support including capital formation. Other regions in Texas such as Dallas-Fort Worth, San Antonio, and Houston-Galveston-The Woodlands and other regions in the US such as California and the North East are more competitive in terms of such regionally-based assets for the development of Life Science Clusters.

On the other hand, The Lower Rio Grande Valley's geography and population provides a world-unique research and education “laboratory” on a broad range of important national and global healthcare challenges. Border realities include diseases that reflect agrarian 3rd world conditions, a predominance of young and older binational residents including their respective health care needs, and poverty and malnutrition coupled with a lack of adequate quantities of fresh water, inadequate housing and colonials, and a lack of needed quantities of healthcare professionals.

**The National Institutes of Health want to fund one or two complex and sophisticated high-level research labs that would be primarily devoted to trying to find better therapeutics, better vaccines and better treatments for diseases that would be targets of bio-terrorism.**

Stanley Lemon, Dean  
School of Medicine  
Galveston, Texas  
Austin American Statesman  
January 8, 2003, p. B1

As noted in "The Future of the Region, Regional Forum on Healthcare Issues" (Harlingen, Texas, June 25, 2002), the Lower Rio Grande Valley needs to better link and leverage regional assets on both sides of the border to meet border healthcare challenges and concerns and to link with emerging regional healthcare clusters including education and training, retention and development of healthcare businesses, and border specific healthcare challenges. Healthcare services related to homecare, offices, and clinics are existing assets in Cameron County. Emerging businesses related to medical devices, pharmaceuticals, and laboratories are potential growth areas.

As suggested in Section V, there is a window of opportunity for the Lower Rio Grande Valley to establish binational, world-class research centers focused on border region healthcare challenges. Such centers of excellence would also be important in establishing a new vision of healthcare business and manufacturing in the Valley. Quality faculty has already been attracted to Regional Academic Health Center (RAHC) programs that offer exceptional research opportunities leading to career-building contributions to healthcare practice. With quality faculty come exceptional students and research funds. From these activities, and with important regional support structures, can come technology spin-off activities leading to company start-ups and the development of a life science industry cluster.

## IMMIGRATION & BORDERS

### **Serving Our Visitors, Securing Our Borders**

On March 1st the Department of Homeland Security will become responsible for securing our nation's borders and managing the immigration process. In the past, these two important missions were bundled together within one agency - the Immigration and Naturalization Service. Under DHS, however, immigration services and border enforcement functions will be divided into separate agencies, allowing both missions to receive the full attention they deserve.

Under DHS the newly created Bureau of Citizenship and Immigration Services will focus exclusively on providing services such as efficiently processing applications for U.S. citizenship, administering the Visa program, administering work authorizations and other permits, and providing services for new residents and citizens.

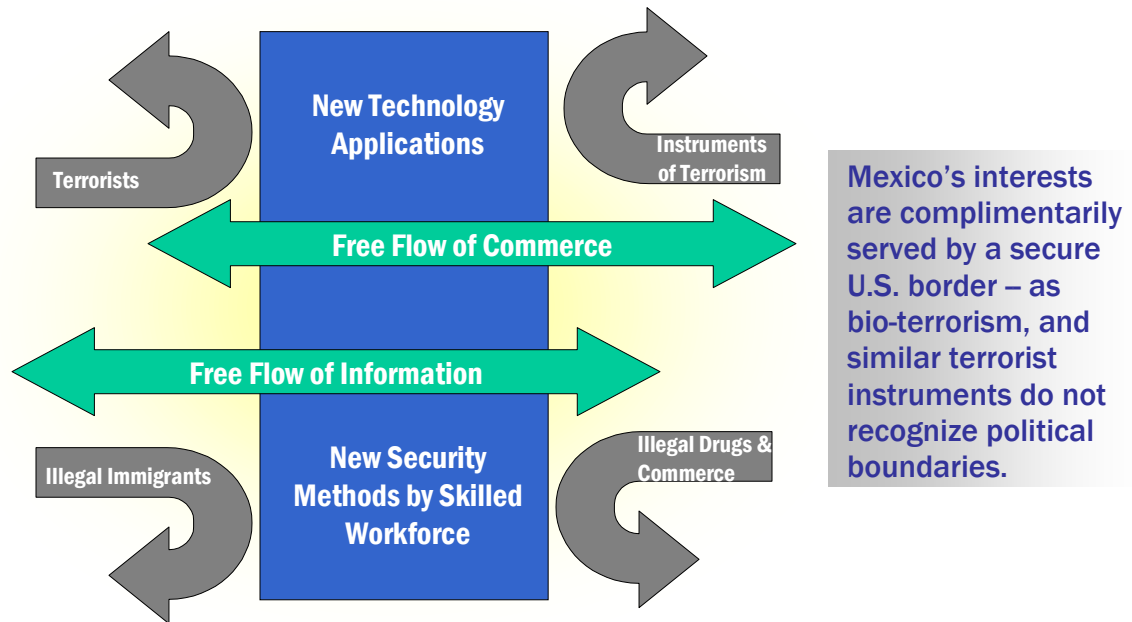
Border security and the enforcement of immigration laws, however, will be handled by the Directorate of Border and Transportation Security. BTS will absorb the INS's Border Patrol agents and investigators who will join with agents from the U.S. Customs Service, Transportation Security Administration and other enforcement personnel to protect the nation's borders. This mission includes not only managing illegal immigration, but also securing the borders against illicit drugs, unlawful commerce and - as the Department's main priority - the entry of terrorists and the instruments of terrorism.

By making use of cutting-edge technologies, enhancing the flow of information, coordinating with state and local governments, and improving efficiency within the federal government, DHS is uniquely qualified to meet the challenge of safeguarding our borders while facilitating commerce and economic movement and improving the efficiency of our immigration and naturalization process.

*U.S. Department of Homeland Security Web Site  
www.dhs.gov.dhspublic/theme4\_home4.jsp  
January 2003*

**Border Security**

As global mobility increases, border security needs become critical, figure 6.1. Cameron County's economic needs gain national and international significance in the face of global terrorism. As the U.S. Government turns new scrutiny to all border processes, they articulate the need for new technology development and a highly skilled workforce. The research centers recommended in this report would – together – synergistically support the concept of a secure border at Cameron County/Matamoros: a crucial, multi-modal border location.

**Figure 6. 1. Border Security Needs Increase with Global Mobility**

President Bush's fiscal year 2004 budget includes \$18.1 Billion for the Border and Transportation Security Directorate, Department of Homeland Security. The budget includes \$4.7 Billion for community development block grants; \$1.6 Billion for health centers and healthcare and \$1.1 Billion for bio-terrorism; \$500 Million for critical border infrastructure; \$373 Million for border security and trade initiatives and \$350 Million for border security R&D; \$331 Million for economic development assistance; and \$29.5 Million to expand entrepreneurial opportunities for minorities.

**INITIATIVE 2:****EDUCATION TRAINING, AND RESEARCH**

On the one hand, both Cameron County and Matamoros respondents (Section III) emphasize the importance of quality education: College and university, and K-12 as well as vocational training. On the other hand, they also report that their respective regions are challenged to provide needed quality education and training for 21st Century jobs and careers.

The University of Texas at Brownsville/Texas Southmost College (UTB/TSC) is challenged to double its enrollment to 20,000 by 2010. UTB/TSC requires

additional funding to build needed facilities and to hire needed faculty to grow existing programs and to build new graduate programs and centers of research excellence. In Fall 2002, Texas Southmost College went to the community with a bond request as an investment in the future of the region and to enhance the educational resources and opportunities for UTB/TSC students – to help “close the gaps.” Programs to be supported included the West Campus Technology Center and Binational Business Incubator, student housing, biomedical research, child development, library expansion, and expanded student services. In part, because of the lack of regional awareness for the importance of these initiatives to accelerated development, the Bond was defeated.

TSTC has no regional tax base for funding support. It relies on the State of Texas to provide needed financial resources. The college is challenged to recruit, train and retrain faculty and for the development of new technology-based programs for 21st Century Texas-based industry. Tech Prep needs funds for school-to-career programs and for subcontracts to school districts and colleges to provide incentives for program implementation.

### Strategies for Action

Don Brown, the Commissioner of Higher Education Coordinating Board for Texas states, “While legislators, higher education leaders and supporters, and interest groups will have to expend energy on traditional challenges [in 2003], the framework for their debates should be that of “Closing the Gaps.” Every significant proposal to add, expand or reduce appropriations, authority and programs should be measured against the contribution it would make to close the four gaps in participation, success, excellence, and research... We cannot afford not to succeed.”<sup>1</sup>

State Senator and Vice Chair of Senate Education Committee, Judith Zaffirini underscores this concern, “Higher Education in Texas is in dire shape... We must increase funding for higher education, not reduce it... it’s too important to the state. Everything in Texas is impacted by education.”<sup>2</sup>

In addition to increased state appropriations for education-based initiatives, this report advocates the development of “Partnerships for Excellence” between regional business and academia to accelerate the growth of targeted regionally-based industry clusters as well as building centers of education and research excellence. “Partnerships for Excellence” have proven to be a viable strategy for such regions and their local universities as Stanford and Palo Alto, CA; MIT and Boston, MA; and The University of Texas at Austin to:

- ⇒ Increase education and research excellence
- ⇒ Accelerate regional economic development
- ⇒ Identify the region as an important national and international technology and entrepreneurial center

“Partnerships for Excellence” can benefit the larger community in terms of increased tax income, real estate development, sales of consumer goods and services, and national and global alliances for accelerated technology-based

**Four-year universities throughout this country have tried to maintain an academic high ground, often forgetting the significant contributions of two-year colleges. Yet, there exists a continuum of academic opportunity between these two... Two-year and four-year institutions must develop agreements and programs that enable successful transition to four-year universities... including a new category of scholarships... the return on investment is a larger, energized and more diverse workforce.**

David Smith, Chancellor  
Texas Tech University System  
*Austin American Statesman*  
January 10, 2003, p. A13

<sup>1</sup> Don W. Brown, Commissioner of Higher Education Coordinating Board, *Austin American Statesman*, Insight, September 1, 2002, p. H5.

<sup>2</sup> Judith Zaffirini, Vice Chair of Senate Education Committee, State Senator, Laredo, *Austin American Statesman*, Insight, September 1, 2002, p. H5.



growth. “Partnerships for excellence” could stimulate the development of R&D centers of excellence at UTB/TSC in such areas as:

- ⇒ The proposed Center for Binational Entrepreneurship (CBE) that would be linked to the emerging regionally-based industry clusters of manufacturing/maquiladoras, transportation & logistics, health services and life sciences. The Center could promote binational technology-, social-, and civic-entrepreneurial competitions for university, college, and high school students.
- ⇒ A Binational Transportation & Logistics Research Center (BTLRC) that would be linked to supply-chain management, advanced telecommunications, and cross-border security including healthcare concerns such as bio-terrorism.
- ⇒ World-class manufacturing including technologies and processes associated with value-added Maquiladora binational and global operations.
- ⇒ Border healthcare challenges with links to emerging centers of education and research excellence at the Regional Academic Health Centers (RAHC). The RAHC is attracting excellent faculty that is recruiting excellent students and building research funding. Over time these activities should lead to spin-out and start-up technology-based business ventures.

⇒

While university-based research centers would be a big boost to the regional economy, full economic success can only be achieved if the local workforce is educated and trained to fill the new jobs and careers as they become available.

[According to the Falfurrias dialogue, August 21] the THECB region of South Texas will be responsible for meeting at least 70% of the projected enrollment of Hispanic students to meet the *Closing the Gaps* goal. Instead, we’re talking about cutting higher education budgets at this most crucial time for the state’s future.

I’ve been trying to think of an equivalent example that might be analogous to a parent with many children. Imagine having one child who has completed medical school and is now earning their own living. A parent would no longer feel compelled to support that child. Another child is in law school, still needing some support to guarantee that they can complete law school and soon earn their own living. Now imagine the same family with a child in second grade: a child almost completely dependent on their parents for their living expenses and their education. No one would expect a parent to treat those children the same in providing for their needs.

Juliet V. Garcia, Ph.D.  
President, UTB/TSC  
to the House Appropriations  
Subcommittee on Education  
February 19, 2003

**Getting more Hispanic students into college is critical for Texas’ future. The biggest economic generator any community can have is a person with a college degree**

Leticia R. Van de Putte  
State Senator  
San Antonio and member of Senate  
Committee on Education  
Quoted by Michael Arnone in  
“Texas Falls Behind in Plan to Enroll  
More Minority Students”  
*Chronicle of Higher Education*,  
1/17/03

## INITIATIVE 3: ENTREPRENEURSHIP

On the one hand, Cameron County does have regionally-based binational entrepreneurial success stories including (See Section 5):

- ⇒ Multimedia Production Center (MPC), Brownsville that provides state-of-the-art web page development and support services
- ⇒ South Texas Internet (STI), Brownsville that provides advanced web-based telecommunications support to facilitate cross-border business development

- ⇒ Aventura Entertainment a Cameron County/Hidalgo County based digital Maquiladora that is building Spanish and Mexican video and film content for television and multimedia

At the same time, Cameron County and Matamoros respondents (Section 3) emphasize the importance of business retention and expansion, promotion of local entrepreneurs, and the development of regional economic development plans.

On the other hand, respondents on both sides of the border also give low marks to their region’s effectiveness in providing support for entrepreneurs, leveraging community assets, cross-border collaboration, and developing regional plans for economic development. The Lower Rio Grande Valley has long suffered from a regional “talent drain” in that many of the most educated and skilled workers and professionals leave the region to build their careers, earn higher salaries, spend their salaries, and contribute to society in Houston, San Antonio, Austin, and other U.S. cities (Section V). The Lower Rio Grande Valley also faces the classic challenge of import substitution as the region also tends to import higher educated and higher salaried workers from Houston, San Antonio, Austin, and Dallas.

### Strategies for Action

To help counter and reverse the “entrepreneur drain” the Valley needs to emphasize the importance of grassroots development of entrepreneurial initiatives and celebrate homegrown entrepreneurial successes to:

- ⇒ Bring UTB/TSC and TSTC graduates home with targeted recruitment to help build “smart infrastructure” in targeted industry clusters
- ⇒ Leverage the talent and networks of UTB/TSC, TSTC Alumni, where they are currently located for enhanced national and global exposure and access
- ⇒ Establish a Binational Moot-Corp Business Plan Competition at UTB/TSC and include TSTC and Matamoros students and technologies and perhaps develop a separate ‘feeder’ competition from regional high schools focusing on technology-, civic-, and social-entrepreneurship.
- ⇒ Develop a Binational Border Region (BBR) Entrepreneurial Council to champion and coordinate such activities as:
  - The development of a Binational Business Angel Network and help finance new business ventures
  - Invite keynote speakers and organize workshops and seminars
  - Provide mentoring and role models and develop roadmaps for binational technology-, civic-, and social-entrepreneurial success

UTB/TSC’s West Campus International Technology Center (ITC) is partnering with the Brownsville Economic Development Council to offer the following binational entrepreneurial and business development educational opportunities:

- ⇒ Technology Training Center
- ⇒ New Business Incubator
- ⇒ Workforce training facilities
- ⇒ International Trade Center
- ⇒ Trade Show Venue

Objectives are to accelerate the growth of start-up companies, establish a Small Business Administration (SBA) Assistance Center, and increase collaboration with cross-border business activities. The Cameron County/Matamoros Region has an exceptional opportunity to build a unique center of excellence in

**It’s going to be very difficult to “Close The Gaps” without funding. If the Legislature is serious about “Closing the Gaps,” they’re going to have to pony up and pay the bill.**

*Gregory S. Powell, President  
Panola College, Carthage  
Quoted by Michael Arnove in  
“Texas Falls Behind in Plan to  
Enroll More Minority Students”  
Chronicle of Higher Education,  
1/17/03*

**Cameron County does have regionally-based binational entrepreneurial success stories. One way to promote entrepreneurial effort is to celebrate those successes.**



Binational Entrepreneurship, a center not matched by other well-known entrepreneurial regions in the U.S. Such a center of excellence might:

- ⇒ **Form a Cameron County/Matamoros Technology Council (CCMTC)** to promote networking events, a distinguished speaker series and host technology specific management workshops. A goal of these events would be to enhance communication among entrepreneurs and support services to create a greater sense of a binational technology community and to strengthen the marketing of The Lower Rio Grande Valley as a destination for technology-based companies.
- ⇒ **Foster Civic and Social Entrepreneurship Programs** as an opportunity to grow for regional leadership that promotes a quality of life that is required for continued economic growth and prosperity sharing.
- ⇒ **Create a Network of Networks** to link tourism-, industry- and civic-networks. Leadership forums can be hosted online to promote regional strategies to meet local challenges.

The Internet brings new possibilities to the Cameron County/Matamoros region, from improved delivery of education and training, and healthcare services, to greater civic engagement and new economic opportunities. The Cameron County/Matamoros region also brings new possibilities to the Internet, as binational community leaders can build new models for cross-border knowledge sharing, leveraging of resources, and problem solving. A willingness to tolerate multiple approaches needs to be accompanied by a willingness to apply lessons learned. *The South Texas/Northern Border region has a unique opportunity to build a binational model of wealth creation and prosperity sharing that other international binational and border regions will seek to emulate.*

**The Cameron County/Matamoros Region has an exceptional opportunity to build a unique center of excellence in Binational Entrepreneurship — Technological, Civic and Social Entrepreneurship – for the 21<sup>st</sup> Century.**

## INITIATIVE 4: PARTNERSHIPS – REGIONAL, NATIONAL, AND INTERNATIONAL

On the one hand, the Lower Rio Grande Valley benefits from a strong binational economic and cultural heritage. On the other hand, the border region suffers from parochialism that fosters city-based and bi-lateral partnering rather than more regionally-based, multilateral cooperative strategies and expanded cross-border cooperation.

### Strategies for Action

At one level the general objective is to target activities that foster regional and binational partnerships and alliances for targeted opportunities of collaboration that show business and quality of life results to the benefit of the Lower Rio Grande Valley and Matamoros academic, business, and government sectors. At another level the objective is to identify and eliminate relatively minor, but important structural barriers to binational cooperation. For example, in the latter case, a relatively small but significant barrier to TSTC's enhanced cooperation with Mexican schools is the fact that the college cannot use State funds to pay the cost of international travel for faculty, administrators, and students. Well meaning rules and procedures designed for 20th Century business and education may inhibit value-added binational or multilateral cooperation needed in the 21st Century.

Technology capabilities of the 21st Century and assets and challenges of the Lower Rio Grande Valley can be linked. Improved telecommunications

**Community-based methods need to migrate to regional, binational, and global networks in the 21<sup>st</sup> Century knowledge-base economy.**

infrastructure is one key way to accelerate regional economic development and quality of life in knowledge-based economies (see Section V). Community-based knowledge networks have the potential to enhance social capital that facilitates the exchange of knowledge among community leaders and organizations and the subsequent leveraging resources.

CBIRD-TRAC conducted an inventory of telecommunications providers and a regional needs assessment for Cameron County and Matamoros, Mexico. Building on this initiative the city of Harlingen and the Harlingen Chamber of Commerce was awarded a Texas Telecommunications Infrastructure Fund (TIF) initiative to bring enhanced telecommunications infrastructure to the city to help promote advanced services for health care, education and training, and workforce development. Brownsville’s Public Utility Board (PUB) is poised to work with UTB/TSC to also provide enhanced telecommunications infrastructure for the city. A further challenge will be to share lessons learned across both of these cities along with McAllen, Edinburg and Northern Mexico cities and to build and maintain a Lower Rio Grande Valley Binational Communities Network.

A main objective of The Cross-Border Institute for Regional Development (CBIRD) at UT-Brownsville, UT-Pan Am, UT-Austin, CODERT-Tamaulipas, and ITESM-Monterrey, is to incubate new attitudes and alliances needed for the border region to reach its full economic and social potential, driven by regional, binational, bi-literate, and multicultural principles... Una Región – Un Futuro. Select binational initiatives include:

- ⇒ Accelerated Economic Development
- ⇒ Education, Training & Research
- ⇒ Entrepreneurship
- ⇒ Partnerships – regional, national, and international

International initiatives include leveraging the binational networks and entrepreneurial infrastructure of the South Texas Border Region and Northern Mexico with access to international markets with an emphasis on Latin America. However, it is also possible to build knowledge-bridges globally to access to world-class R&D and to develop and manufacture these technologies in the Cameron County/Matamoros region.<sup>1</sup> R&D and technology expertise can be imported to the Valley to be developed locally for emerging clusters in health sciences, transportation & logistics, manufacturing & maquiladoras, and border security.

## SUMMARY & CONCLUSIONS

This report advocates a balanced approach to regional economic development including (Figure 6.2):

- ⇒ The recruitment of key technology-based industries, service companies, and talent
- ⇒ Retaining and facilitating the growth of established and emerging industries and talent
- ⇒ Accelerating the growth of new technology-based industries and talent
- ⇒ Leveraging academic-business-government partnerships: regionally, nationally, and globally

<sup>1</sup> One such example would be to leverage IC<sup>2</sup> Institute’s partnership with the International Science and Technology Center, Russia – [www.istc.ru].

Industry/Talent recruitment is an important and long-standing strategy for regional development. However, this strategy often leads to enhanced regional competition and win-lose scenarios as neighboring communities seek to out-bid each other with tax breaks and other recruitment incentives. Such competition is most prevalent in current U.S. economic development environments that are challenged by domestic corporate downsizing and off-shore corporate growth, especially in labor intensive and low value-added (non-knowledge-based) industries.

Retaining and growing regionally-based industry and talent focuses public and private resources on firms and human resources that already have a presence in and a loyalty to the area. Facilitating the growth of talent and new company start-ups emphasizes the importance of regionally-based entrepreneurship for diversifying the local economy for enhanced wealth and job creation. These two economic development strategies – Industry/Talent Retention & Expansion and New Industry/Talent Development – have been key to the accelerated wealth and job creation of most successful and innovative technology/knowledge growth areas in the U.S. including Silicon Valley, CA; Boston, MA; and Austin, TX.<sup>1</sup>

**Figure 6. 2. Four Interrelated Strategies for Regional Knowledge-Base Development**



Source: IC<sup>2</sup> Institute, The University of Texas at Austin

Creative and innovative regionally-based academic/business/government partnerships are key for knowledge-base economic development to “take-off” and “leap-frog” national and global competition. In the 21<sup>st</sup> Century, geographic regions are the most appropriate unit of analysis for examining changes and opportunities for economic and social development. Defining an economically meaningful region is not so much a matter of national borders or geographic size, but rather of finding areas where educational, economic, cultural and other linkages are strong or could be stronger relative to external linkages. The Lower Rio Grande Valley-Northern Mexico Border Region is a distinctive binational, bicultural, bilingual region.

<sup>1</sup> Please refer to The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life, Richard Florida, 2002!; and Creating the Technopolis: Linking Technology Commercialization and Economic Development, edited by Raymond W. Smilor, George Kozmetsky, and David V. Gibson.

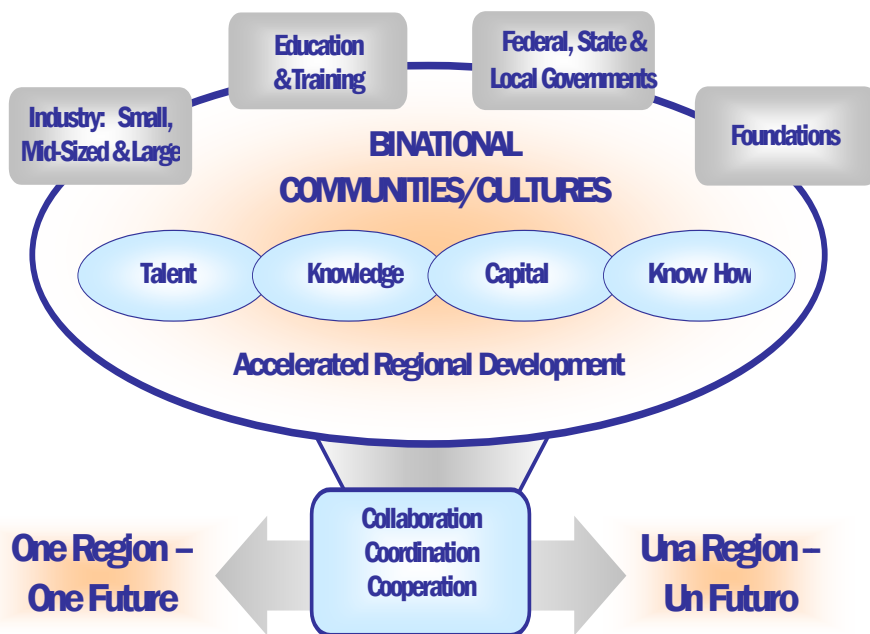
**The Cameron County/Matamoros region needs a cluster-based strategy built on cross-border cooperation targeting higher-value added industries and components.**

As emphasized throughout this report, the Cameron County/Matamoros Border Region, as well as the Lower Rio Grande Valley, is at a crossroads in terms of (see Figure 1.2):

- ⇒ Business and industry development for accelerated wealth creation and the growth of globally competitive, career oriented jobs
- ⇒ “Closing the Gaps” in education in terms of participation, success, excellence, research, and workforce training for 21<sup>st</sup> Century jobs
- ⇒ Maintaining and enhancing an accessible quality of life for all the region’s citizens and countering the regional “brain drain” of some of the most capable workers and professionals
- ⇒ Visionary leadership that fosters regional and binational strategies for action

Key to the border region meeting these challenges is enhanced leveraging of local industry assets, education and training, government and foundation resources, and community and cultural assets and knowledge to foster the regional and binational development of talent, knowledge, capital, and know-how for accelerated development, Figure 6.3.

**Figure 6. 3. Networking & Leveraging Regional and Binational Institutions & Knowledge for Accelerated Regional Development**



Institution-based excellence – whether it be academic, business, or government – is NOT sufficient.

Source: IC<sup>2</sup> Institute, University of Texas at Austin

Talent<sup>1</sup> — whether the focus is on technology-, civic-, or social-entrepreneurship (please refer to Section I and Figure 1-2) — refers to the entrepreneurial drive, tenacity, dedication, and hard work of special types of individuals or champions—people who make things happen. Talent without ideas is like seed without water. The entrepreneurial process is underway when talent is linked with knowledge that can be embodied in processes or technologies. Talent facilitates the push and pull of the transfer process where knowledge is applied to solve

<sup>1</sup> The following descriptions are adapted from the writings and presentations of Dr. George Kozmetsky, Co-Chair, CBIRD Bi-National Advisory Board and Chairman of the Board, The IC<sup>2</sup> Institute, The University of Texas at Austin.

community challenges or to launch a new company. Every dynamic process needs fuel, and here the fuel is capital. Capital, whether human, social or financial, is the catalyst that empowers regionally-based public-private partnerships.

Know-how is the ability to leverage talent, knowledge, and capital with innovative and creative solutions that overcome cultural, social, organizational, and institutional barriers and challenges. Such know-how is often referred to as “smart infrastructure” and is considered a critical component in achieving success in regionally-based growth. Know-how includes public policy, legal, academic, and business oriented expertise.

Leadership in regionally-based initiatives can come from a range of participants and from a variety of levels in business-academic-government sectors. The crucial issue is to identify and motivate true champions/influencers for the chosen initiative. Being a successful boundary-spanning influencer is a considerable challenge within and across sectors that traditionally do not reward (if they do not discourage) such efforts; however, there are “guidelines” that have been identified by those that have been effective in such a role and they include:<sup>1</sup>

- ⇒ Understand the concepts of power and status
- ⇒ Have enormous reservoir of patience
- ⇒ Work very hard
- ⇒ Don’t throw your weight around
- ⇒ Help those that follow
- ⇒ Be tenacious
- ⇒ Ignore a lot and be very flexible
- ⇒ Trust to luck
- ⇒ Don’t take your self too seriously
- ⇒ Believe in your intuition

Community-based assets are leveraged through entrepreneurship that facilitates networking and the forming of regional visions and strategies for success. Committees are not collaboration. Collaboration is meaningful knowledge sharing and targeted leveraging of resources (i.e., financial, intellectual, and physical) to overcome specific challenges. For such collaboration to be realized it needs to be action oriented with metrics for success (short- and long-term) for all participants. Community-based influencers and champions need to communicate across academic, business, government, and other regional sectors. Where there is a synergistic grouping of such influencers, there can be creative and innovative problem solving, accelerated economic development, shared prosperity and an enhanced quality of life.

Institution-based excellence – whether it be academic, business, or government - is NOT sufficient. What is required is public-private leveraging of **regional assets** to overcome **regional challenges** to accelerate **regional development**. How effectively Cameron County and Matamoros and other border business, academic, and government sectors collaborate, coordinate, and cooperate will, in large part, determine the region’s ability to accelerate economic growth and to create high value jobs while sustaining and enhancing an accessible quality-of-life for all: One region – Un Futuro.

**Community-based assets are leveraged through entrepreneurship that facilitates networking and the forming of regional visions and strategies for success. Public/private committees are not collaboration. Collaboration needs to be action-oriented with metrics for success for all participants.**

<sup>1</sup> Ronya Kozmetsky presentation in Harlingen Texas on May 8, 2002 and Women in Business: Succeeding as a Manager, Professional, or Entrepreneur, by Ronya Kozmetsky, Texas Monthly Press, 1989. pp 142-144.

# APPENDICES

## APPENDIX A. SURVEY INTRODUCTORY LETTER

Cross-Border Institute for Regional Development (UTB-CBIRD)  
Young House, UTB/TSC  
500 E. St. Charles  
Brownsville, TX 78520 USA

Respondent Name & Address  
Brownsville, TX 78520 USA

The Border Development Alliance (BDA) is conducting a survey on job creation and economic development as part of the joint efforts of four Border Universities: UT-Brownsville, UT-Pan American, UT-El Paso, and Texas A&M University in Laredo as well as the Cross-Border Institute for Regional Development/CBIRD (UTB/TSC). Sponsorship is provided by the U.S. Department of Housing and Urban Development (HUD).

We appreciate your assistance in providing accurate information on the relative importance of different industries, factors and strategies for the coming 5-to-10 years in terms of your community's success in job creation, economic development, and wealth creation.

Your opinion is extremely important for the success of this research. We thank you in advance for taking the time to complete the attached survey and returning it in the enclosed envelope.

Sincerely,

Dr. Pablo Rhi-Perez  
CBIRD Executive Director  
On behalf of the Border Development Alliance (BDA)

Note: All individual responses are confidential and the information will not be shared with any other public or private entity.



## APPENDIX B. SURVEY INSTRUMENT

*Please note that all individual responses and information are confidential and will not be shared with any other public or private entity.*

### QUESTION 1A:

For the coming five-to-ten years, please indicate the importance of the listed **ESTABLISHED INDUSTRIES** in your community for job creation, economic development, and wealth creation (please circle your best answer for each item).

### QUESTION 1B:

Also, please **RANK** the “Top Five” of these industries from the lowest rank #(1) (2) (3) (4) to the highest rank (5).

ESTABLISHED INDUSTRIES	Important	Somewhat Important	Not Important	Don't Know	TOP FIVE
Agriculture production-crops	1	2	3	4	
Banking and financial services	1	2	3	4	
Business services	1	2	3	4	
Commercial construction	1	2	3	4	
Conventions and Tourism	1	2	3	4	
Education services	1	2	3	4	
Electronics and electrical equipment	1	2	3	4	
Entertainment and Amusement	1	2	3	4	
Fishing, hunting, and trapping	1	2	3	4	
Food processing and marketing	1	2	3	4	
Government programs and services	1	2	3	4	
Health services	1	2	3	4	
Heavy construction (highways, streets, bridges)	1	2	3	4	
Professional & managerial services	1	2	3	4	
Residential construction	1	2	3	4	
Retail trade	1	2	3	4	
Social services	1	2	3	4	
Telecommunications	1	2	3	4	
Transportation equipment	1	2	3	4	
Transportation services - air	1	2	3	4	
Transportation services - rail	1	2	3	4	
Transportation services - water	1	2	3	4	
Trucking and warehousing	1	2	3	4	
Other (Please List)	1	2	3	4	

**QUESTION 2A:**

For the coming five-to-ten years, please indicate the importance of the listed NEW & EMERGING INDUSTRIES in your community for job creation, economic development, and wealth creation (please circle your best answer for each item).

**QUESTION 2B:**

Also, please RANK the “Top Five” of these industries from the lowest rank #(1) (2) (3) (4) to the highest rank (5).

NEW & EMERGING INDUSTRIES	Important	Somewhat Important	Not Important	Don't Know	TOP FIVE
Advanced Agriculture Techniques	1	2	3	4	
Advanced Shipping & Logistics	1	2	3	4	
Advanced Telecommunications	1	2	3	4	
Aerospace/Aerodynamics	1	2	3	4	
Biotechnologies	1	2	3	4	
Computer & Information Technologies	1	2	3	4	
E Commerce	1	2	3	4	
Energy Efficiency & Conservation	1	2	3	4	
Industrial Design	1	2	3	4	
Material Technologies	1	2	3	4	
Software Development	1	2	3	4	
Other (Please List)	1	2	3	4	

**QUESTION 3:**

Please circle your best answer for each economic development FACTOR, AND in addition please RATE the EFFECTIVENESS of each item as of TODAY, from #1=LEAST effective to #5=MOST effective.

ECONOMIC DEVELOPMENT FACTOR	Important	Somewhat Important	Not Important	Don't Know	TODAY'S EFFECTIVENESS
Affordable and available energy	1	2	3	4	
Affordable and available water supplies	1	2	3	4	
Business Incubators	1	2	3	4	
Cross border cooperation (general)	1	2	3	4	
Cross Border Infrastructure to handle growing flow of people and goods	1	2	3	4	
Empowerment & Enterprise Zones	1	2	3	4	
Environmental Quality	1	2	3	4	
Financing & Capital Access	1	2	3	4	
Free Trade Zones	1	2	3	4	
Health services	1	2	3	4	
Industrial & University Research & Development	1	2	3	4	
Industrial Parks	1	2	3	4	
Internet	1	2	3	4	
Office Spaces	1	2	3	4	
Public Services (police, fire, etc.	1	2	3	4	
Quality of college and university education	1	2	3	4	
Quality of K-12 Education	1	2	3	4	
Quality of life (cultural and recreational activities)	1	2	3	4	
Quality of technical and vocational education	1	2	3	4	
Skill of entry level workplace	1	2	3	4	
Tax Incentives	1	2	3	4	
Telecommunications	1	2	3	4	
Transportation Services	1	2	3	4	
Other (Please List)	1	2	3	4	

**QUESTION 4:**

Please circle your best answer for each economic development STRATEGY, AND in addition please RATE the EFFECTIVENESS of each item as of TODAY, from #1=LEAST effective to #5=MOST effective.

	Important	Somewhat Important	Not Important	Don't Know	TODAY'S EFFECTIVENESS
Access to venture capital	1	2	3	4	
Cross-border economic development collaborations	1	2	3	4	
Economic diversification	1	2	3	4	
Free Trade Zones	1	2	3	4	
Further Development of Maquiladoras	1	2	3	4	
Leveraging of Community Assets	1	2	3	4	
Promotion/support local entrepreneurs in high-tech value-added industries	1	2	3	4	
Promotion/support of local start-up Industries/business	1	2	3	4	
Promotion/support of new business incubators	1	2	3	4	
Regional economic development collaborations of cities/countries	1	2	3	4	
Regional economic development plans focusing on job creation	1	2	3	4	
Relocation of Industries/businesses from outside region	1	2	3	4	
Retention/expansion of existing Industries/business	1	2	3	4	
Other (Please List)	1	2	3	4	

**PLEASE GIVE US YOUR OPINIONS:**

1. What is the most important factor or condition that will ACCELERATE the economic development of YOUR community in the coming five-to-ten years?
2. What is the most important factor or condition that will INHIBIT the economic development of YOUR community in the coming five-to-ten years?
3. What one KEY IDEA or project should your community undertake to significantly improve the area's economy?
4. Other comments...

**RESPONDENT'S INFORMATION:**

Please check if you would like to RECEIVE A COPY of the summarized results of this survey: \_\_ Yes \_\_ No

Please check if you would like to PARTICIPATE in a FOCUS GROUP discussion on the future economic development of your community and the border region: \_\_ Yes \_\_ No

Name & Contact Information:

Number of years you have lived in the region:

Position/Occupation:

Name of Company/Organization

Product/Service:

## APPENDIX C. CLUSTER ANALYSIS METHODOLOGY

Economists define industry clusters as integrated groups of businesses with strong vertical and horizontal linkages. Such a perspective achieves a much higher level of detail than the standard classification of major industries such as manufacturing, textiles & apparels, electronics, and services. CivEc also categorizes businesses according to their final product and how these products are related to each other and integrated along the vertical supply chain. Accordingly, CivEc has formulated the following multi-layered cluster structure, providing a customizable framework for analysis, Figure C.1. CivEc's custom database allows sorting of Large, Standard, and Small Clusters to accurately gauge strengths in a regional economy. Additionally, in response to the unique character of each local economy, CivEc is able to construct alternative clusters from Small Clusters.

**Figure C.1. Civic Economics Industry Cluster Structure**

	STANDARD CLUSTERS	SMALL CLUSTERS				LARGE CLUSTERS
1	Agribusiness	Crops	Livestock	Fishing	Equipment	A
2	Food Products					A
3	Textiles & Apparels	Textiles	Apparels			A
4	Mining	Precious Metals	Other Metals	Stone		B
5	Materials					B
6	Construction	Heavy Construction	Buildings	Construction Design		B
7	Energy/Resources	Oil & Gas	Coal			C
8	Chemicals & Plastics	Chemicals	Petrochemicals	Plastic Products		C
9	Industrial Supplies					D
10	Industrial Machinery					D
11	Transportation Equipment	Automotive	Boat & Ship Building	Other		D
12	Consumer Goods					E
13	Biotechnology	Pharmaceuticals	Medical Devices			F
14	Aerospace & Defense	Aerospace	Defense			G
15	Electronics					G
16	Telecom Equipment					G
17	Computers & Peripherals					G
18	Semiconductors					G
19	Logistics & Distribution					H
20	Transportation Services	Air	Ground	Sea		H
21	Utilities	Electricity	Water	Pipelines		H
22	Wholesale Trade					H
23	Retail Trade	General Retail	Specialty Retail			I
24	Recreation & Leisure	Hotels	Restaurants & Bars	Other Recreation		I
25	General & Personal Services	General	Personal			J
26	Business Services					K
27	Finance & Real Estate	Finance	Real Estate			K
28	Health Services					F
29	Mass Media	Print	Radio & TV	Film*	Advertising*	L
30	Telecom Services					L
31	Software*					L
32	Education & Research	K-12	Vo-Tech	Higher Ed	Research*	M
33	Government	Public Admin	Public Safety	Armed Forces		N
34	Nonclassifiable					

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To assess the strength of a cluster in a regional economy, the location ratios are calculated by comparing the cluster's share of total local employment to the cluster's national share. This quotient will yield a value generally between 0.00 and 2.00, where 1.00 demonstrates an equal share percentage between the local and national economies. Cluster location ratios greater than 2.00 indicate a strong cluster agglomeration, while those less than 0.50 indicate relatively weak clusters. The formulation is as follows:

$$LQ = \frac{\frac{\text{Local Industry Jobs}}{\text{Total Local Jobs}}}{\frac{\text{National Industry Jobs}}{\text{Total National Jobs}}}$$

### Data Collection

CivEc compiled employment data from three fully compatible sources in order to assemble an accurate picture as possible of Cameron County's economy.

**IMPLAN:** Minnesota IMPLAN Group is the creator of IMPLAN software and databases and is a premier provider of economic and marketing analysis information. The primary input to the CivEc database is ES202 data, state and county level employment and wages at the 4-digit Standard Industrial Classification (SIC) code level. Government sources often suppress employment data, particularly at the local level, to avoid disclosing information about particular establishments. The suppressed elements in ES202 data have been adjusted through a procedure developed by MIG. For each community analysis, CivEc verifies the accuracy of this data by comparing ES202 with other data sources.

CivEc uses IMPLAN because it is the most reliable source of data on American employment. ES202 data is drawn from mandatory submissions from all private sector enterprises, allowing for an accurate snapshot of employment. Data drawn directly from governmental sources fails to overcome the suppression problem. Private sector sources, such as Dun & Bradstreet, while purporting to collect more recent information, rely on non-mandatory surveys. This data is useful for identifying broad changes in the national economy, but is deemed by most economists too unreliable for any detailed analysis.

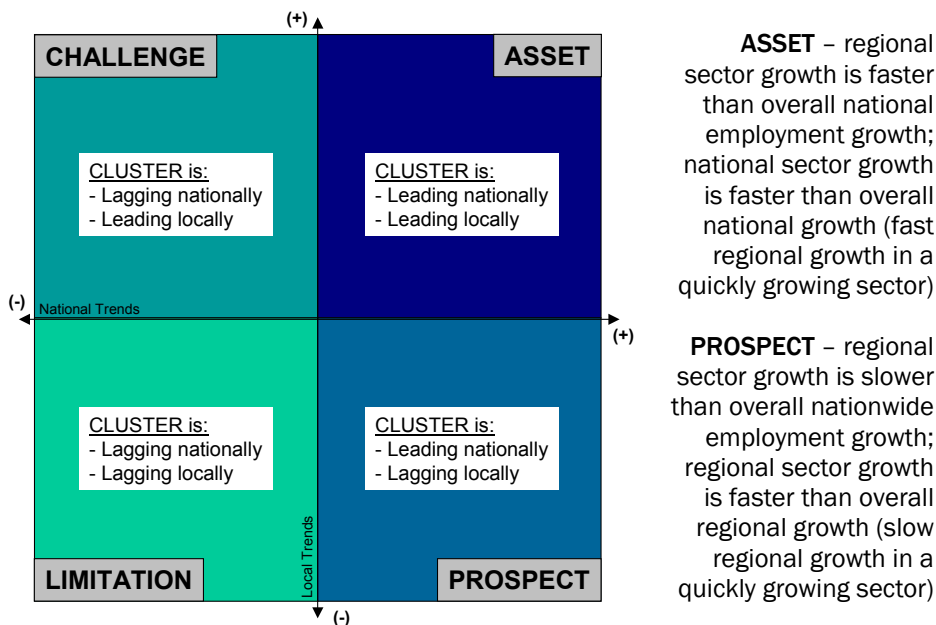
**BLS and State Labor Market Information:** ES202 data excludes a few broad categories of workers in the American economy, most notably government employees. Fortunately, these workers are easily accounted for in other sources. The Bureau of Labor Statistics of the United States Department of Labor and state Labor Market Information sources provide readily available tabulations of public sector employment. The custom CivEc database facilitates an accurate blending of these employees into the ES202 data.

## APPENDIX D. SHIFT-SHARE ANALYSIS

Shift-share analysis is one way to account for the competitiveness of a region's industries and to analyze the potential contribution to its future economic base. This analysis is utilized to identify employment changes in various business sectors over a specific period of time. Shift-share indicates threats and opportunities based on regional, state, and industrial influences.

Shift-share analysis breaks down employment growth (or decline) in a region over a given time period into three components: (1) a *national growth effect*, which assumes the growth (or loss) of employment in a region mirrors the national trend, (2) an *industry mix effect*, which is the amount of change in employment the region would have experienced had each of its industries grown at their national rates, less the national growth effect, and (3) a *competitive effect*, which is the difference between the actual change in employment and the employment change to be expected if each industrial sector grew at the national rate and thus determines the regional effect of industry employment. The sum of these three effects equals the actual change in total employment within a region over a prescribed time period. When these sums are plotted on a graph with XY coordinates, specific definitions that balance local trends against national trends can be applied to describe each industry's current status, Figure D.1.

**Figure D.1. Definitions Used in Shift-Share Analysis**



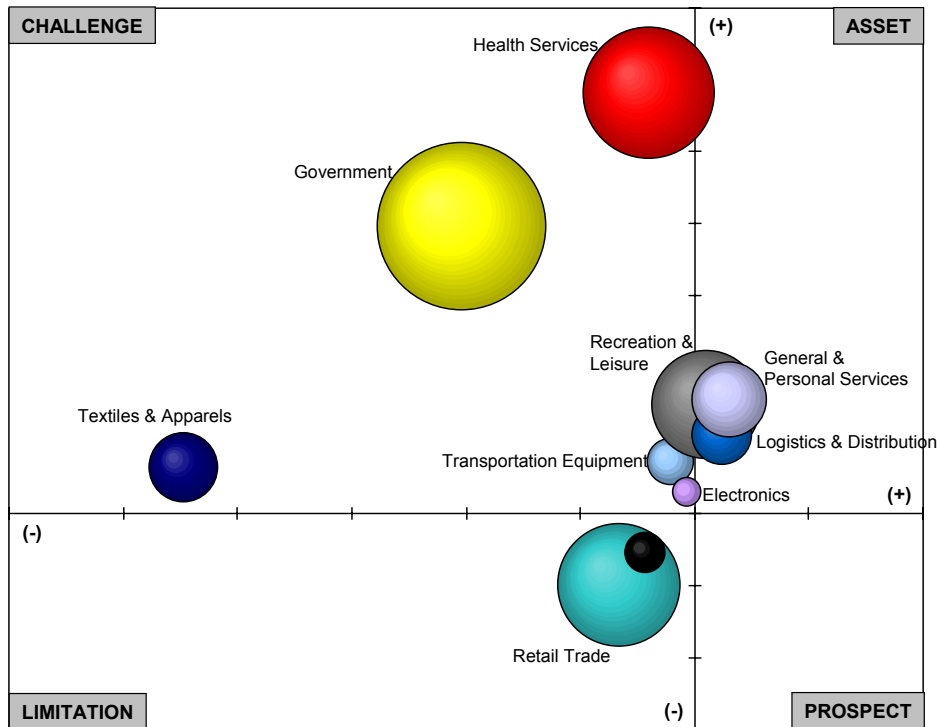
**CHALLENGE** – regional sector growth is faster than overall national employment; national sector growth is slower than overall national growth (fast regional growth in a regionally declining or lagging sector)

**LIMITATION** – regional sector growth is slower than overall nationwide employment growth; national sector growth is slower than overall national growth (slow regional growth in a nationally declining or lagging sector)



Figure D.2 presents a sample as an example of shift share data presentation. In this case, Government represents the largest cluster by employment while electronics is the smallest. However, Government is classified as a challenge because its share of employment has grown locally while its share is shrinking nationally. Logistics & Distribution, on the other hand, while employing far fewer people, is classified as an asset because it is expanding both locally and nationally, indicating a healthy local cluster in a thriving industry.

**Figure D.2. Sample Shift-Share Analysis for Strongest Clusters**



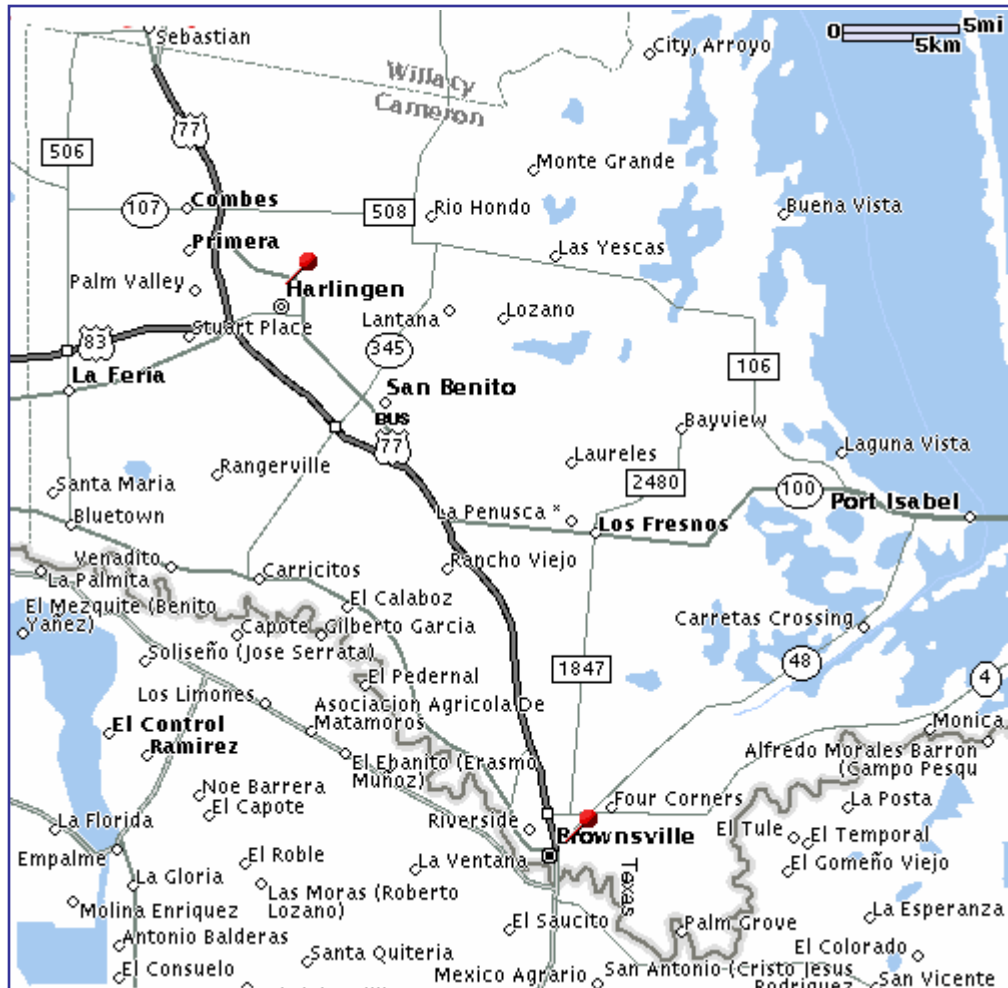
## APPENDIX E. TRANSPORTATION INFRASTRUCTURE

Cameron County's infrastructure in terms of highways and bridges play a crucial role in the region's economy. The quality, number and destination of regional roads and highways give shape to the potential markets for Cameron County's domestic and international trade. Cities accessible by main roadways become partners in trade rather than competitors.

### Highways

Two four-lane divided highways intersect in Harlingen: U.S. Highway 77 and 83. U.S. Highway 83 runs west and connects with Interstate Highway 35 in Laredo, Texas. U.S. Highway 77 runs north and south. To the north it connects with Interstate Highway 37 near Corpus Christi, Texas and to the south it provides border access to Matamoras, Mexico across the Veterans International Bridge to Mexican Interstate Highway 40 and Highway 101. Mexican Interstate 40 runs west to Monterrey and Highway 101 runs south to Ciudad Victoria.

Figure E.1. Cameron County Map with Highways



## Bridges

Cameron County has four international bridges that provide inland access across the Rio Grande River into Mexico: B&M Bridge at Brownsville, Gateway International Bridge and Free Trade Bridge at Los Indios; and Veterans International Bridge at Los Tomates. Table E.1 presents the ownership and hours of operations for each of the four bridges.

**Table E.1. Cameron County International Bridges along the Texas-Mexico Border**

Bridge Name	Ownership	Hours of Operations for Privately-owned Vehicles	Hours of Operations for Commercial Vehicles	Hours of Operations for Hazardous Material
<b>B &amp; M</b>	<b>Private</b>	<b>24 hours</b>		
<b>Free Trade at Los Indios</b>	<b>Cameron County, City of San Benito, &amp; City of Harlingen</b>	<b>6 am-Midnight M-F</b>	<b>7 am-7 pm M-F 10 am-6 pm Sa-Su</b>	<b>7 am-7 pm M-F 10 am-5 pm Sa-Su</b>
<b>Gateway Int'l</b>	<b>Cameron County</b>	<b>24 hours</b>		
<b>Veterans Int'l at Los Tomates</b>	<b>Cameron County &amp; City of Brownsville</b>	<b>6 am-Midnight M-Su</b>	<b>7 am-11 pm M-F 8 am-4 pm Sa-Su</b>	<b>9 am-3 pm M-Su</b>

Source: Texas Department of Transportation

## International Bridge Truck Crossings

As indicated in Table E.2, northbound Brownsville truck crossings have increased by 100% from 1994 (125,441) to 2001 (251,613). The opening of the Veteran's International Bridge in 1999 had a dramatic affect on the number of crossings, and the number more than doubled for the years of 1999 (265,462) and 2000 (299,238). But at the same time, total Texas northbound truck crossings increased by 240% from 1994 (659,949) to 2001 (2,239,090), and Cameron County's traffic did not increase accordingly. Most of this increase was taken by Laredo, with five international bridges, and McAllen-Hidalgo with two international bridges.

**There are five reasons why the twin cities of Laredo are booming. And every one of them spans the Rio Grande...**

**Timothy Roche**  
Time Magazine  
July 11, 2001, p. 50.

**Table E.2. Truck Crossings into Texas from Mexico, 1994-2001**

TRUCKS: NORTH	1994	1995	1996	1997	1998	1999	2000	2001
<b>Brownsville</b>	<b>125,441</b>	<b>115,828</b>	<b>118,171</b>	<b>122,883</b>	<b>121,255</b>	<b>265,462</b>	<b>299,238</b>	<b>251,613</b>
<b>Del Rio</b>	<b>25,158</b>	<b>28,926</b>	<b>29,695</b>	<b>33,042</b>	<b>35,456</b>	<b>59,843</b>	<b>61,228</b>	<b>59,942</b>
<b>Eagle Pass</b>	<b>24,884</b>	<b>31,747</b>	<b>36,261</b>	<b>40,628</b>	<b>49,072</b>	<b>101,242</b>	<b>106,892</b>	<b>97,658</b>
<b>Laredo</b>	<b>366,781</b>	<b>428,774</b>	<b>575,886</b>	<b>576,652</b>	<b>650,907</b>	<b>1,486,511</b>	<b>1,493,073</b>	<b>1,404,184</b>
<b>McAllen-Hidalgo</b>	<b>98,887</b>	<b>114,752</b>	<b>139,728</b>	<b>156,516</b>	<b>167,077</b>	<b>325,352</b>	<b>374,150</b>	<b>368,395</b>
<b>Progreso</b>	<b>8,592</b>	<b>9,189</b>	<b>8,111</b>	<b>7,994</b>	<b>3,741</b>	<b>16,588</b>	<b>12,001</b>	<b>19,844</b>
<b>Rio Grande City</b>	<b>6,384</b>	<b>6,064</b>	<b>10,635</b>	<b>15,917</b>	<b>12,546</b>	<b>20,946</b>	<b>24,065</b>	<b>25,724</b>
<b>Roma</b>	<b>3,822</b>	<b>4,701</b>	<b>5,388</b>	<b>5,747</b>	<b>7,895</b>	<b>15,985</b>	<b>2,824</b>	<b>11,730</b>
<b>Total</b>	<b>659,949</b>	<b>739,981</b>	<b>923,875</b>	<b>959,379</b>	<b>1,047,949</b>	<b>2,291,929</b>	<b>2,383,471</b>	<b>2,239,090</b>

Source: Texas Department of Transportation

Table E.3 indicates that while southbound traffic through Brownsville is higher than northbound traffic, southbound truck crossings have increased by only 7% from 1994 (204,344) to 2001 (217,731). This is a small fraction compared to the total southbound truck crossings increase of 98% from 1994 (1,102,446) to 2001 (2,187,114). As with northbound truck crossings, Brownsville has not captured its share of increased truck crossing traffic, and this increase has largely been taken by Laredo (which takes over 50% of total bridge traffic in both directions of the cities listed here). When comparing the increase in northbound to southbound Brownsville trucking crossings it is evident that the northbound truck crossings have increased significantly from the southbound truck crossings. This may suggest that maquiladoras in Mexico have increased production of products destined for U.S. and Canadian markets.

**Table E.3. Truck Crossings into Mexico from Texas, 1994-2001<sup>1</sup>**

Trucks -South	1994	1995	1996	1997	1998	1999	2000	2001
<b>Brownsville+</b>	<b>204,344</b>	<b>184,848</b>	<b>197,617</b>	<b>229,788</b>	<b>290,746</b>	<b>237,189</b>	<b>234,121</b>	<b>217,731</b>
<b>Del Rio+</b>	<b>33,622</b>	<b>34,529</b>	<b>36,670</b>	<b>43,579</b>	<b>66,186</b>	<b>67,788</b>	<b>69,468</b>	<b>69,770</b>
<b>Eagle Pass++</b>	<b>40,728</b>	<b>34,918</b>	<b>39,747</b>	<b>44,416</b>	<b>50,167</b>	<b>81,868</b>	<b>108,704</b>	<b>92,466</b>
<b>Harlingen+</b>	<b>57,085</b>	<b>35,316</b>	<b>44,154</b>	<b>42,207</b>	<b>64,912</b>	<b>74,833</b>	<b>71,714</b>	<b>42,599</b>
<b>Laredo++(+)</b>	<b>548,409</b>	<b>422,916</b>	<b>516,790</b>	<b>650,812</b>	<b>1,188,577</b>	<b>1,306,655</b>	<b>1,409,336</b>	<b>1,407,621</b>
<b>McAllen-Hidalgo+</b>	<b>170,704</b>	<b>123,426</b>	<b>124,986</b>	<b>98,640</b>	<b>52,381</b>	<b>51,458</b>	<b>46,933</b>	<b>37,244</b>
<b>Pharr+</b>	<b>NA</b>	<b>30,981</b>	<b>56,863</b>	<b>114,008</b>	<b>180,171</b>	<b>206,298</b>	<b>256,899</b>	<b>258,386</b>
<b>Progreso+</b>	<b>24,357</b>	<b>21,109</b>	<b>20,000</b>	<b>14,008</b>	<b>16,834</b>	<b>27,627</b>	<b>25,116</b>	<b>25,724</b>
<b>Rio Grande City+</b>	<b>15,795</b>	<b>13,513</b>	<b>17,905</b>	<b>21,795</b>	<b>21,561</b>	<b>23,887</b>	<b>21,602</b>	<b>21,940</b>
<b>Roma+</b>	<b>7,402</b>	<b>7,710</b>	<b>8,911</b>	<b>8,976</b>	<b>10,556</b>	<b>15,767</b>	<b>13,142</b>	<b>13,633</b>
<b>Total</b>	<b>1,102,446</b>	<b>909,266</b>	<b>1,063,643</b>	<b>1,268,229</b>	<b>1,942,091</b>	<b>2,093,370</b>	<b>2,257,035</b>	<b>2,187,114</b>

Source: Texas Department of Transportation

### Port of Brownsville

The Port of Brownsville opened in 1936 and is located at the southern tip of Texas at the end of a 17-mile (27 kilometers) channel that meets the Gulf of Mexico at the Brazos Santiago Pass. The Port, a man-made basin 4,200' long and varying in width from 400' to 1,200', is three miles north of the Rio Grande and the Mexican border, five (5) miles east of the City of Brownsville and seven miles from the rail and highway border crossing.<sup>2</sup>

The Port of Brownsville is unique in that it offers its customers five modes of transportation to and from the port:

- ⇒ ocean vessels
- ⇒ US and Mexican truck transport
- ⇒ US and Mexican rail service
- ⇒ barge service via the US Intercoastal and Inland Waterway Systems
- ⇒ air service

<sup>1</sup> Source: Data provided by U.S. bridge operators in cited cities and compiled by Texas A&M Int'l University, Texas Center for Border Economic and Enterprise Development. Notes: The symbols indicate the following: (+) loaded and empty trucks, (++) loaded trucks and (+++) does not separate loaded trucks from other vehicles thus not reported. Laredo++(+): 1990-97 figures denote loaded trucks and 1998 figure denotes loaded and empty trucks. Data was unavailable for El Paso. 2001's decrease in northbound truck crossings, and the steady decrease in southbound truck crossings every year since it peaked in 1998, can be attributed to the slowdown in the U.S. and Canadian economies.

<sup>2</sup> Port of Brownsville, Web site: <http://www.portofbrownsville.com/>, Accessed: April 22, 2002

The Port of Brownsville handles bulk cargo for deep-sea vessels from the Gulf of Mexico or barges navigating the Intracoastal Waterway. The port channel is 42 feet deep, lined with docks and warehouses with the capacity to accommodate over 3 million metric tons of cargo a year. The port is often referred to as "Mexico's northernmost port" because of the cargo, especially steel coils and bars coming to and from Mexico.

As a bulk commodity port, The Port of Brownsville has developed a versatile marine terminal operation covering both liquid and dry cargo handling. Principal imports and exports include chemicals, LPG, clays, petroleum, grain, agricultural products, sulfur, steel, bulk minerals, ores, fertilizers and aluminum.<sup>3</sup> Table E.4 provides volumes of waterborne cargo in metric tons that moved through the port in 2001.

**Table E.4. Waterborne Cargo, 2001**

Waterborne Cargo, 2001	
<b>Deep Sea In Cargo</b>	<b>2,008,074 metric tons</b>
<b>Deep Sea Out Cargo</b>	<b>190,887 metric tons</b>
<b>Intercoastal In Cargo</b>	<b>1,351,488 metric tons</b>
<b>Intercoastal Out Cargo</b>	<b>131,967 metric tons</b>

Source: Port of Brownsville Newsletter, Full Steam Ahead, Vol. 3, Issue 1, 1.30.027

This disparity between in and out cargo volumes is due to bulk commodities that are moved through the port to supply the Northern Mexican maquiladora industry. It is also evident that the value added products manufactured at the maquiladoras are not moved back through the port. The Port of Brownsville did not own and operate a land base container crane until April 2002 and many value added maquila products are shipped via container on vessels. Table E.5 indicates that over the past four years the volume of waterborne cargo has varied to a high in 2001 of 4,004,265 metric tons.

**Table E.5. Waterborne Cargo (in metric tons) 1998-2001**

Waterborne Cargo (in metric tons)			
1998	1999	2000	2001
<b>3,224,511</b>	<b>2,888,456</b>	<b>3,181,155</b>	<b>4,004,265</b>

Source: Port of Brownsville

The Port of Brownsville is small compared to other ports in the U.S, as measured by cargo volume. The American Association of Port Authorities (AAPA) ranked the Port of Brownsville 110<sup>th</sup> out of 111 U.S. ports in terms of total 1999 cargo volume. Compared to the Port's peers in Texas, eight had higher 1999 cargo

<sup>3</sup> Ibid.

volumes. The Port of San Diego also ranked low, 105 out of 111 U.S. ports; however, in 1999 the Port of San Diego handled approximately 172,000 more short tons of cargo than the Port of Brownsville.

**Table E.6 U.S. Ports Ranked by Total Cargo Volume, 1999**

Rank	Port	Short Tons
2	Houston, TX	158,828,203
5	Corpus Christi, TX	77,986,587
6	Beaumont, TX	69,405,951
15	Texas City, TX	49,502,557
24	Freeport, TX	28,076,004
52	Galveston, TX	10,335,825
55	Matagorda, TX	9,077,589
74	Victoria, TX	5,521,873
105	San Diego, CA	2,659,072
110	Brownsville, TX	2,486,839

Source: American Association of Port Authorities, 2000

## Port Developments

In May 2002, the Port of Brownsville installed a new \$2.5 million 164-foot multipurpose Gottwald Mobile Harbor Crane capable of lifting 100 metric tons. The new crane has the capacity to averages 25 container moves per hour accommodating 20-45 foot containers from barges up to Panama Canal size vessels.<sup>4</sup> “Basically, the new crane allows us to cut the unloading time of a freight in half and greatly reduce turn-around-time for the deep-sea cargo lines,” said German Rico, director of container services marketing for the port. Increased shipments have led to added staffing to the more than 2,000 employees associated with the port and its lessees.<sup>5</sup> Additional port improvements are the 120,000 square foot Dock 15 Warehouse scheduled for completion by July 2002, and deepening the ship channel to 55 feet.<sup>6</sup>

The Port of Brownsville has embarked on an endeavor to create a land bridge via railway to the Port of Lazaro Cardenas located on the Pacific Ocean in Mexico. The direct port-to-port land bridge will be facilitated by rail connections utilizing existing railways (Brownsville & Rio Grande International Railroad [BRG] railway and Mexico’s Grupo Transportacion Ferroviaria Mexicana, S.A. de C.V. [TFM] railway). The land bridge will allow cargo from the Pacific to be transported by intermodel connections to the Port of Brownsville, thereby, competing with the well-established Long Beach to Houston land bridge.<sup>7</sup>

## Port of Harlingen

The port is located four miles east of Harlingen, Texas on Highway 106. It is 25 miles west of Mile Marker 646 on the Gulf Intracoastal Waterway that stretches along the coast of the Gulf of Mexico from the Mexican border at Brownsville, Texas, to St. Marks, Florida. The Harlingen channel is maintained to a width of

<sup>4</sup> Phone interview with German Rico, Marketing Director (container services), Port of Brownsville, by Richard J. Rodarte, June 6, 2002.

<sup>5</sup> Dwayne Hartnett, Port gets a powerhouse, New \$2.5 million crane expected to boost business at Port of Brownsville, The Brownsville Herald, May 30, 2002.

<sup>6</sup> Ibid.

<sup>7</sup> Interview with Tony Rodriquez, Marketing Director, Port of Brownsville, by Richard J. Rodarte, March, 2002.

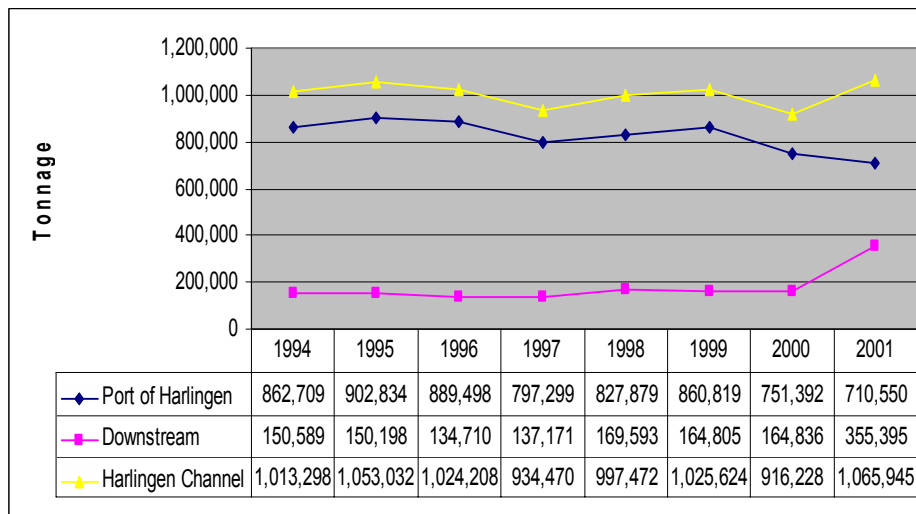
125 feet and a depth of 12 feet and is supplied by the Arroyo Colorado, a fresh water river.

Port facilities consist of a 650 foot concrete general dry cargo wharf, a 100 foot dry bulk wharf, 5 smaller docks (50' x 25') located near the turning basin and extending along the Harlingen channel. Terminal docks and over 150 acres of on-and-off channel sites are available for industrial firms requiring transportation and land lease rates.

The port is an important link in the comprehensive transportation network of the Rio Grande Valley of Texas. Southern Pacific Company rail lines at the port (with switching capabilities to Union Pacific Railways) keep products moving to Texas locations and on throughout the U.S. and Mexico.<sup>8</sup>

The closest international bridge for truck traffic to Mexico is the Free Trade Bridge, which is approximately 12 miles from the Port of Harlingen. Figure E.2 indicates that tonnage on the Harlingen Channel has hovered above and below one million tons from 1994 to 2001. The Port of Harlingen experienced a decline in tonnage in 2000 and 2001 while the downstream tonnage increased sharply in 2001.

**Figure E.2. Port of Harlingen Tonnage Moved from 1994 to 2001**



Source: Port of Harlingen

## Rail Facilities

**Union Pacific Railroad (UP)** provides Cameron County national and international rail access at its local terminals and switching yards in Brownsville and Harlingen. The **Brownsville and Rio Grande Valley International Railroad (BRGRR)** located at the Port of Brownsville is a short line railroad that has interchange connections with UP and **Burlington Northern Santa Fe Railroads** via an intermediate switch with UP. BRGRR maintains and operates 42 miles or lines of track and owns eight locomotives.<sup>9</sup>

<sup>8</sup> Port of Harlingen Authority, web site: <http://www.portofharlingen.com/Default.htm>, Accessed: April 29, 2002.

<sup>9</sup> Brownsville & Rio Grande International Railroad, Web site: <http://www.brgrr.com>, April 21, 2002



The Port of Brownsville has over 33 miles of railroad track, with rail sidings serving warehouses, industries and all docks in the port area. General Cargo Docks have shipside tracks and all general cargo facilities, with the exception of Dock 11, have double depressed tracks at the rear of the transit sheds. Storage and classified tracks are capable of holding 500 cars.<sup>10</sup>

UP maintains a local terminal and switching yard in Harlingen where the Harlingen Industrial Parks and Port of Harlingen have direct rail access. Only the UP terminal in Harlingen provides commercial motor carrier and rail intermodal connectivity facilities.

**Transportacion Ferroviaria Mexicana (TFM)** connects with the UP switching yard and is the Rio Grande Valley's only rail line to Mexico which runs across the Brownsville & Matamoros International Bridge to Monterrey, Mexico. TFM is a subsidiary of Grupo Transportacion Ferroviaria Mexicana, a joint venture of Tranportacion Maritima Mexicana and Kansas City Southern Industries. TFM provides the shortest route between major cities in Mexico and the U.S.A., and links up to the North American rail network at the border crossing points of Laredo/Nuevo Laredo and Brownsville/Matamoros, where more than 60% of commercial traffic between Mexico and the USA crosses the border.<sup>11</sup>

As indicated by Table E.7, southbound rail car crossings at Brownsville/Matamoros increased 18% from 1994 (11,854) to 2001 (14,007). Statewide, southbound rail car crossings in the region increased by 220% from 1994 (66,898) to 2001 (213,775). Clearly, the Brownsville/Matamoros rail corridor has not captured it fair share of the increase in rail car crossings.

This disparity in crossings also holds true for northbound rail car crossings but to a smaller extent. Table E.8 indicates that northbound rail crossings at Brownsville/Matamoros increased by 24% from 1994 (31,119) to 2001 (38,450). Statewide, northbound rail car crossings in the region increased by 80% from 1994 (171,103) to 2001 (306,732). As with truck border crossings these disparities may be due to border crossing delays, distance from point of origin to destination, the location of maquiladoras in Mexico, or other factors.

**Table E.7 Rail Car Crossings SOUTH (Texas to Mexico) 1994-2001**

Rail -South	1994	1995	1996	1997	1998	1999	2000	2001
<b>Brownsville</b>	<b>31,119</b>	<b>21,820</b>	<b>25,389</b>	<b>30,842</b>	<b>32,717</b>	<b>31,780</b>	<b>36,074</b>	<b>38,450</b>
<b>Eagle Pass</b>	<b>18,818</b>	<b>24,713</b>	<b>40,929</b>	<b>52,443</b>	<b>56,669</b>	<b>69,661</b>	<b>78,347</b>	<b>86,038</b>
<b>El Paso</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>3,001</b>	<b>N/A</b>	<b>N/A</b>
<b>Laredo</b>	<b>121,166</b>	<b>109,385</b>	<b>133,314</b>	<b>152,230</b>	<b>148,009</b>	<b>167,963</b>	<b>184,498</b>	<b>182,244</b>
<b>Total</b>	<b>171,103</b>	<b>155,918</b>	<b>199,632</b>	<b>235,515</b>	<b>237,395</b>	<b>272,405</b>	<b>298,919</b>	<b>306,732</b>

Source: Data provided by railroad companies serving cited cities and compiled by Texas A&M International University, Texas Center for Border Economic and Enterprise Development.

<sup>10</sup> Ibid.

<sup>11</sup> Transportacion Ferroviaria Mexicana, Web site: <http://www.tfm.com.mx/english/home1.html>, Accessed: April 21, 2002

**Table E.8. Rail Car Crossings NORTH (Mexico to Texas) 1994-2001**

Rail –North	1994	1995	1996	1997	1998	1999	2000	2001
<b>Brownsville</b>	<b>11,854</b>	<b>13,789</b>	<b>19,158</b>	<b>11,707</b>	<b>12,134</b>	<b>15,354</b>	<b>12,426</b>	<b>14,007</b>
<b>Eagle Pass</b>	<b>15,177</b>	<b>22,331</b>	<b>39,795</b>	<b>39,438</b>	<b>40,314</b>	<b>41,749</b>	<b>42,214</b>	<b>31,392</b>
<b>El Paso</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>Laredo</b>	<b>39,867</b>	<b>59,377</b>	<b>85,592</b>	<b>93,967</b>	<b>92,829</b>	<b>115,771</b>	<b>151,110</b>	<b>168,376</b>
<b>Total</b>	<b>66,898</b>	<b>95,497</b>	<b>144,545</b>	<b>145,112</b>	<b>145,277</b>	<b>172,874</b>	<b>205,750</b>	<b>213,775</b>

Table E.9 provides BRGRR annual carloads volume from 1997 to 2001. As indicated by the table, rail connectivity has been increasing over the past five years and will play a vital role in the ports future expansion projects.

**Table E.9. Brownsville & RGV International Railroad Carloads**

International Railroad (carloads*)		
1997	7,465	Annual Increase
1998	13,325	44 %
1999	16,446	19 %
2000	20,747	21 %
2001	25,981	20 %

Source: Port of Brownsville, Full Steam Ahead Newsletter, Volume 2, Issue 1, April 30, 2001 and Volume 3, Issue 1, January 30, 2002, \* 100% port generated

### Airport Facilities

There are two international airports that service Cameron County: The **Brownsville/South Padre Island International Airport** and **Harlingen's Valley International Airport**. Within a 40 mile radius, these airports have a service area with more than 2.5 million citizens of the Lower Grande Valley and Northern Mexico.

**Brownsville/South Padre Island International Airport** provides domestic air passenger service and daily cargo service. It is the largest air cargo handling airport in the Rio Grande Valley, and it encompasses 1,815 acres which includes the airport, an industrial park, and a Foreign Trade Zone (FTZ). Cargo carriers include:

- ⇒ **Emery**
- ⇒ **BAX Global**
- ⇒ **Continental Airlines**

Since 1997, Brownsville has completed nearly \$10 million in capital improvements directly benefiting air cargo including: runway pavement and lighting rehabilitation, air cargo ramp, flood control, taxiway reconstruction. These investments have helped increase trade: cargo weights have increased 60% since 1998, from 45 million pounds to 72 million pounds in 2000. Brownsville has programmed a CIP for fiscal years 1999-2003 totaling over \$23 million for airfield infrastructure and facility improvements directly benefiting air

cargo operation and continued development.<sup>12</sup> The airport is finalizing plans to extend its runway to 10,000 feet to accommodate larger aircraft.

**Harlingen's Valley International Airport** is the Rio Grande Valley's leading airport in terms of passenger activity, infrastructure to support growth, and services. In February of 2001 the **Federal Aviation Administration** named **Valley International Airport "Outstanding Airport of the Year" for the year 2000**. Over \$1.8 million was invested in airport terminal improvements in 2001. Additionally, a \$2.0 million air cargo ramp (including the extension to the Taxiway) is nearing completion. Cargo carriers include:

- ⇒ UPS
- ⇒ Airborne Express
- ⇒ Southwest Airlines Cargo
- ⇒ Fed Ex

**McAllen-Miller International Airport**, located in Hidalgo County, provides cargo services with seven air freight service companies:

- ⇒ American Airlines Cargo
- ⇒ ACE Forwarding
- ⇒ Crate and Fly
- ⇒ Campbell's Delivery Service
- ⇒ Surfair
- ⇒ Direct Expeditors
- ⇒ Eagle USA
- ⇒ Continental Cargo.<sup>13</sup>

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<sup>12</sup> Brownsville-South Padre Island International Airport, web site: <http://www.flybrownsville.com/>, accessed: June 18, 2002.

<sup>13</sup> McAllen-Miller International Airport, web site: [www.mcallenairport.com](http://www.mcallenairport.com), accessed: June 18, 2002.

## APPENDIX F. COMMUNITIES' NETWORKS

In 2001-2002, the Cross-Border Institute for Regional Development (CBIRD) and Texas Regional Action Committee (TRAC) conducted an inventory of telecommunications providers and a needs assessment to detail current telecommunications use in Cameron County and Matamoros, Mexico.<sup>14</sup> It was determined Harlingen and Brownsville have local ISP providers that offer up-to-date telecommunications connectivity at competitive costs. High-speed wireless access, optical fiber (OC-48, OC-192), T1 and DS3 access, VPNs, and WANS are available in the Cameron County area and will continue to develop. But while they work to provide state-of-the-art technology to their customers, these providers experience a common frustration that they must educate industry clients about the most basic benefits of using Internet technology; it is difficult to serve a client base that does not perceive a need.

### Providers' View

Providers stressed the importance of a regional, long-range fiber infrastructure, and pointed out that wireless connectivity might be an imminent stop-gap measure and to provide services for rural areas. Local providers would like to offer services across the border, but found significant obstacles to entering this market. According to providers, long-range infrastructure development will require advanced fiber connections and, in order for this development to be possible, a significant amount of communication and coordination among regional communities is required. Providers would like to see an increase in communication and coordination among communities about technology issues.

Rather than building new networks, regional providers suggest using existing infrastructure combined with new services and technologies such as virtual-private networking (VPN) over broadband ATM connections. New services are on the horizon for the Lower Rio Grande Valley: fixed-wireless, upgraded cable networks, and video-over-copper DSL will provide various interactive and multimedia capabilities. These new services are expected to gain wide acceptance and despite the current economic downturn, competition in broadband is heating up among telephone companies, power-line providers, wire-line, satellite and wireless companies provide significant competition.

### User Views

While Cameron County users' level of dependence on the Internet varies, organizations generally felt Internet access was very important. Most users predicted gradual improvement and upgrading of their resources as needs increase and costs decrease. Wireless connectivity is an emerging preference for heavy Internet users. The most common obstacles to upgrading of telecommunications resources are cost, availability, and the lack of perceived benefits.

**Challenges: According to providers, a general lack of knowledge, awareness, and trust among users in the community provide more obstacles to technological progress than infrastructure and availability.**

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<sup>14</sup> This effort was led by Dr. Corey Carbonara, Director, Baylor University's Institute for Technology Innovation Management; and a team of researchers from Texas State Technical College, Waco, Texas.

⇒ **Top Five User Requirements**

1. Increased bandwidth and/or more fiber
2. Wireless or remote connectivity
3. Videoconferencing and Voice-over IP
4. Community and/or employee education
5. Improved reliability/redundancy of access

While users in the Harlingen, Brownsville and the Lower Rio Grande Valley region want more bandwidth and more education about networks, many were unable to identify resources for information and support regarding telecommunications. Most study participants supported universal access and believed that the area needed to obtain and maintain high quality telecommunications services to improve quality of life, to attract businesses and jobs, and to avoid being left behind in an increasingly technology-oriented society.

A Community Network Implementation Plan was structured to provide strategies, options, requirements, and suggestions for Harlingen and Brownsville to guide these communities in their pursuit of significantly enhanced technology infrastructure capable of promoting economic development and improving quality of life. The key factors were performance, scalability, applications, economics, and adaptability (future-proof). The steps were:

- ⇒ Cultivate a well-developed community concept
- ⇒ Involve all community members in a communal effort for change
- ⇒ Periodically assess community needs and strengths
- ⇒ Develop a vision or mission statement
- ⇒ Establish goals and priorities
- ⇒ Draft a strategic plan to meet goals that includes responsibilities and timelines
- ⇒ Grow the network infrastructure
- ⇒ Provide education, training, access, and services for the Community
- ⇒ Apply systems engineering, stakeholder analysis, and Zero Time principles throughout the planning and the implementation processes of a Communities' Network
- ⇒ Create a Knowledge Network of Networks
- ⇒ Focus on Education
- ⇒ Be regional in scope

### **Technology Infrastructure and Knowledge Networks Assessment**

Compared to other South Texas Counties, Cameron County has a unique diversity of broadband offerings available to residential and business users. Cameron County has the opportunity to position itself as a unique market for technology based growth. The existing and future infrastructure, when combined with the available human capital, provides abundant entrepreneurial opportunities.

Cameron County offers companies the combination of a strong and developing infrastructure with the sense of a unified community and high employee loyalty. Cameron County wireless technology companies are bringing healthy competition into the local IT providers market. In interviews, several technology companies noted that while the region does not suffer from a negative perception, neither does it enjoy strong statewide or national awareness as a destination for tech-business.

The existing IT infrastructure could be utilized to promote a powerful online presence for the county; the community's volunteer networks, local attorneys, CPAs, retired CEOs and current business leaders could create an online know-how-network that would be the start of a business incubator/accelerator to serve both sides of the border.

Cameron County has the essentials to support entrepreneurial success, and hi-tech business start-ups:

- ⇒ Brownsville, Harlingen and San Benito draw regional talent from a hundred mile radius, to be educated in technology professions by the local institutions, and thus provide employers with the competency they require.
- ⇒ Current available bandwidth and business services enable local IT companies to market their products successfully online and deliver both physical hardware components and intangible software products to customers internationally.
- ⇒ Major technology-based firms like Lockheed Martin and large infrastructure provider such as SBC and Time Warner communications provide unique opportunities for smaller companies to benefit from the point-of-presence providers currently serving the Cameron County market.
- ⇒ Technology companies who locate in the region could expect loyal employee base with low turnover, inexpensive cost of living, and the stability of an established infrastructure.

#### **Technology Forecast**

- ⇒ **Continued trend toward applications that are dependent on the network**
  - application servers
  - web servers
  - thin clients
  - mobile computing
- ⇒ **High speed Internet connections for everyone**
- ⇒ **Convergence of voice and data networks to one network based on Internet protocols**
- ⇒ **Bandwidth on the network backbone will double each year**
- ⇒ **Continued dramatic increase in customer demand for bandwidth each year**
- ⇒ **MPLS, Gigabit Ethernet, and IP protocols will allow significant streamlining in backbone and metropolitan area networks.**
- ⇒ **Streamlining the network will be driven by new competition**
- ⇒ **Significant improvements in the IP network infrastructure's performance**
- ⇒ **Latency can be as much as, or even more of a concern than bandwidth**
- ⇒ **Virtual private networks (VPNs) and QoS will speed the transition from private to the public network**
- ⇒ **Fixed wireless IP networks will complement, but not replace, wired IP networks**
- ⇒ **Mobile cellular voice and data networks will provide the same services as the wired network at a heavy price in bandwidth**
- ⇒ **New fixed wireless technologies such as 802.16 and Free Space Optical (FSO) provide a network architecture with capacity to be the last mile invisible fiber extension and is scalable to Gigabit Ethernet**

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# PROJECT PARTNERS

## UTB/TSC

The University of Texas at Brownsville has been a member of The University of Texas System since 1991. In Partnership with Texas Southmost College, The University serves over 10,000 students at its Brownsville, Texas campus.

The mission of The University of Texas at Brownsville and Texas Southmost College (UTB/TSC) is to provide accessible, affordable, postsecondary education of high quality, to conduct research which expands knowledge and to present programs of continuing education, public service, and cultural value to meet the needs of the community. The partnership offers the strengths of the community college while facilitating students a seamless transfer to an upper-level university with the power of the UT System behind it.

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UTB/TSC places excellence in learning and teaching at the core of its commitments. It seeks to help students at all levels develop the skills of critical thinking, quantitative analysis, and effective communications which will sustain lifelong learning. UTB/TSC respects the dignity of each learner and addresses the needs of the entire community.

UTB/TSC convenes the cultures of its community, fosters an appreciation of the unique heritage of the Lower Rio Grande Valley and encourages the development and application of bilingual abilities in its students. It provides academic leadership to the intellectual, cultural, social and economic life of the binational urban region it serves.

The University of Texas at Brownsville & Texas Southmost College  
80 Fort Brown  
Brownsville, Texas 78520  
(956) 544-8200





## UTB-CBIRD

The Cross Border Institute for Regional Development (CBIRD) was officially created on April 7, 1999 when representatives from both sides of the border met at the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) in Monterrey, Nuevo Leon, Mexico to sign the agreement. The partnership not only includes The University of Texas at Brownsville and Texas Southmost College and ITESM but also The University of Texas at Austin and the IC2 Institute. The partnership was initiated to foster and help build the 21st Century Texas-Mexico border region through strengthened infrastructures, new technologies and public-private partnerships.

CBIRD Goals are to:

- ⇒ Develop opportunities at the community level
- ⇒ Facilitate cross-border cooperation, collaboration and coordination
- ⇒ Bring together government, business, academic, and philanthropic foundations as well as other non-government organizations with the common goal of developing the cross-border region.
- ⇒ Develop and report the metrics for benchmarking and progress assessment. (This report is an example of a UTB-CBIRD Benchmarking project).
- ⇒ Facilitate the development of civic and social entrepreneurship.
- ⇒ Provide technical assistance for expanding the internal capacity of UTB/TSC components to meet the educational and training needs of their clients.

CBIRD functions as a cross border catalyst that is both a “think” and a “do” tank where creative ideas are studied, analyzed, disseminated and implemented. CBIRD forms public-private partnerships to conduct joint-studies and training and promote private sector programs and projects.

CBIRD - Brownsville Office  
The University of Texas at Brownsville  
500 East Saint Charles  
Brownsville, Texas 78520  
Director  
Baltazar Arispe y Acevedo, Jr., Ph.D.

Telephone: 956-983-7573  
Toll Free: 1-877-44-CBIRD  
(1-877-442-2473)  
Fax: (956) 983-7574  
Email: CBIRD@utb1.utb.edu



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[www.CivicEconomics.com](http://www.CivicEconomics.com)

Austin Office  
314 West Milton  
Austin, Texas 78704

Chicago Office  
644 West Addison, Suite 50  
Chicago, Illinois 60613



## IC<sup>2</sup> Institute, The University of Texas at Austin

*Innovation, Creativity, Capital* [[www.IC2.org](http://www.IC2.org)]

IC<sup>2</sup> Institute, The University of Texas at Austin is a “think” and “do” tank founded in 1977 by Dr. George Kozmetsky, successful entrepreneur, academic, and business leader and 1995 winner of the National Medal of Technology.

A major focus of the Institute’s research and implementation activities is to partner with local business, academic, and government leaders, at home and abroad, to accelerate wealth creation, sustainable development, and prosperity sharing through technology-based growth. Examples of IC<sup>2</sup> Institute Austin-based initiatives with national and global reach include:

- The Austin Technology Incubator [<http://IC2-ati.org>]
- The Capital Network [[www.thecapitalnetwork.com](http://www.thecapitalnetwork.com)]
- The Austin Technology Council [[www.austintechnologycouncil.org](http://www.austintechnologycouncil.org)]
- Masters of Science in Science and Technology Commercialization [<http://msstc.IC2.org>]
- ELT Labs [[www.eltlabs.org](http://www.eltlabs.org)]
- IC<sup>2</sup> Institute/UT-Austin CBIRD (Cross-Border Institute for Regional Development) [[www.cbird.org](http://www.cbird.org)]

A key resource of the Institute is The IC<sup>2</sup> Fellows Global Knowledge Network that includes 230 researchers, scientists business, government, and public sector leaders from a broad range of institutional backgrounds and professional disciplines. The Fellows bring their expertise to Institute education and training programs, research activities, conferences and workshops, and consulting projects. IC<sup>2</sup> welcomes applications for the Institute’s Visiting Scholars Program that includes academics and public and private sector influencers and civic- and social-entrepreneurs worldwide.

IC<sup>2</sup> Institute  
The University of Texas at Austin  
2815 San Gabriel  
Austin, TX 78705  
Director  
John S. Butler

Telephone: 512/475-8900  
Fax: 512/475-8902  
[www.ic2.org](http://www.ic2.org)





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