



# Healthy Discussions

A community assessment and healthcare gap analysis of four border counties

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**Jesse Rodriguez**

**Hannah Reisor**

**Brian Smith**

**Faculty Advisor: Dr. Wynn Rosser**



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## Executive Summary

The purpose of this capstone research project was to perform a community health assessment and healthcare gap analysis of the four counties of Cameron, Hidalgo, Starr, and Willacy for the Knapp Community Care Foundation (KCCF). These four counties studied in this report are often referred to as the Rio Grande Valley (RGV). This consulting project is the result of KCCF partnering with the Bush School of Government and Public Service at Texas A&M University and the subsequent research by a capstone consulting team working under a faculty advisor. The community assessment included the collection of tabular data and GIS information from a variety of federal, state, and local government agencies as well as a number of non-profits and other organizations. The GIS data was uploaded into ArcGIS Online to visually represent geographical data, such as doctor's office locations and public transit lines, as well as to facilitate analysis.

The gap analysis consisted of an examination of the data collected for the community assessment, with a focus on determining the health disparities between the RGV, Texas, and the United States, and comparing the RGV to similar counties in the U.S. The

community assessment and gap analysis revealed six major findings:

1. The RGV faces high levels of food insecurity.
2. Large numbers of individuals live below the poverty line or are unemployed.
3. There is low spatial access to healthcare resources.
4. There are high rates of teen pregnancy
5. There is insufficient public transit.
6. A high percentage of individuals are uninsured.

There are 227,510 food insecure individuals in the RGV, and 159,130 of them are children. The RGV has higher levels of unemployment than the U.S., in a state that has lower unemployment rates than the U.S. Likewise, the RGV has higher rates of poverty than either Texas or the U.S. Through the analysis of geographical data and an examination of doctor to patient ratios, it was determined that there are many areas in the RGV that are medically underserved. Another interesting finding is that the teen birth rate in the RGV is about 47% higher than the Texas rate, while Texas is already one

of the ten states with the highest birth rates in the country.

Analysis of public transit routes in the RGV revealed that there are large areas in the four county region that have little or no access to public transit. Furthermore, Starr and Willacy counties do not have public transit systems.

Finally, the percentage of people without

health insurance is higher in the RGV than it is in Texas. This is a staggering finding, as the Texas uninsured rate is the highest in the U.S., which is, in turn, higher than any of its peer countries. To better understand our findings, it is important to first understand the project, the client, and the geographic area that was studied.

## Background Information

Being able to obtain healthcare is a key determinant of someone's physical and mental well-being; however, large populations within the U.S. still face significant challenges in accessing healthcare. Specifically, low-income, Hispanic populations experience many more barriers to accessing healthcare than the general population.

### **Our Client**

The Knapp Community Care Foundation (KCCF) is a newly formed grant-making foundation which seeks to expand access to healthcare and build healthier communities in the Rio Grande Valley, especially for low income and otherwise disadvantaged populations. KCCF also seeks to identify new and existing healthcare programs, provide direct medical, dental, and mental healthcare services, and initiate programs that support and facilitate access to healthcare services for residents of the RGV.

### **Our Project**

At the request of KCCF, the Knapp Capstone Consulting Team assisted KCCF in achieving these goals by performing a community assessment and a health related gap analysis of the RGV. The community assessment consists

of an analysis of both the general population demographics and the health demographics of RGV residents, as well as the healthcare infrastructure and health-related non-profits that are available to the people of the RGV. The gap analysis is an examination of the data collected in the community assessment and serves to identify disparities in healthcare access and outcomes in the RGV. The Knapp Consulting Capstone Team first conducted a literature review of health care outcomes and challenges which in turn informed the community assessment and gap analysis. The assessment and gap analysis identified potential areas of improvement in which KCCF can have the greatest impact when issuing grants.

### **The RGV**

Cameron, Hidalgo, Starr, and Willacy counties are located at the southernmost tip of Texas. Cameron, Hidalgo, and Starr counties lie along the north bank of the Rio Grande River, which separates Texas and Mexico. Collectively, the RGV covers 5,599 square miles and has approximately 1,379,119 residents. Hidalgo county is the RGV's largest county with over 1,000 square miles and a population greater than 800,000 (Census Quick Facts). Additionally, Hidalgo County has more than

## Colonias

Colonias are low income, unincorporated communities located on the U.S. – Mexico border that sometimes lack critical infrastructure such as municipal water, sewage, paved roads, electricity, gas, and health services (Ramos, et al. 2008; Mier 2008; and Anders 2010).

On average, residents of the colonias are overwhelmingly Hispanic and predominantly speak Spanish (Ory, et al. 2009; Anders, et al. 2010; Ramos, et al. 2008; and Mier, et al. 2008). Residents of colonias experience significantly worse health outcomes than either Texas or the U.S. For example, residents of colonias have a significantly higher risk of developing diabetes and have a significantly higher diabetes related mortality rate (Anders, et al. 2008; Anders, et al. 2010; Ory, et al. 2009; and Mier, et al. 2008).

Depending on which colonia is studied, higher rates of alcoholism and anxiety (Anders, et al. 2010) or asthma and allergies (Ramos, et al. 2008) are reported. Mier, et al. noted “Living in a colonia for 10 years or more was also a predictor of lower physical and mental health status” (2008, p. 1768).

900 *colonias* – more *colonias* than any other county in the RGV or Texas. This can be compared to Willacy County, the smallest of the four counties, with about 22,000 residents or 37.5 people per square mile in its 590 square mile region. Willacy County only has 16 *colonias*. To learn more about *colonias*, see the sidebar for information.

Across the four Rio Grande Valley counties, the population is predominately Hispanic, considerably young, and growing quickly. In all four counties, the population is more than 87% Hispanic. Spanish is second to English as the most used language along the Texas-Mexico border. According to LEP (Limited English Proficiency)<sup>1</sup> totals, the LEP rate in the counties range from 17.8% to 44.7% of the population. For example, in Hidalgo County 33.5% of the population classifies as LEP. In Texas, 12.6% of the population is LEP (The Migration Policy Institute 2011). The average age of residents in the four counties is younger (28.4-30.9 years old) than that in Texas (33.8 years old). More than 40% of the population is younger than 24 years old in all of the RGV counties except for Willacy County (38.6% of Willacy’s population is younger than 24). Between

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<sup>1</sup> According to lep.gov, LEP populations do not speak English as their primary language and have difficulty reading, writing, speaking, or understanding English.



2010 and 2013, the two larger counties, Cameron and Hidalgo, experienced population growth of 2.7% and 5.3% respectively. RGV metropolitan areas like

McAllen-Edinburg-Mission, TX, are among some of the fastest growing areas in the nation (McAllen Chamber of Commerce).

## Data and Methods

Our review of the literature indicated that health care outcomes are influenced by a number of factors and that the outcomes are closely related to three major categories of barriers to healthcare that particularly impact low-income Hispanic populations: environmental factors, cultural barriers, and financial barriers.

### Sources of Data

Our team purchased a data-file from the Texas Medical Board with the addresses of 60,000 doctors' offices located within the state of Texas. The list was reduced to our four county area of study using postal zip codes and further reduced by eliminating medical specialties that were not relevant to our analysis. The Office of the Attorney General is the state repository of GIS Data locations of all *colonias* and unincorporated areas within Texas and provided us with the location of all 2,294 *colonias*. The Center for Disease Control provided data on the prevalence of diabetes, obesity, heart related conditions, morbidity, mortality, and cancer rates. Information gathered from the U.S Census Bureau included demographic information such as income and percentage of population insured. County Health Ranking and Roadmaps provided a number of sources of data (via their website),

including the prevalence of health related conditions, access to healthcare facilities, and teen birthrates. We coordinated with a number of transportation planning agencies located within the four county area of study to obtain their original GIS data files for public (bus) transportation routes. The transportation agencies included:

1. Brownsville Metropolitan Planning Organization
2. Harlingen-San Benito Metropolitan Planning Organization
3. Hidalgo County Metropolitan Planning Organization
4. Valley Metro Transportation Agency

The Texas Department of State Health Services provided data on the number of physicians, dentist and mental health professions per 100,000 population. The National Campaign to Prevent Teen and Unplanned Pregnancy provided data on the change in rates of teen pregnancy and teen birth across the United States and Texas. The U.S. Bureau of Labor Statistics provided us with the unemployment figures for the United States and Texas.

## Methods

We found in our research that environmental factors are related to space, location, and context. Environmental factors that consistently appear in the scholarly literature reviewed for this project identified that the distance between patient and provider, access to transportation, residential location in a *colonia*, and access to healthy foods. These factors informed our decision to collect data relevant to our area of study from multiple sources, including federal and state agencies, county offices, city agencies, metropolitan planning organizations, and non-profits. The decision on the type and scope of data to be collected and used for our community assessment was informed by the literature review and an evaluation of County Health Rankings information. The community assessment required the collection and analysis of general population demographics and health demographics of RGV residents, as well as the healthcare infrastructure and health-related non-profits that are available in the RGV.

In our collection and presentation of data, our goal was to show the comparison between national data, Texas data, and the four counties of our study. Every effort was taken to ensure all sources were collected with the

same methodology. We have made notations in any case where national data or state data was collected from different sources or for different years than the county data. Environmental data included public transportation routes (bus routes), locations of doctors' offices, and locations of healthcare facilities to include hospitals, emergency care clinics, and community care clinics. The location of *colonias* was central to our data collection and presentation process, with the information coming from the Office of the Attorney General.

Accessing healthcare and obtaining insurance requires financial resources. We directed our efforts to collect data that identified and highlighted the financial barriers encountered by low income families. The US Census Bureau provided relevant demographic information including income, employment status, and percentage of insured residents. This data was collected in tabular form and provided an overview of the financial challenges in the RGV.

Two types of analysis were performed for the purposes of this project: 1) an analysis of secondary data (summarized through graphs and charts) and 2) the use of ArcGIS Online (a Geographical Information System) to analyze geographical information. ArcGIS

Online provides us with the ability to 1) overlay and study the location of healthcare facilities in relation to public transportation routes in our area of study, and 2) identify the location of *colonias* in relation to public transportation and public health facilities.

Once the data points were collected and uploaded into the GIS Mapping Software,

analysis of the different barriers and their relation to each other were essential in developing a gap analysis of the community. We selected the ArcGIS Software because of the prevalence of its use by county and city agencies within Texas and the ease with which we could upload data obtained from state agencies.

# Findings

## **Finding 1: Food Insecurity**

*Overall food insecurity rates (those for adults) in Cameron, Hidalgo, Starr and Willacy counties are not significantly different from Texas rates, but are slightly higher than U.S. rates. More importantly, child food insecurity is significantly higher in each of the four counties than it is in either Texas or the U.S. as a whole.*

## **Background**

The United States Department of Agriculture (USDA) states, “Food security means access by all people at all times to enough food for an active, healthy life.” According to the USDA, there are four levels of food security: High, marginal, low, and very low food security. Individuals or households categorized with low or very low food security are considered food insecure. Low food security involves self-reported reductions in quality, variety, or desirability of food bought and consumed by an individual or household, and little or no self-

reporting of reduced food intake (USDA). Very low food security, on the other hand, involves multiple self-reported cases of “disrupted eating patterns and reduced food intake” (USDA). To analyze food insecurity, data was used from Feeding America, which is the largest organization devoted to providing food to at-risk populations in the U.S.

## **Findings**

As shown in Table 1.1, the percentage of people who can be classified as food insecure in Cameron and Hidalgo counties is no different than the Texas rates of food

County	Food Insecurity Rate (full population)	Population Under 18	Child Food Insecurity Rate	Estimated Number of Food Insecure Children
Cameron	18%	133,521	37%	49,640
Hidalgo	18%	267,654	37%	98,980
Willacy	20%	5,906	38%	2,230
Starr	19%	20,651	40%	8,280
Texas	18%	6,981,175	27%	1,909,470
United States	16%	-	22%	15,898,000

Source: Feeding America, 2012. [http://www.feedingamerica.org/hunger-in-america/our-research/map-the-meal-gap/?\\_ga=1.188392744.1481542338.1426704091](http://www.feedingamerica.org/hunger-in-america/our-research/map-the-meal-gap/?_ga=1.188392744.1481542338.1426704091)

insecurity at 18%. Willacy and Starr counties have slightly higher rates of food insecurity than Texas, at 19% and 20% respectively. When the U.S. food insecurity rates are considered, however, it is clear that having the same food insecurity rate as the state of Texas is not necessarily a good thing. The U.S. food insecurity rate in 2012 was 16%, significantly lower than any of the counties considered or the state of Texas. This means that Cameron and Hidalgo counties have food insecurity rates that are 13.2% and 12.6% higher than the U.S. rates respectively, while Starr's food insecurity rate is 24.5% higher than the national level.

When child food insecurity rates are considered, the differences between the four counties, Texas, and the U.S. become even more apparent. The counties' child food insecurity rates range from 37% in Cameron and Hidalgo to 40% in Starr. On the other hand, the child food insecurity rate is 27% in Texas and 22% in the U.S. This means that the child food insecurity rate in Cameron and Hidalgo counties is about 72% higher than the U.S. rate, while the child food insecurity rate in Starr County is 85.6% higher than the U.S. rate. Likewise, Cameron and Hidalgo child food insecurity rates are about 35.5% higher than the rates in Texas while Starr child food insecurity rates are 46.4% higher

than the rest of Texas.

### **Significance**

The small disparity in whole-population food security and the large disparity in child food security between the four counties and state and national levels are important for a number of reasons. Food insecurity, in adults, is linked to poorer physical health, mental health, and healthcare access. Children face all of these risks of food insecurity, as well as poorer academic performance, cognitive function, and development. Other concerns are that levels of food insecurity might be under-reported, especially for children, and rates of food insecurity might be higher in *colonias* and among migrant seasonal farm workers (MSFWs).

Adults who are food insecure face a number of negative health outcomes, including poorer physical health, mental health, and healthcare access. Adults who are food insecure are significantly more likely to be obese, especially women (Martin and Ferris 2007). There is also evidence that being food insecure increases the risk of chronic diseases such as hypertension and diabetes (Seligman, Laraia, and Kushel 2009). Being food insecure also results in poorer mental health

in adults, including higher incidence of depression and generalized anxiety disorders, especially in parents and women (Whitaker, Phillips, and Orzol 2006; Bronte-Tinkew et al. 2007). Another author found MSFWs who were food insecure were more likely to experience *nervios* and *deprimido*. Both of these are ethnospecific conditions (collections of symptoms that have been named by a group of people, in this case Hispanics). *Nervios* (nerves) is characterized by “severe general anxiety, a sense of desperation, insomnia, and a desire to cry,” (Weigel, et al. 2007, p. 159). *Deprimido* is a Hispanic term for depression (Weigel). Finally, food insecurity is associated with poor access to medical care, with food insecure individuals being more likely to postpone needed medical care, postpone seeking medications, and increase use of emergency departments (EDs) and hospitals (Kushel, et al. 2006).

Food insecurity has an even greater impact on children. Food insecure children have poorer health than food secure children. Food insecure children face a greater risk of iron deficiency anemia (IDA) than food secure children (Skalicky, et al. 2006). IDA that occurs before the age of 2 is a well-established correlate of impaired cognitive, mental, and psychomotor development; and

the effects of IDA can persist after the deficiency is treated (Skalicky, et al. 2006). Especially among immigrant homes, parents are more likely to report that their children are in fair or poor health if the household is food insecure (Chilton, et al. 2009; Cook and Frank 2008). The more recent the immigration of the parents, the more food insecure the household is likely to be. It is also possible that low food security results in higher intake of energy, fat, and added sugar, all of which could lead to negative health outcomes (Sharkey, et al. 2012).

Children experiencing food insecurity are more likely to exhibit indicators of poor mental health via behavioral problems (aggressiveness, anxiety, depression, or attention deficit/hyperactivity) than food secure children (Whitaker, Phillips, and Orzol 2006). Food insecurity is also correlated with poor child development, as reported by the parent (Rose-Jacobs, et al. 2008; Cook and Frank 2008). Finally, food insecurity is predictive of poor academic performance/development. Specifically, food insecure children performed worse in reading and mathematics regardless of gender, exhibited a decline in social skills amongst boys, and led to weight gain in girls (Jyoti, Frongillo, and Jones 2005).

There are also several concerns that the problem of food security might be significantly worse in specific communities. In a 2011 study of *colonias* in the lower Rio Grande Valley, it was determined that only 22% of the population could be defined as “food secure” while 78% of the population was food insecure at some level (Sharkey, Dean, and Johnson 2011). A total of 49% of the populations studied within the RGV were “at the most severe levels of household food insecurity,” nearly twice that of other studies based in California (Sharkey, Dean, and Johnson 2011, p. 9). Weigel, et al., found that 82% of migrant and seasonal farmworkers (MSFWs) experienced food insecurity, and 49% experienced food insecurity with hunger<sup>2</sup> (2007). There is also concern that parents might not be accurately reporting the food security of their children. When children and parents were asked about the child’s food security separately, 56% of the parents reported child food insecurity while 64% of the children reported child food insecurity (Nalty, Sharkey, and Dean 2013).

## **Recommendations**

We have shown in the previous section that the access to healthy and consistent food

options is lacking to the residents of the four county region. To address this problem, we recommend that KCCF seek projects to fund that increase the food options available to the residents of the four county region. The USDA recommends programs that support or create farmer’s markets; community supported agriculture (CSA)<sup>3</sup>; or farm-to-school initiatives (2015). Other options include partnering with the local food bank to hold food drive events or distribute collected food, or creating community gardens.

The Office of the Surgeon General’s National Prevention Council recommends that community organizations and non-profits should, “[1.] Lead or convene city, county, and regional food policy councils to assess local community needs and expand programs (e.g., community gardens, farmers markets) that bring healthy foods, especially locally grown fruits and vegetables, to schools, businesses, and communities...[and 2.] implement culturally and linguistically appropriate social supports for breastfeeding, such as marketing campaigns and breastfeeding peer support programs,” (National Prevention Council 2011, p. 36).

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<sup>2</sup> Food insecurity with hunger is the old USDA food insecurity measure equivalent to the current very low food security level.

<sup>3</sup> CSA initiatives come in many different forms. Generally, they involve a group of community members pre-paying for a local farmer’s crops. This builds strong relationships between the community and farmers, as well as sharing the risks and rewards of farming.



## Finding 2: Poverty and Unemployment

Poverty and unemployment rates in the four county region are significantly higher than either the United States or the Texas poverty and unemployment rates.

### Background

Though high unemployment rates and high poverty rates are distinct phenomena, they are not completely independent. Rather, they are intrinsically related and highly intertwined. Therefore, the findings of high levels of poverty and high unemployment rates will be considered together. Data from the U.S. Census was used to determine historical rates of poverty<sup>4</sup> for the four counties, Texas, and the U.S. as a whole, while data from the U.S. Bureau of Labor Statistics (BLS) was used to determine historical rates of unemployment for the same entities. According to the BLS website, “Persons are classified as unemployed if they do not have a job, have actively looked for work in the prior 4 weeks, and are currently available for work. Persons who were not working and were waiting to be recalled to a job

Figure 2.1: Historical Rates of Unemployment

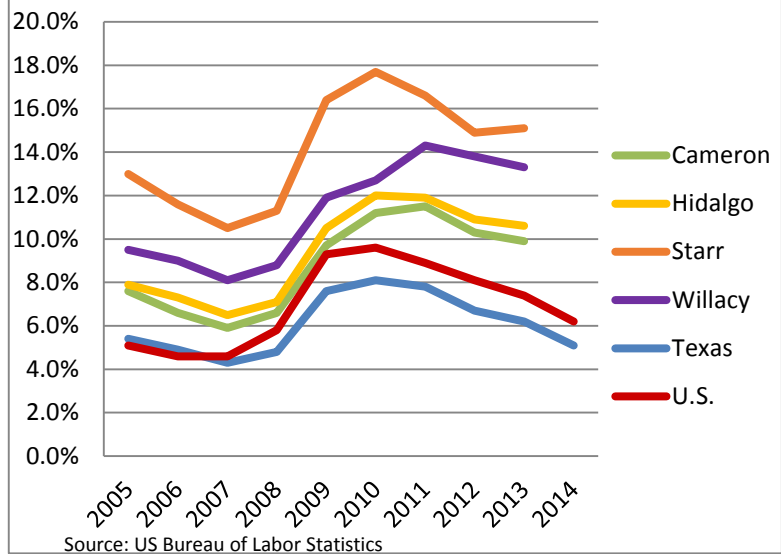
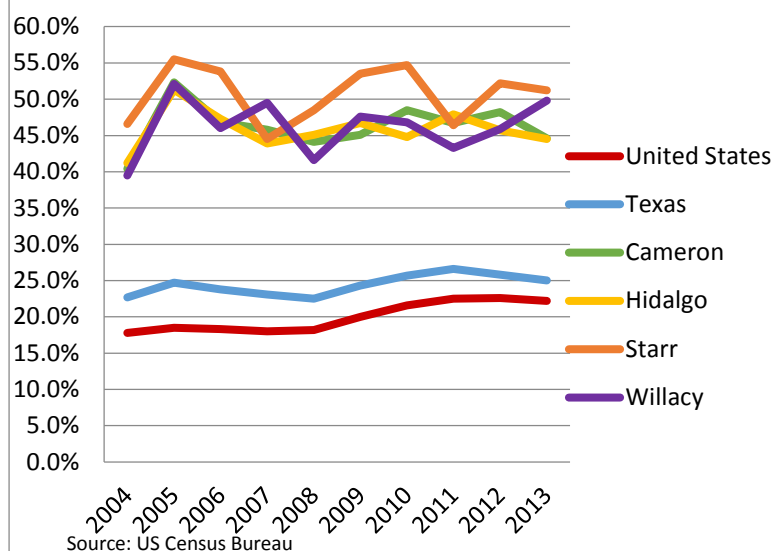


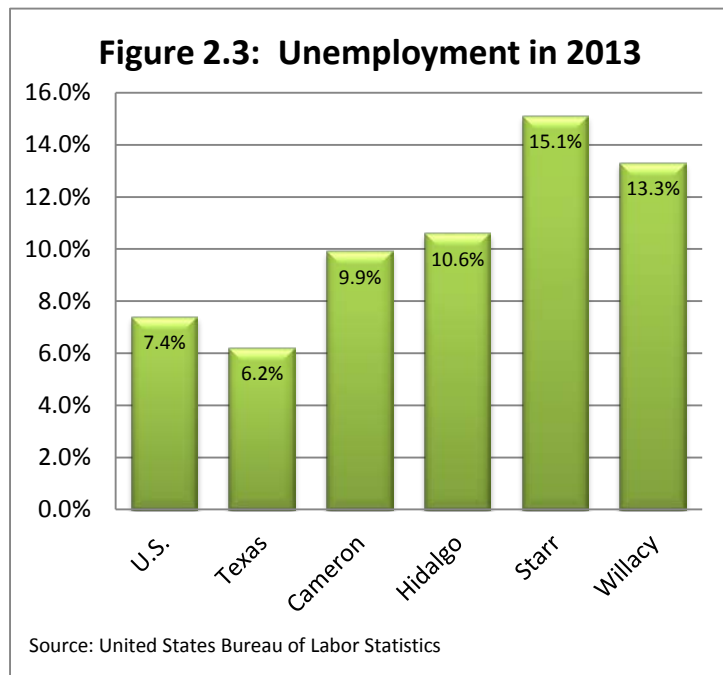
Figure 2.2: Poverty Rates, 2004 to 2013



<sup>4</sup> See Appendix A for a detailed breakdown of the poverty level thresholds used by the U.S. Census.

from which they had been temporarily laid off are also included as unemployed.” As shown in Figures 2.1 and 2.2, the unemployment rates in the four counties seem to follow the same trends represented in the larger economy (for the most part); however, the unemployment rates are consistently higher than Texas or U.S. rates year to year, indicating there is systemically higher unemployment in the four counties. This means the higher unemployment rates discussed in the next section are not simply an anomaly of the year analyzed; rather, higher unemployment rates are a consistent finding that is supported by more than a decade of data.

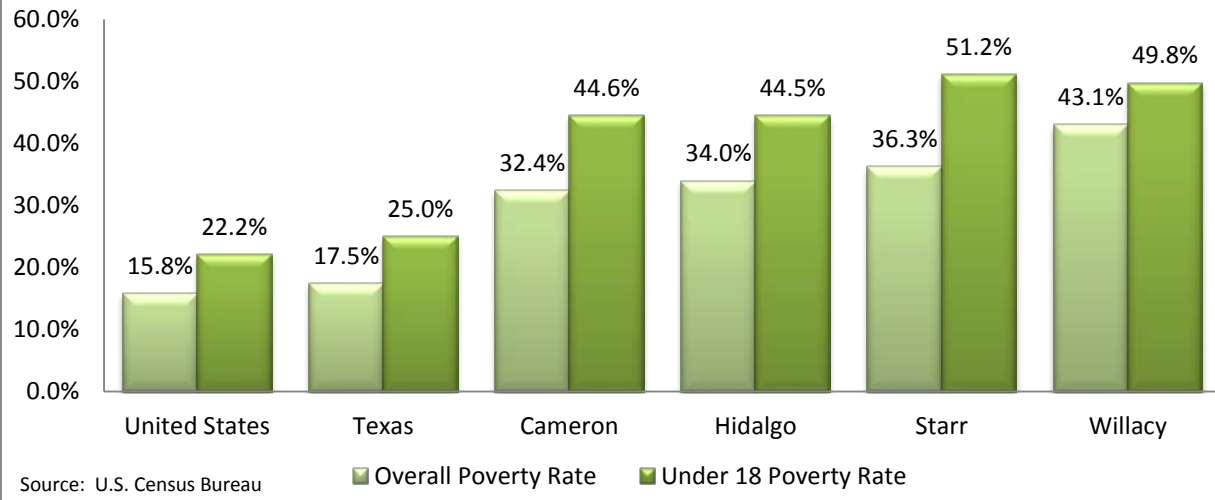
**Findings**



The four counties each have significantly higher rates of poverty and unemployment when compared to either Texas or United States rates. As shown in Figure 2.3 (the most recent year for which county unemployment data is available from the BLS), the U.S. had an unemployment rate of 7.4% and Texas had an unemployment rate of 6.2%. In the same year, Cameron, Hidalgo, Starr, and Willacy counties had unemployment rates of 9.9%, 10.6%, 15.1%, and 13.3% respectively. This means that the unemployment rates in the four counties range from 33.8% higher than the U.S. rates in Cameron County to 104.1% in Starr County. Likewise, the unemployment rates in the four counties range from 59.7% to 143.5% higher, in Cameron and Starr counties respectively, than Texas unemployment rates.

Poverty rates are also much higher in the four counties than in Texas or the U.S. As shown in Figure 2.4, in 2013 (the most recent year in which county poverty rates were available from the U.S. Census Bureau), Cameron, Hidalgo, Starr, and Willacy counties had overall poverty rates of 32.4%, 34.0%, 36.3%, and 43.1% respectively. In comparison, the overall poverty rate for Texas was 17.5% and the overall

**Figure 2.4: Overall and Under 18 Poverty Rate, 2013**



U.S. poverty rate was 15.8%. County poverty levels ranged from 105% to 173% (Cameron and Willacy counties), higher than the U.S. poverty levels and 85% to 146% higher than Texas poverty levels.

### Significance

The link between poverty, unemployment, and negative health outcomes is supported by a large body of work dating back to the 1970s and 1980s (Feinstein 1993; Bamba 2009, Evans and Kim 2007; and Athar, et al. 2013). In fact, this relationship is so well established, all of the literature written in the last decade addressing this intersection takes the link as a given, and analyzes specific aspects of the link (e.g. the effect of poverty on future development of children). An analysis of the literature reveals two main

findings: 1) Poverty and unemployment negatively affect mental and physical health outcomes, and 2) experiencing poverty in childhood can lead to negative outcomes in adulthood. The National Health Interview Survey (NHIS), a yearly poll that is administered by the U.S. Center for Disease Control and Prevention (CDC), asks numerous health related questions, the answers to which all indicate a clear relationship between poverty and poor health.

The link between poor physical and mental health outcomes, poverty, and unemployment is well established in the literature, especially with regards to the health/unemployment relationship. Poverty has been found to increase likelihood of obesity, the number of medical conditions a

person has (such as hypertension and diabetes), the likelihood of being stressed or depressed, and the usage of cigarettes and illegal drugs (Nagahawatte and Goldenberg 2008). These health effects of poverty, when observed in mothers, have been found to result in increased risk of preterm birth (Nagahawatte and Goldenberg 2008). Unemployment is linked to higher mortality, heart disease, poorer mental health, lower life satisfaction, lower marital or family satisfaction, worse subjective health, higher rate of para-suicide<sup>5</sup>, and heavy drinking (McKee-Ryan, et al., 2005; Bambra 2009). The relationship between unemployment and poor mental health has been found to be particularly strong and likely causative (McKee-Ryan, et al., 2005; Paul and Moser 2009). Paul and Moser (2009) found that unemployed individuals were more than twice as likely (34% compared to 16%) to have psychological problems (including depression, anxiety, psychosomatic symptoms, subjective well-being, and esteem) compared to their

*Uninsured individuals are more than twice as likely to have psychological problems (including depression, anxiety, psychosomatic symptoms, subjective well-being, and esteem) compared to their employed counterparts.*

employed counterparts. One theory as to the cause of the link between unemployment and poor mental health is the latent deprivation model. According to this model, employment serves to satisfy five psychological needs: time structure, social contact, collective purpose, status, and activity (Paul and Moser 2009). When individuals lose employment, they are not as able to satisfy these psychological needs. It is also important to note that the negative health effects of unemployment extend to the families of the unemployed (Bambra 2009).

Furthermore, the negative effects of poverty, when experienced in childhood, can result in poorer outcomes in adulthood. One group of researchers found that experiencing poverty in early childhood reduced adult earning and work hours (Duncan, et al. 2010). Another group found that poverty experienced in childhood could result in poorer health outcomes as an adult, including higher mortality, higher rate of cardiovascular disease or stroke, and higher

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<sup>5</sup> Para-suicide is an intentional, but unsuccessful attempt on one's own life.

rate of type II diabetes (Raphael 2011). Even more concerning is that these results persisted even if the socioeconomic position of the individual improved (that is, the negative effects of poverty persisted after the individual left poverty) (Raphael 2011).

Finally, virtually all nationally administered surveys collect data on poverty (or socioeconomic status). The NHIS (National Health Interview Survey) is no exception. The NHIS is a yearly survey administered by the CDC that tracks a large amount of health U.S. health information<sup>6</sup>. The responses to this survey consistently indicate that as poverty increases, respondents have worse health risk factors, fewer health screenings, poorer health status, and worse healthcare access. Respondents to the NHIS who were poorer tended to have more health risk factors; specifically, they were less likely to have a healthy weight and were less likely to meet the aerobic activity and muscle strengthening guidelines set by the Office of Disease Prevention and Health Promotion. Respondents of the NHIS were also more likely to have fewer healthcare screenings. Poorer women are less likely to have had a

mammogram in the past 2 years or a pap smear in the past 3 years. Also, poorer patients were less likely to have had any colorectal screening<sup>7</sup>. Poorer patients also consistently report poorer health status, including being more likely to report “fair or poor health” or having “serious psychological distress” and are more likely to report having had a doctor tell them that they have had a stroke or heart disease in the past. Likewise, poorer parents were more likely to report that their children have asthma (or have had an asthma attack in the past 12 months), Attention Deficit Hyperactivity Disorder (ADHD), serious emotional or behavioral difficulties, or have had three or more ear infections<sup>8</sup>. Finally, poorer respondents are more likely to report poorer healthcare access or access behaviors. For instance, poorer people are more likely to report delaying or not receiving needed medical care due to cost, delaying or not receiving needed prescriptions due to cost, and not receiving needed dental care due to cost. Also, poorer patients are less likely to have a usual source of healthcare, more likely to have one or more emergency room visit in the past year (even more so for two or

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<sup>6</sup> All information in this paragraph is derived from an analysis of the NHIS survey data, with dates of the data ranging from 1960 to 2012.

<sup>7</sup> This includes home fecal occult blood tests (FOBT) in the past year, a sigmoidoscopy procedure in the past five years with FOBT in the past three years, or a colonoscopy in the past decade (National Health Statistics 2013).

<sup>8</sup> Based on parents’ response to a question of their child being diagnosed by a doctor.

more visits), and are more likely to have either no doctor's office visits in the past year or more than ten.

### **Recommendations**

The previous section discussed the distressingly high poverty and unemployment rates in the four county region. Although KCCF cannot independently solve such systemic problems directly, there are a number of actions that KCCF can take to mitigate the effects of unemployment and poverty. For instance, KCCF could gather community leaders to

organize a job fair, or provide grant funding to job placement efforts. Another opportunity for KCCF would be to fund an effort to provide guidance to unemployed/low income populations to navigate the ACA exchanges. Because of the effects of poverty on health status, any effort that attempts to connect unemployed/low income individuals to stable work or temporary governmental safety net benefits would have a significant health impact on the four county region.

### **Finding 3: Access to Healthcare**

*Spatial access to healthcare services is low in the four counties being studied.*

#### **Background**

Spatial factors can be divided into two sub-categories: availability of healthcare and accessibility of healthcare (Guagliardo 2004). Availability of healthcare refers to the number of healthcare facilities, and accessibility refers to the distance of a facility to individuals who need healthcare services. These two are often considered together, however, under the name of spatial accessibility (SA) (Guagliardo 2004). Although it is generally accepted that SA is a possible indicator of negative health outcomes, the lack of capacity and technology to study the effect of distance between patient and provider on patient health has limited the ability of researchers to examine the effects of SA in the RGV area (Guagliardo 2004, Liu 2007). Thankfully, geographic information systems<sup>9</sup> (GIS) and their use are on the rise, which opens the door for more research to be done in the RGV.

#### **Findings on Spatial Availability**

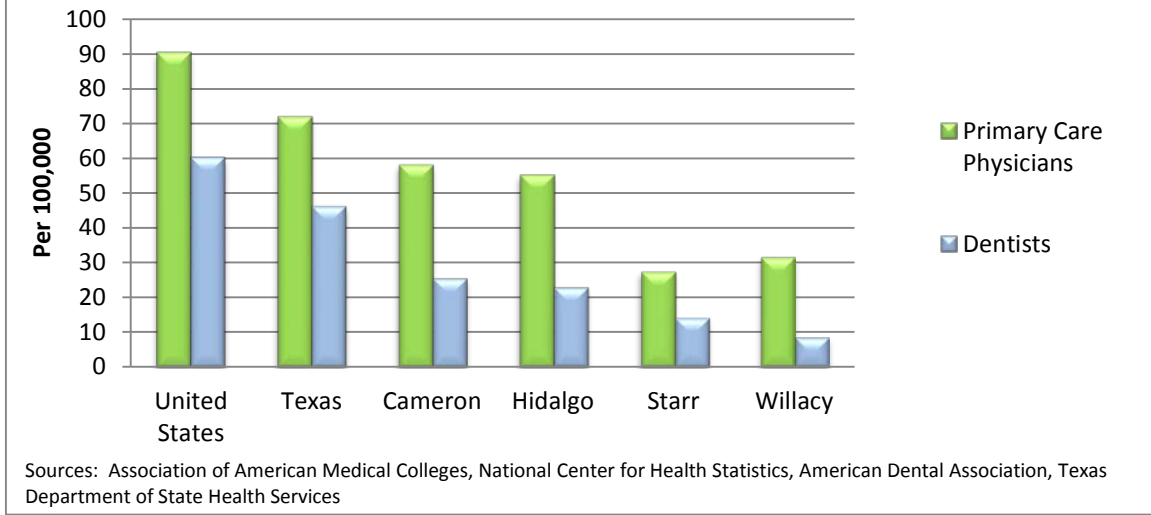
Based on data from the Texas Medical Board, there are significant gaps in spatial accessibility, and data from the Texas Department of State Health Services (DSHS), the Association of American Medical Colleges, and the National Center for Health Statistics, it is clear that there are significant gaps in spatial availability. Together, these indicate poor SA in the counties being studied.

As shown in Figure 3.1<sup>10</sup>, there are fewer primary care physicians and dentists per 100,000 population in each of the four counties than there are in either the state as a whole or the U.S. The disparity between U.S. and county primary care physicians per 100,000 is consistently large, but varies significantly by county as well. The U.S. number of physicians per 100,000 (90.5) is 55.5% higher than that of Cameron (58.2) and 229% higher than that of Starr (27.5). Likewise, the U.S. number of dentists per 100,000 (60.3) is 136% higher than that of

<sup>9</sup> GIS systems are computer programs that allow data to be overlaid on maps.

<sup>10</sup> The data for primary care physicians is from 2011 for Texas and the counties, and from 2010 for the U.S. (this was the closest estimate available). The U.S. numbers for primary care physicians are derived from a report from the Association of American Medical Colleges, while the numbers for counties and Texas are from the National Center for Health Statistics. All dentist data is from 2013. The national data is from American Dental Association; and the state and county information is derived from the Texas Department of State Health Services.

**Figure 3.1: Health Care Professionals by Region**

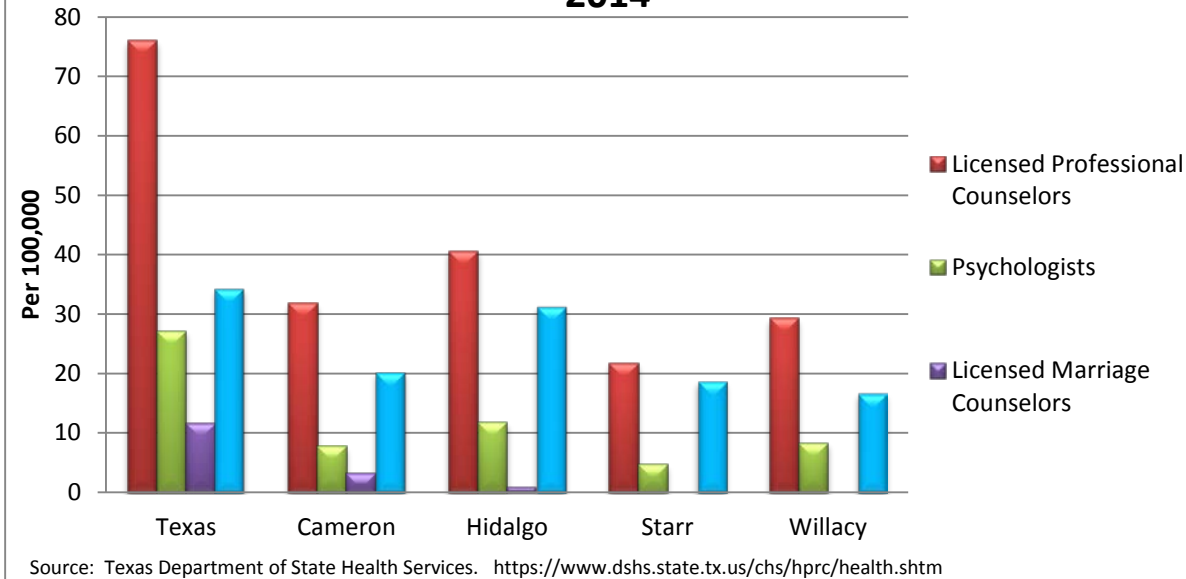


Cameron (25.5) and 601% higher than that of Willacy (8.6).

The disparities between the U.S., Texas, and the four counties persist when mental health

professionals are considered. As shown in Figure 3.2<sup>11</sup>, there are four types of mental health professionals that were considered: Licensed professional counselors (LPC),

**Figure 3.2: Mental Health Professionals by Region, 2014**



<sup>11</sup> All data are from 2014 from DSHS. Data for the U.S. were not available.



psychologists, licensed marriage counselors (LMC), and Licensed Chemical Dependency Counselors (LCDC). The disparity between the number of mental health professionals per 100,000 population for the state and for the counties varied by the profession. Texas (76.0) had 87.2% more LPCs per 100,000 population than Hidalgo (40.6) and 249% more than Starr (21.8). Texas (27.2) had 132% more psychologists per 100,000 population than Hidalgo and 479% more than Starr (4.7). The statistics on LMCs were particularly striking, because neither Starr nor Willacy have a registered LMC. Texas (11.6) has 263% more LMCs per 100,000 population than Cameron (3.2) and 1,189% more LMCs per 100,000 than Hidalgo (0.9). The LCDC disparities are the least extreme, but there are still clear differences present. Texas (34.2) had 9.6% more LCDCs per 100,000 population than Hidalgo (31.2) and 105% more than Willacy (16.8).

Also, as shown in table 3.1, all of the counties are federally designated as health

professional shortage areas (HSPAs) in some fashion. The HPSA designation is determined by doctor/patient ratio, accessibility of healthcare professionals, poverty, and other measures that might indicate a particularly high need for medical care (HRSA.gov). The HPSA designation can be given to a geographical area (census tract, partial county, whole county, etc.), one or more facilities, or a population. There are separate HPSA designations for primary care providers, dentists, and mental health professionals. Willacy and Starr qualify for HPSA designations for all categories; primary care, dentistry, and mental health. Willacy also has a number of facilities with HPSA designations across all categories of healthcare. Cameron and Hidalgo are whole county mental health HPSAs, and both have a number of dentists' facilities that are qualified as HPSAs. Cameron is a partial county primary care HPSA and has primary care facilities that are HPSAs. Hidalgo has some primary care facility HPSAs.

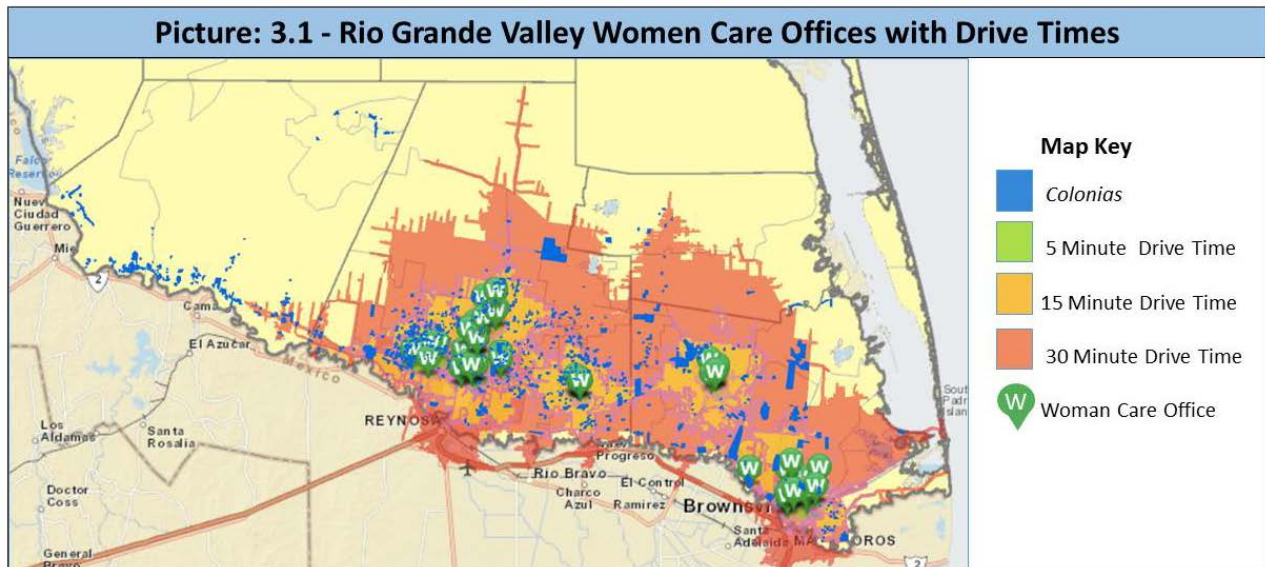
<b>Table 3.1: Current HPSA Designations</b>			
	<b>Primary Care</b>	<b>Dentists</b>	<b>Mental Health</b>
Cameron	Partial County/Facility	Facility	Whole County/Facility
Hidalgo	Facility	Facility	Whole County/Facility
Starr	Whole County	Whole County	Whole County
Willacy	Whole County/Facility	Whole County/Facility	Whole County/Facility
Source: HRSA. <a href="http://hpsafind.hrsa.gov/HPSASearch.aspx">http://hpsafind.hrsa.gov/HPSASearch.aspx</a> .			

## Findings on Spatial Accessibility

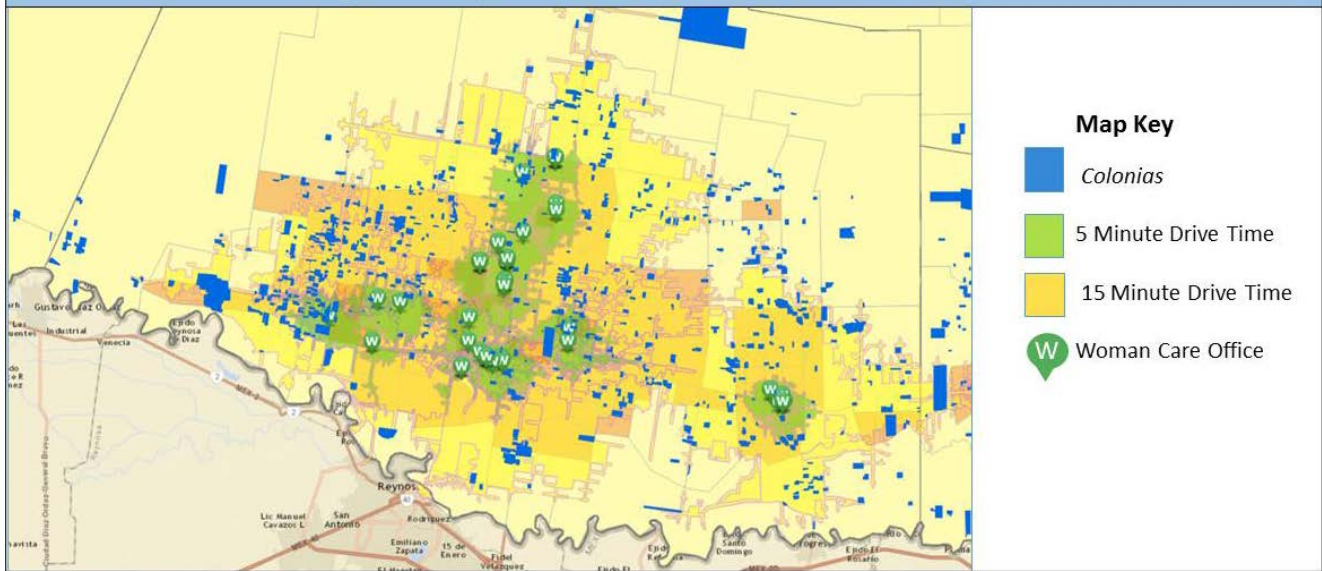
The lack of health care professionals discussed in the previous section is reflected in an analysis of primary care physicians', pediatricians', and women's health specialists' office locations. All of this data (office locations) was collected from the Texas Medical Board and mapped using ArcGIS Online, a web-based geographic information system (GIS). There are a number of important findings that come from this analysis.

As shown in Picture 3.1, there are no women's health professionals (represented by a green circle with a white "W" inside) registered to operate in either Starr or Willacy counties. For the representation of drive times and walk times, a red, yellow, green color scheme was chosen. For drive times,

red shading represents a 30 minute drive, yellow shading represents a 15 minute drive, and green represents a 5 minute drive. The blue polygons represent known locations of *colonias*. It is important to note that it is unclear whether the represented population densities are accurate for *colonias*. Many population estimates are based on surveys. Some *colonias* do not have formal addresses or mailboxes. They may not even have telephone lines or internet access. Any surveys that are administered via mail, internet, or landline might not accurately represent the residents of *colonias*. Clearly, there are many large *colonias* northeast of McAllen, northwest of Harlingen, east of Harlingen, and along the Texas/Mexico border that are in the red-shaded area (15-30 minute drive from a women's health professional). There are also a number of



**Picture: 3.2 - Hidalgo County Women Care Offices and Colonias with Drive Times**



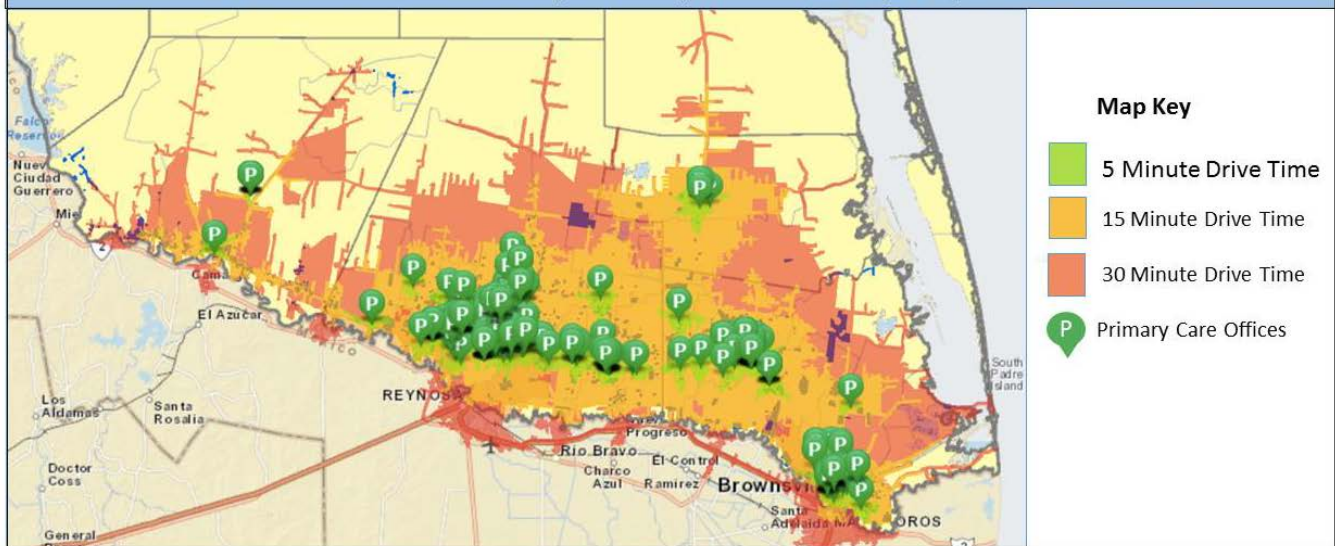
colonias in Willacy and Starr that are more than 30 minutes away from a women’s health professional.

Picture 3.2 shows a close-up of the McAllen region. The darker shaded orange on the U.S./Mexico border indicates a more dense

population. As you can see, some of these more dense populations are outside of a 15 minute drive from the nearest women’s health professional.

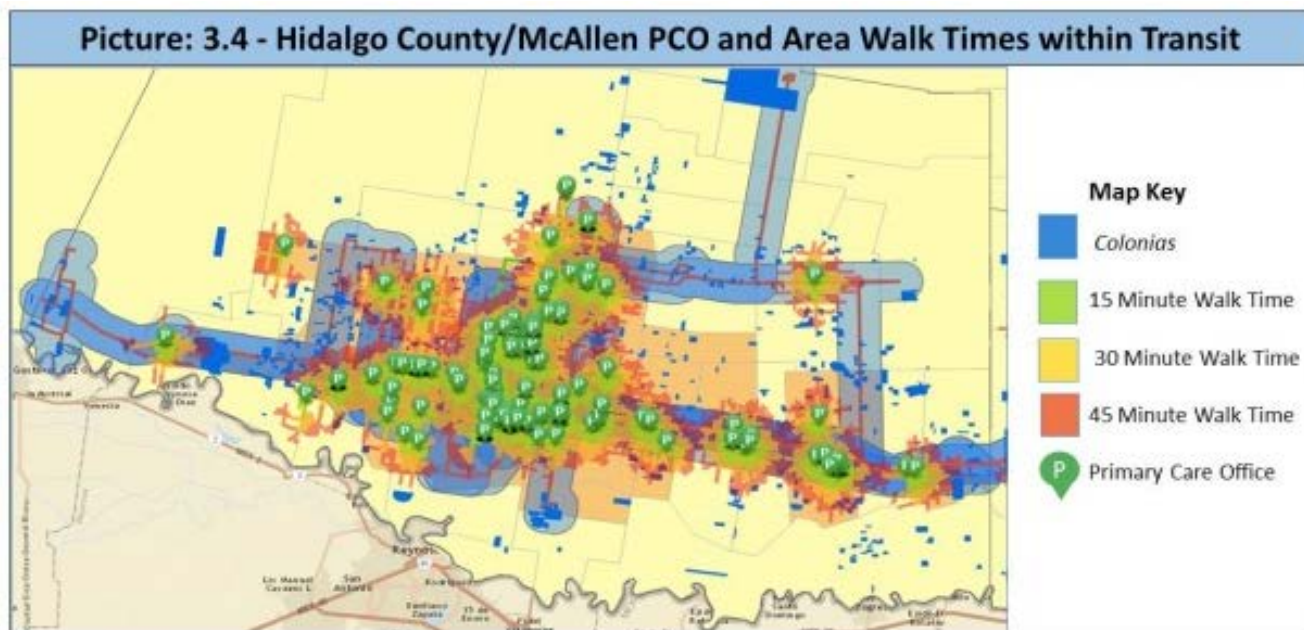
As might be expected, there are more primary care physicians available in the RGV than

**Picture: 3.3 - Rio Grande Valley Primary Care Offices (PCO) with Drive Times**



there are women's health professionals. There are, however, deficiencies in primary care as well. As shown in Picture 3.3, there are a number of *colonias* in northeastern and southwestern Starr county that are more than 30 minutes away from the nearest primary care health professional. There are also large *colonias* northeast of McAllen and east of Harlingen that are more than 15 minutes

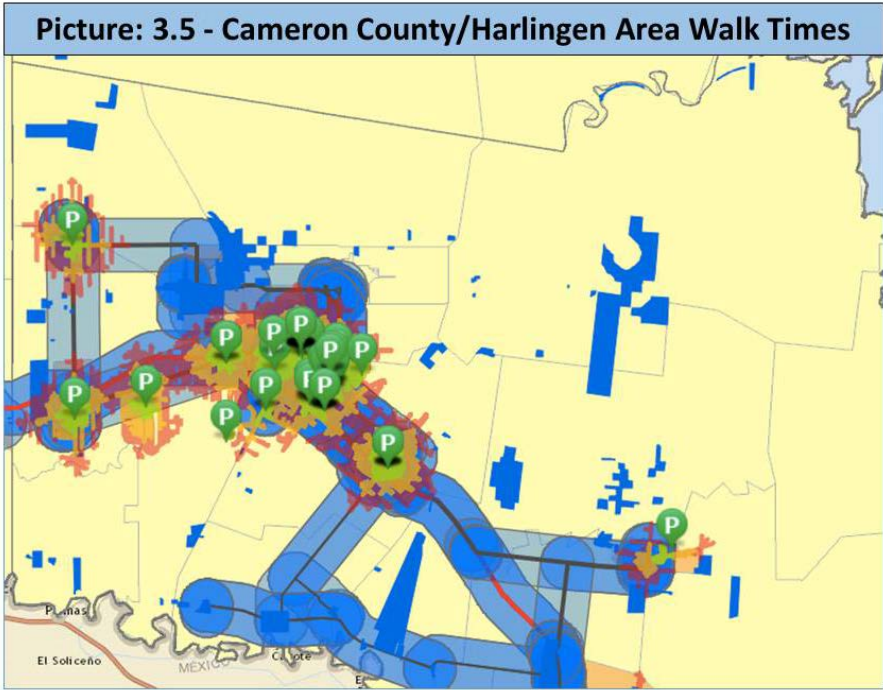
yellow, green color scheme was used for walk times, with the red shading representing a 45 minute walk, the yellow shading representing a 30 minute walk, and the green shading representing a 15 minute walk. In Picture 3.4, there are also blue shades, which represent a 1 mile radius around public transit routes. Picture 3.4 shows that there are many *colonias* on all sides of McAllen that are



away from the nearest primary care health professional.

The picture becomes even more concerning when walk times are considered. Walk times are important to analyze, because many low-income individuals have either no cars or only one car (which the whole family must share and is usually reserved for work). Therefore, an analysis of drive times matters little for this population. The same red,

neither within 45 minutes walking time from a primary care physician, nor a mile away from the nearest public transit line. There is, furthermore, a more dense population to the east of McAllen proper that is ringed by public transit routes, but is more than a mile away from that public transit route. Lower income residents of this area would still find it difficult to obtain medical care without a personal vehicle.



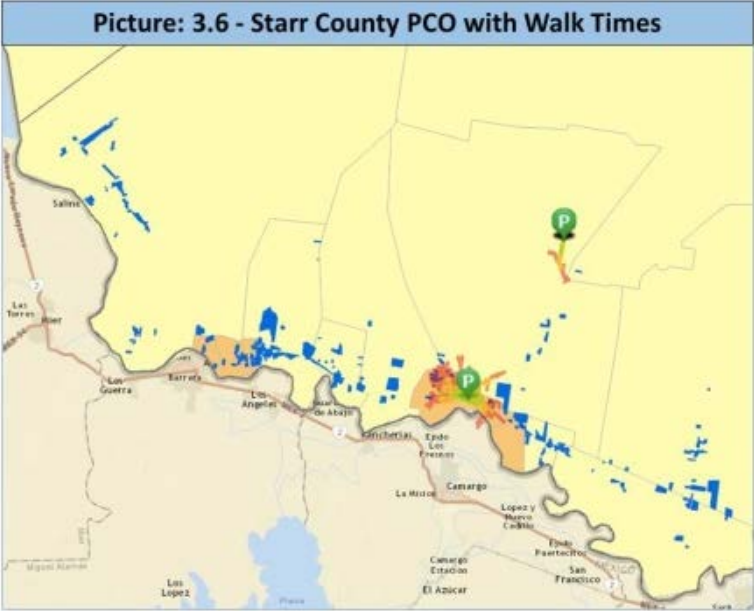
SA is not abundant, but evidence is slowly beginning to accumulate that limited SA has negative health outcomes. For instance, in areas that are designated as a Health Professional Shortage Area (HPSA), residents often report poorer health outcomes as measured by, “self-reported health status, not good physical

Similar results can be seen east of Harlingen (Picture 3.5), where there are larger *colonias* to the west of the city, and in south Starr (which has no public transit) as shown in Picture 3.6.

health, having a usual place for medical care, and not getting needed health care,” (Liu 2007). Likewise, Parchman and Culler (1999) found that Medicare patients who reside in a Primary Care Shortage Area

**Significance**

The incredible difference between availability of healthcare professionals in the U.S. and Texas and availability of healthcare professionals in the four RGV counties is evidence in itself that health outcomes in the four counties are not as good as they could be. Literature on the health effects of



(PCSA) are 1.7 times more likely to be hospitalized for a preventable condition. Preventable hospitalizations contribute to the rising costs of healthcare, because preventative care is much less expensive than emergency care or hospitalization. Wang, et al. (2008), identified an inverse relationship between SA and likelihood of a late breast cancer diagnosis. This means residents living with poor SA are more likely to delay or forgo checkups, which can lead to late diagnoses of cancer, or potentially other conditions.

### **Recommendations**

We have shown the lack of healthcare professionals available to the residents of the

four county region. This highlights the importance of efforts directed at bringing more doctors and nurses (and other healthcare professionals) into the RGV. Efforts to attract more residencies to the four county region should have a significant positive impact on the health of the RGV residents. Beyond attempts to bring more doctors into the RGV, KCCF could try to encourage innovative ways to allow existing doctors to serve more patients (perhaps through tele-health efforts) via a request for proposal (RFP). KCCF could also sponsor a hack-a-thon, wherein a prize would be offered to the contestant who developed the most innovative app to increase a doctor's ability to serve his/her patients.

**Finding 4: Teen Pregnancy**

*Although there has been a steady decline in the teen pregnancy and teen birth rate across all fifty states since it peaked in 1990, Texas remains among the five worst ranking states and exhibits even poorer results in counties along the Texas-Mexico border (The National Campaign).*

**Background**

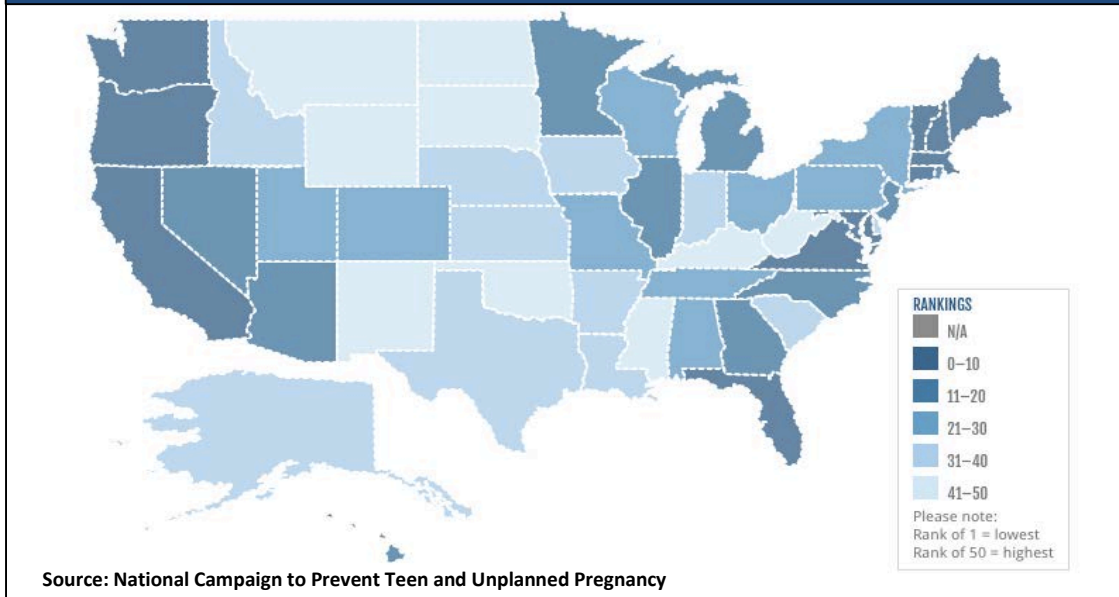
The CDC defines teen birth rate as number of live births to 15-19 year olds per 1,000 population (CDC 2015). When organizations and policy makers discuss the issue of teen pregnancy they may rely on both teen pregnancy and teen birth rates to illustrate the growth, decline, or disparities. For example, information presented by the CDC utilizes teen birth data when discussing teen pregnancy and studies by the Guttmacher Institute pull data surrounding birth, pregnancy, and abortion rates when discussing the topic (Wind 2014). Similar to the teen birth rate, the teen pregnancy rate also focuses on girls between the ages of 15-19 (Wind 2014). Teen pregnancy and teen births go hand in hand and are therefore discussed interchangeably or alongside one another in this section. For the purposes of this finding, they illustrate the same point— Teen pregnancies/births are declining but remain a personal and societal concern, especially in the state of Texas and in border counties.

**Findings**

Across the United States and in all ethnic populations, teen pregnancy is declining annually (Boonstra 2014). In 2010, the teen pregnancy rate in the United States dropped 51% from its peak in 1990-116.0 to 57.4, and the teenage birth rate in the United States dropped from its peak of 61.8 to 34.4 (The National Campaign to Prevent Teen and Unplanned Pregnancy 2014). In Figure 4.1, a map of the United States is displayed showing a by state comparison of the change in the teen pregnancy rate since its peak year, 1990.

According to the National Campaign to Prevent Teen and Unplanned Pregnancy, the source from which this image is drawn and will be hereafter referred to as the National Campaign, the state rankings are illustrated by depth of color, dark blue being the best scoring with the greatest change in teen pregnancy rate and the palest of blue being the worst scoring with the least amount of change in rate. Texas is a faint shade of blue. More specifically, according to the National

**Figure 4.1: Change in Teen Pregnancy Rate Comparison, 2010, from Peak Year, 1991**

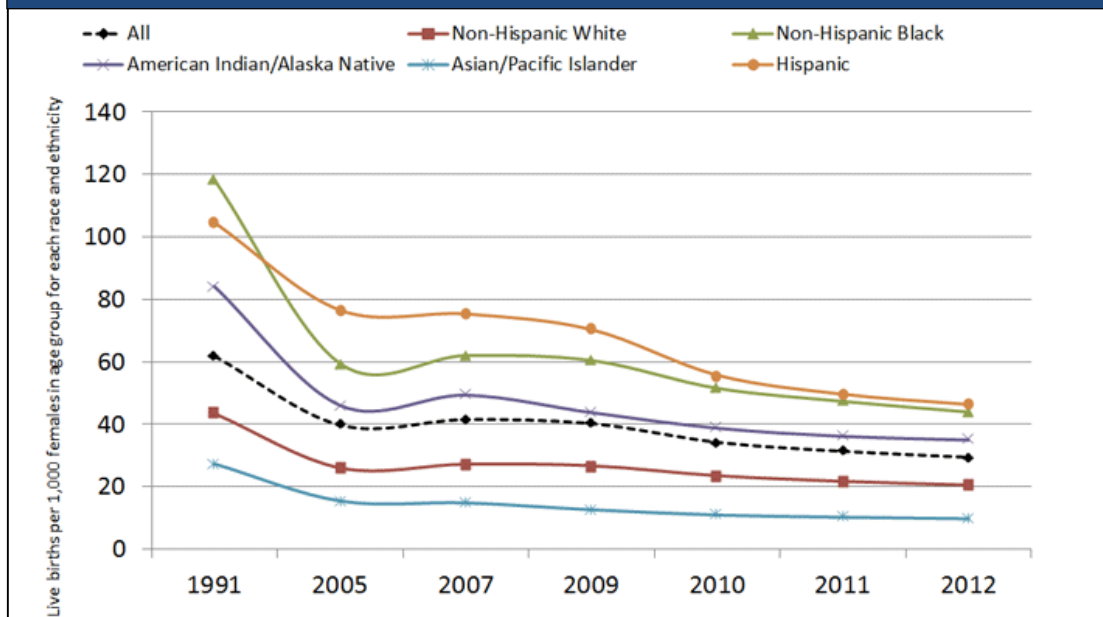


Campaign’s data, Texas’s teen pregnancy rate changed from the peak year by 38 percent. This means that Texas is among the lowest 15 states of change. Compare this to

the United States’ 48 percent change in 2010 (Change in Teen Pregnancy Rate 2010).

The National Campaign notes that although

**Figure 4.2: Birth Rates (Live Births) per 1,000 Females Aged 15-19 Years, by Race and Hispanic Ethnicity, Select Years**

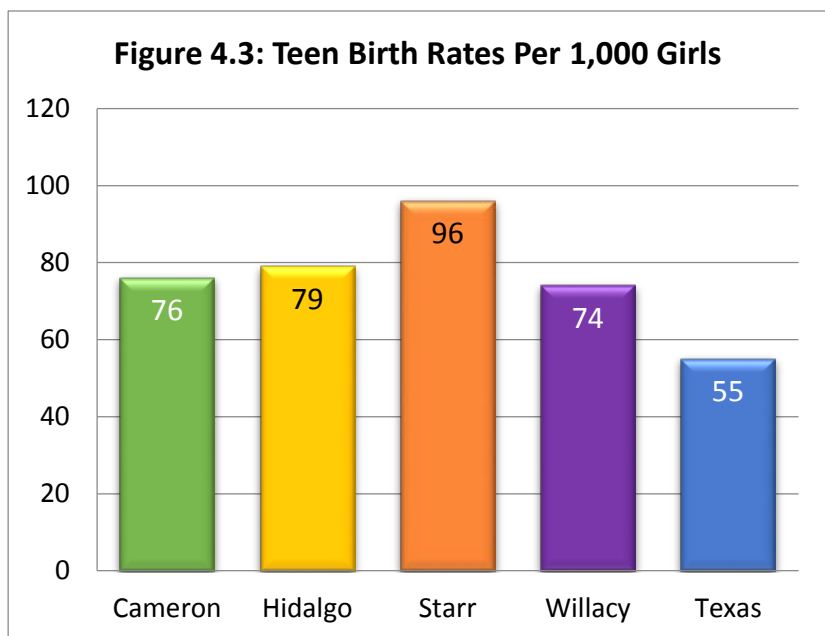




states decreased rates of teen pregnancy across the board, the change is uneven between states and amongst race/ethnic groups (The National Campaign to Prevent Teen and Unplanned Pregnancy 2010). The CDC provides the following Figure 4.2, which clarifies how teen births decreased with race and ethnicity in mind. According to the CDC, “despite these declines, geographic, socioeconomic, and racial and ethnic disparities exist” (CDC 2014). Further, “Hispanic teen birth rates are still more than two times higher than the rate for non-Hispanic-white teens...” (CDC 2014).

Interestingly enough, the Guttmacher Institute in its Summer 2014 policy review considered what indicators might lie behind the decline in teen pregnancy rates. Within the review, race and ethnicity were considered. The review pointed out that since the early 1990s the teenage population has remained fairly consistent but the racial and ethnic composition has changed (Boonstra 2014). To acknowledge that the Latina adolescent base has expanded considerably while contemplating the high rates of pregnancy and births of this

particular teenage population, it almost seems counterintuitive that pregnancy rates in the United States are decreasing, especially in states like Texas. Though race/ethnicity may explain in part why Texas’s teen pregnancy and birth rate have decreased less dramatically than other states, Hispanic ethnicity is not the sole factor at play. For example, in the CDC’s data and statistics feature on teen birth rates, implications leading to health disparities beyond race are explored (CDC 2014). The CDC suggests that geographical and socioeconomic disparities may play a role in the complexity of teen pregnancy. In the RGV, many communities reside in rural territory, geographically positioned away from city resources. As shown in Finding 2, the RGV has a high proportion of low-income residents.



The fact that the four county region has higher teen pregnancy rates than Texas's already comparatively high teen pregnancy rate is what makes this finding particularly important to the community, organizations such as KCCF, and their stakeholders. County Health Rankings allows us to compare teen birth rates across the four counties, as shown in Figure 4.3. Using 2006-2012 data, Hidalgo, Starr, Willacy, and Cameron counties have birth rates of 79, 96, 74, and 76 respectively. In comparison, Texas has a teen birth rate of 55 (births per 1,000 females ages 15-19). Across Texas, county teen birth rates range from 20 to 128 per 1,000 females (Teen Births 2014). The teen birth rates in the RGV are around 47% higher than the Texas rate, which is in the top ten states with the highest birth rate in the U.S. (CDC).

### **Significance**

There are at least two kinds of important consequences of teen pregnancy to consider. The first are those that impact the mother and her child/children, and the second are those that affect society. This capstone team's review of the literature supports the widely acknowledged claim, as asserted in the *Journal of Applied Research on Children*, that,

### **KEY DATA**

- Teen Mothers were nearly twice as likely to forgo prenatal care in the first trimester compared to older mothers (43% compared to 25% respectively).
- Teen mothers were 33% more likely to smoke during pregnancy compared to older mothers (12% compared to 9% respectively). Furthermore, the majority of teen mothers who smoked during their pregnancy did not quit smoking before their child was born.
- Infants born to teen mothers were 17% more likely to be preterm and 25% more likely to be born low-birth-weight compared to infants born to older mothers.
- Infant mortality rates, although low across the board, were more than 50% higher among teen mothers compared to older mothers (9.6 deaths per 1,000 births compared to 6.3).
- Differences in these outcomes between teen and older mothers were significant for nearly every racial/ethnic subgroup, and recent studies suggest that the risk of poor infant health outcomes remains significantly higher among teen mothers even after controlling for other factors.

(Kaye 2012, p. 1) Why It Matters: Teen Childbearing and Infant Health

## KEY DATA

- 38% of teen girls who have a child before age 18 get a high school diploma by age 22.
- 30% of teen girls who have dropped out of high school cite pregnancy or parenthood as a reason.
- 67% of teen mothers who moved out of their own families' household live below the poverty level.
- 63% of teen mothers receive some type of public benefits within the first year after their children were born.
- Less than one quarter of teen mothers received any child support payments.
- Children born to mothers younger than 18 years old score significantly worse on measures of school readiness including math and reading tests.

(Kaye 2012, p. 1). *Why It Matters: Teen Childbearing, Education, and Economic Wellbeing*

“Teen pregnancy is inextricably connected to a host of personal, social, and economic costs. Therefore, it stands to reason, and it is indeed well documented that a reduction in teen pregnancy and subsequent reduction in teen births correlates to myriad improvements in personal (e.g. high school completion, experience of abuse and neglect, etc.); social (e.g., number of children in single parent families, life-long poverty, incarceration rates, etc.); and economic (e.g., Medicaid costs, decreased tax revenue, etc.) outcomes” (Alton 1 2011).

To support this claim, the National Campaign’s *Why it Matter* series provides compelling data illustrating disparities in terms of health, education, and socioeconomic status. The following key data is from the *Why It Matters: Teen Childbearing, Education, and Economic Wellbeing* and the *Teen Childbearing and Infant Health* editions:

There is evidence of the impact of teen pregnancy on society. According to the Guttmacher Institute, the following can be said about public costs surrounding unintended pregnancies:

- “Nationally, 51% of all U.S. births in 2010 were paid for by public insurance through Medicaid, the Children’s Health Insurance Program and the Indian Health Service”

- “Public Insurance programs paid for 68% of the 1.5 million unplanned births that year, compared with 38% planned births.”
- “A publicly funded birth in 2010 cost an average of \$12,770 in prenatal care, labor and delivery, postpartum care and 12 months of infant car...” (Sonfield 2015, p. 1)

Furthermore, the National Campaign provides data specific to teen pregnancy and public costs in Texas. For example, according to an analysis conducted by the National Campaign, Texas teen childbearing cost taxpayers at least \$1.1 billion in 2010. In the United States, this figure rises to an estimated \$9.4 billion each year. The National Campaign predicts this figure would of course be higher had there not been a decline since the national peak in 1990 (Counting it up 2014).

### **Recommendations**

There are a number of ways for nonprofit organizations to encourage the reduction of

teen pregnancy along the Texas-Mexico border. Researchers advocate that education programs, such as lessons taught in a classroom influence teen pregnancy trends. However, it is important to note that researchers also suggest “...it is not realistic to expect that an education program alone will change behaviors enough to have a measurable impact on pregnancy rates” (Boonstra 2014, p. 4). County Health Rankings encourage the following pregnancy prevention programs: “comprehensive sex education, HIV/STI prevention, youth development, service learning, abstinence approaches, or combinations thereof”. Furthermore, County Health Rankings proposes these programs could be provided in schools, clinics or community settings and target non-sexually and sexually active pre-adolescents, adolescents, and teens. Generally, it appears researchers believe programs that target attitudes and behaviors surrounding pregnancy and sexual activity to be the most effective (County Health Rankings 1, 2015).

### Finding 5: Transportation

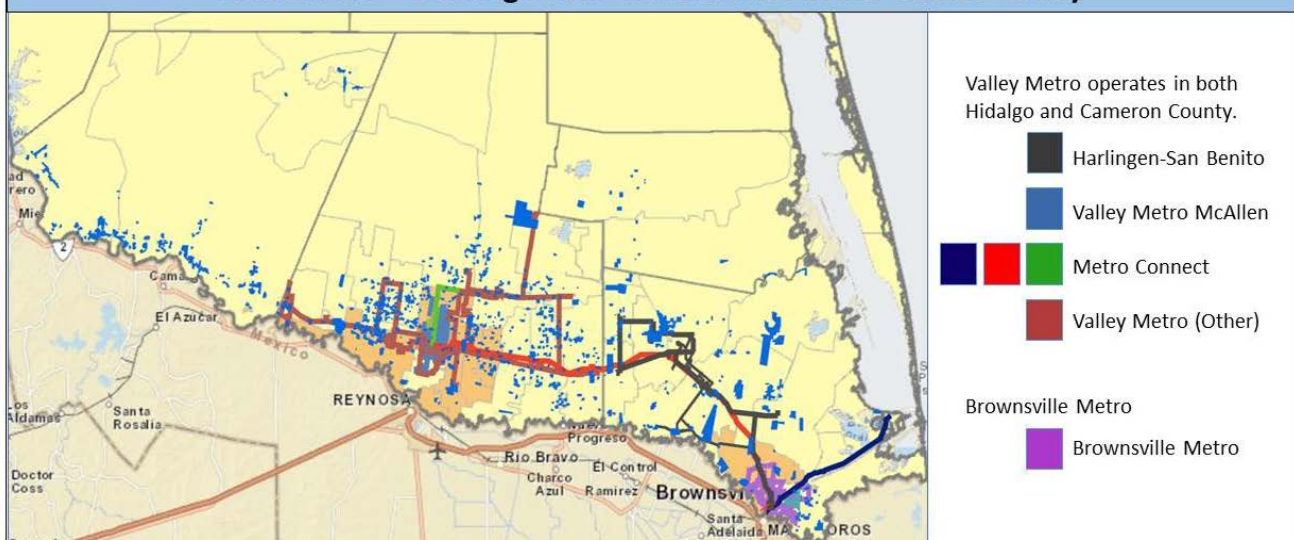
*Two of the four counties in the Rio Grande Valley lacks any public transportation system. Within the two counties that have public transportation systems, the current routes do not provide services to all communities, especially colonias.*

### Background

Currently, two chief transit systems support Hidalgo and Cameron Counties--Valley Metro and Brownsville Metro. The Valley Metro contains the only routes that provide passage in both Hidalgo and Cameron Counties. Brownsville Metro, as one can gather from its name, is solely based in and supportive of a specific region within Cameron County. For aesthetic and comprehension purposes, the Valley Metro is divided into four subcategories in this report. The four subcategories are as follows, Harlingen-San Benito, Valley Metro McAllen, Metro Connect, and Valley Metro

(other). This division also mirrors the fact that the capstone team had to request access to Valley Metro routes in a GIS supportive format from several different sources such as the Harlingen-San Benito Metropolitan Planning Organization (HSB-MPO). Picture 5.1 is a snapshot of the capstone team's GIS map displaying available public transportation in the four county regions. The purple line, located in the southern region of Cameron County (or the most southeast of the four shaded orange county blocks), is the Brownsville Metro. All other lines signify Valley Metro routes (Harlingen-San Benito, Valley Metro McAllen, Metro Connect, and Valley Metro (other)).

Picture: 5.1 – Existing Public Transit Lines in Rio Grande Valley



## Findings

In terms of reliability, consistency seems to be an imperfection of serious concern in the RGV where individuals may need to make plans days in advance only to find out the source of transportation they were relying on is unavailable during their time of need. Public transits such as the Metro Connect, which is actually available to residents of Willacy County on a call ahead and demand basis, states on the Lower Rio Grande Valley Development Council’s (LRGVDC) website, “Schedules are subject to change without notice. LRGVDC makes every effort to adhere to published schedules, but bears no liability for a failure to do so” (LRGVDC). Unreliable pick-up and drop-off times across the three counties may deter otherwise interested public transit riders.

According to the Hidalgo County Metropolitan Planning Organization’s (HCMPO) 2015-2040 Metropolitan Transportation Plan (MTP), a survey conducted of 400 Hidalgo County

residents found that 62.5% of survey participants were public transportation riders. Of those riders, 70.7% relied on public transportation as their only mode of transportation. On the other hand, the 37.5% of survey participants who did not use public transportation reported this was on account of “lack of bus stops near them, the long travel time to their destination, and the feeling of lack of personal security or safety” (MTP 2015, p. 54). The plan included Table 5.1 which represents the recommended services believed to encourage new public transportation riders based on survey responses.

Another concern regarding public transit in the RGV is the limited geographic frame the current routes cover. While Cameron and

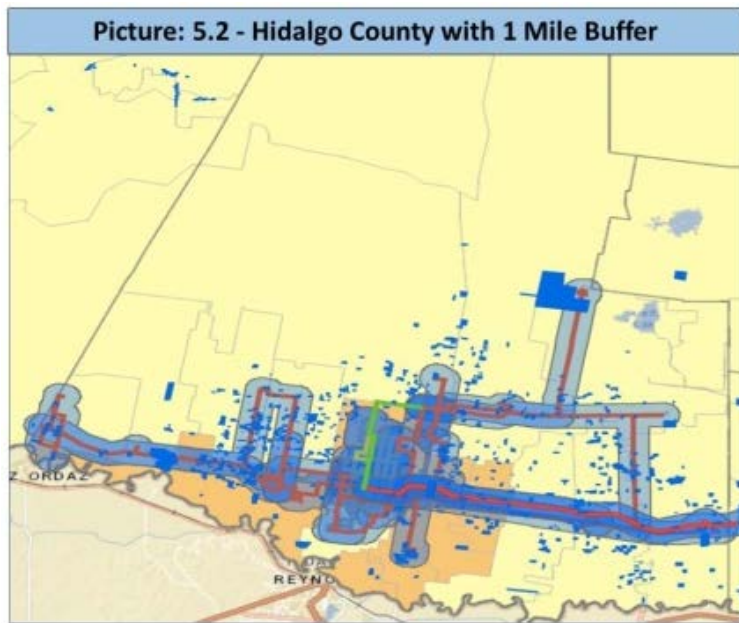
**Table 5.1: Responses to the 2014 Transit Survey by the HCMPO**

Answer Choices	Percent	Answer Choices	Percent
Transit stops closer to frequented destinations	50.4	Reduced Wait Times at Bus Stops	40.5
Shorter transit commute times	35.9	Increased Park & Ride	34.4
Wi-Fi Connections of all buses	28.2	Security cameras at stops	27.5
Sidewalks to/from stops	26.0	Employer discounts on fares	26.0
Dedicated bus lanes	23.7	Increased lighting at stops	22.1
Night Service	21.4	Bicycle Facilities to/from stops	21.4
Gas prices exceed \$3.50/gal	18.3	Emergency phones at stops	16.0
Better accommodations for disabled	13.0	Increased traffic congestions	10.7
Other			
<ul style="list-style-type: none"> <li>• More Bus Shelters</li> <li>• More information made available on Routes &amp; Times, and how to use service</li> <li>• Increased wear &amp; tear on own vehicle</li> <li>• Increased service times and better connections</li> </ul>			19.8

Hidalgo Counties have an operating public transit, there are still communities within their region that are beyond the scope of reasonably accessing their services. To illustrate this point, the Picture 5.2 is a snapshot of Hidalgo County and includes an orange layer<sup>12</sup> representing the 2013 population density from Esri's U.S. updated demographic data. Surrounding Hidalgo County public transit routes is a bold blue buffer signifying a mile radius. Many deep yellow, almost orange pockets lay beyond the blue buffer. This calls into question what communities are without access to the metros. Furthermore, this snapshot of Hidalgo County includes locations of *colonias* as provided from the Attorney General's office, which are represented by

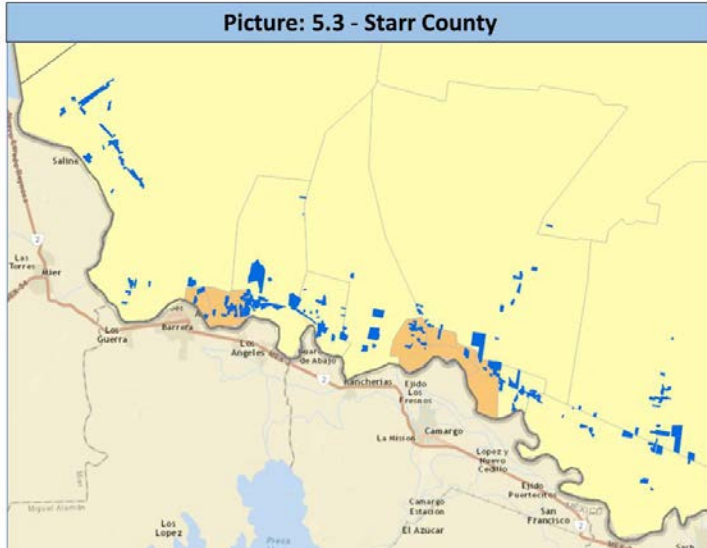
blue spaces outlined in white. Because *Colonia* populations are hard to calculate, populations are not represented with the same deep yellow shading we see in well-developed communities. For example, the Census primarily relies on respondents having a mailbox to submit their information and many *colonia* residents go without postal services. However, it is well known that Hidalgo County is home to more *colonias* than any other county in Texas. With this snapshot including their locations, it is reasonable to see that many lay far beyond the bounds of the blue buffer.

Additionally, Starr and Willacy counties lack the presence of a public transit system and are reported by the census to have far smaller populations yet still have a strong presence of *colonias*. Picture 5.3 below reaffirms the notion that communities exist beyond the range of public transit in the RGV. This image captures the southern border of Starr County along the Texas-Mexico border. Again, the blue spaces with white border represent *colonias* in this county. Starr County, however, is without any form of public transportation, leaving these



<sup>12</sup> The lighter yellow color represents the least densely populated areas, while the darker oranges represent the most densely populated areas.

Picture: 5.3 - Starr County



populations unaccounted for and without mobility support.

Further evidence of the low access to medical care for residents of *colonias* can be seen in Starr County, where some *colonias* are 33 miles from the closest hospital (Border Health 2011). For Willacy County, which is without a hospital within its boundaries, the *colonias* are as far as 25 miles from the closest hospital in Harlingen (Border Health 2011).

These two concerns are not alone in the realm of room for improvement for transportation service in the four counties. According to the Lower Rio Grande Valley Development Council's Human Service-Public Transit Plan, the KFH Group Incorporated distributed public surveys and interviewed 10 key agencies to determine the most

significant needs in the region were. They identified 6 needs: connectivity, *colonias*, Mexican nationals, fixed route need, shorter headway, and rural service. Their plan explained the needs as meaning the following: (1) Connectivity- With population growth in the region continuing to rise, people in the area will move in and occupy new areas, travel further in search for employment, and therefore population will expand and be in greater distance from one another than before. There is a need to connect growing areas. (2) *Colonias*- Noted as one of the highest needs in the region, *colonias* need assistance in terms of traveling to work, medical offices, and shopping destinations (LRGVDC 2011). (3) Mexican nationals- Growth in Mexico means growth along the border. This growth will not be accompanied by growth in state and federal dollars to support high levels of ridership. (4) Fixed route need- Growing populations have a high need for fixed routes. (5) Shorter headway- Consistency and frequency are also in high demand. (6) Rural service- Counties such as Willacy lack frequent service (LRGVDC 2011).



## **Significance**

For *Colonia* residents, limited or unavailable public transportation poses a significant problem to their health. *Colonia* populations tend to have health problems at higher rates due to reasons such as water treatment problems, pollution, crowding, difficulties receiving health care services and a shortage of health resources (MHP Salud 2014). The description of a typical *Colonia* resident depicts what one would imagine to be the ideal candidate for needing exceptional public transit access. That is, they are often left with walking as their only means of movement from one place to another and are too far from developed communities to access medical resources often located in metropolitan areas (Gomez 2012). Long distances to medical facilities and transportation problems have been cited as reasons *Colonia* residents forgo seeking medical attention beyond the recommendations and support of their trusted family and friends in their *Colonia* (MHP Salud 2014).

*Colonias* are not the only communities in the RGV lacking reliable public transportation and therefore facing transportation as a barrier to accessing healthcare services. Although the current available public transit of the RGV covers major population areas, there are still additional smaller communities aside from *colonias* that are left beyond the reach of the metros and are therefore unable to travel for medical assistance (Gomez 2012).

## **Recommendations**

There is a need for reliable transit routes that connect the four counties and extend to populations beyond the RGV's major cities. One county alone cannot provide the resources or manpower to accomplish this feat, so collaboration is essential. Further research will be needed to identify interested partners and potential funding sources to create a cross-county public transportation system.

### **Finding 6: Uninsured Rates**

*Overall uninsured rates in Cameron, Hidalgo, Starr and Willacy counties are on average at least 10% higher than Texas, and significantly higher (at least 19%) than the United States. Texas leads the nation in percentage of population who are uninsured residents.*

**Table 6.1: Uninsured Rates in 2014**

2014 Data <sup>13</sup>	Total Population	Number Uninsured	Percentage of Population that is Uninsured
United States	318,857,056	48,785,130	15.3%
State of Texas	26,956,958	5,771,479	25.7%
Hidalgo County, TX	831,073	277,389	38.9%
Cameron County, TX	420,392	130,812	35.9%
Starr County, TX	62,955	18,820	34.6%
Willacy County, TX	21,903	4,837	29.8%

### **Background**

The U.S. Census measures uninsured as the percentage of the population younger than age 65 without health insurance. The U.S. has more uninsured than most of its peer countries<sup>14</sup>. The average uninsured rate amongst the U.S. states was 15.3% in 2014.

*The U.S. has more uninsured than most of its peer countries...Texas, in turn, has the highest uninsured rate in the nation...The RGV has a higher uninsured rate than Texas.*

According to County Health Rankings (as shown in table 6.1), Texas, in turn, has the highest uninsured rate in the nation with 25.7% of its residents living

without health insurance. The RGV has a higher uninsured rate than Texas.

According to The Institute of Medicine (2002), “Individuals without health insurance often defer necessary preventative care and primary health care treatment until it is too late.” The choice to defer treatment causes uninsured individuals to

utilize the emergency room with less treatable forms of cancer, uncontrolled asthma, diabetes, mental illness, and heart disease.

<sup>13</sup> *County Health Rankings* assesses the extent of access to care with the following measures: Uninsured is defined as the percentage of the population younger than age 65 without health insurance. The data for this measure come from the Census Bureau’s Small Area Health Insurance Estimates (SAHIE), which provide model-based estimates of health insurance coverage for all states and counties in the United States.

<sup>14</sup> Most peer countries of the U.S. have universal health insurance coverage.

## Findings

Shown in Table 6.1 is the percentage of residents that do not have health insurance in the four counties studied. The most populous is Hidalgo County, with more than 250,000 residents (38.9% of the population) without health insurance. Cameron County has 130,812 (35.9% of the population) without insurance and Willacy County has 18,820 (34.6% of the population). Starr County, which is the least populated, has 4,837 (29.8% of the county). The U.S. uninsured rate in 2014 was 15.3%, significantly lower than any of the counties considered or the state of Texas. This means that Cameron and Hidalgo counties have uninsured rates that are 10% and 13.2% higher than the Texas rate, and at least 20% higher than the U.S. rates. Willacy, the least populated county, has an uninsured rate that is 4.1% higher than the state rate, and 14.5% higher than the national level.

## Significance

The large number of uninsured residents within the four counties has significant consequences for a number of reasons. The Institute of Medicine (2004) notes, “The

uninsured are sicker and die sooner.” Forty-three percent of uninsured individuals defer necessary medical treatment when they have a medical problem, compared to ten percent of insured individuals (Institute of Medicine 2002). Because of this fact, the uninsured consistently exhibit worse clinical health outcomes compared to the insured when it comes to diabetes, heart and kidney disease, infectious disease, and mental illness (Institute of Medicine 2004). The lack of insurance often deters families to schedule preventative doctor visits.

*“The uninsured are sicker and die sooner,”  
(The Institute of Medicine 2004).*

One benefit of being insured is that insured individuals know what they will pay when seeing a doctor, because their co-pay is known. However, uninsured individuals do not have any information on how much a visit to the doctor will cost them, as doctor’s rates are not advertised. This knowledge disparity encourages insured individuals to attain needed healthcare and discourages the uninsured from pursuing needed healthcare (Institute of Medicine 2002).

There are barriers that inhibit families to access health insurance, including the complexity of navigating, choosing, and

signing up for insurance. Immigrant families face a unique set of barriers to enrolling in Medicaid and CHIP, even on issues as simple as determining if they are eligible. Hispanic families face a number of barriers including fear of immigration enforcement, worries of harming their status, concern about their sponsors, difficulty completing applications, and language and literacy challenges (Kaiser Foundation 2013). Other roadblocks to accessing healthcare insurance are fear and confusion of the healthcare system (Kaiser Foundation 2013) as well as the inability to communicate with your doctor. The inability to speak or read English provides a unique set of challenges for the uninsured. Chaudry and Fortuny (2010) found that a family with limited English speaking or reading abilities will also find accessing health insurance a challenge due to the need to complete paperwork, file claims, understand benefits, and communicate needs. More than half (60%) of children of immigrants have at least one limited English proficient, or LEP, parent (Chaudry, Ajay, and Fortuny). Equal to the problem of educational attainment, English skills vary across regions of origin: 81% of children of Mexican origin and 68% of children of Central American origin have LEP parents. Outreach through trusted Spanish speaking organizations and

individuals who have strong ties to the immigrant community is important to ease access for immigrant and mixed citizenship status families (Lopez-Class and Jurkowski 2010).

“More than half of the uninsured postponed needed medical care due to financial concerns, while over than one third went without a physician-recommended medical test or treatment due to financial concerns” (Chua and Casoy 2007, p. 2). Compared to the insured, the uninsured are less likely to have a regular source of healthcare, and the uninsured do not have a regular place to go when they are sick or need medical advice. This results in as many as 20% of the uninsured population saying their usual source of care is the emergency room, which compares to just 3% of the insured (Kilbourne 2005).

Problems are furthered when the uninsured are less likely to get needed preventive care and do not seek preventive care such as pap smears, mammograms, blood pressure checks, sigmoidoscopies, cholesterol screening, and prostate exams (Institute of Medicine 2002). A final consequence is that the uninsured are much more likely to be forced to delay medical services, during which time the condition could continue to

worsen. In one study (see Table 6.2), the time to diagnosis of late-stage cancer was compared between uninsured and privately insured patients.

Table 6.2: Increased Risk of Late Diagnosis Due to Not Having Health Insurance	
Increased Risk	Condition
170%	Colorectal Cancer
260%	Melanoma
140%	Breast Cancer
150%	Prostate Cancer
Source: Institute of Medicine, 2002	

The uninsured patients were more likely to be diagnosed late for colorectal cancer, melanoma, breast cancer, and prostate cancer, respectively (Institute of Medicine 2002).

The second barrier for undocumented populations to access healthcare is the lack of their ability to receive health insurance subsidies. Unlike legal residents, undocumented immigrants are not eligible for government programs such as Medicare or Medicaid. Undocumented immigrants have higher uninsured percentages than comparable populations that are legal permanent residents of the U.S. (Callahan, et al. 2006; DeRose, et al. 2007). One contributing factor to the disparity between documented and undocumented immigrants

is that only 18% of undocumented immigrants work in positions that offer health insurance compared with 41% of documented immigrants (Callahan, et al. 2006). Unfortunately, access to insurance is projected to get more difficult for undocumented populations as health insurance plans begin to migrate to the healthcare exchanges created by the Affordable Care Act (ACA). Only U.S. citizens can access those exchanges (Bustamante, et al. 2012; Zuckerman, et al. 2011).

### Recommendations

There are clear, positive benefits to increasing the percentage of insured residents. To realize the positive benefits, we recommend that KCCF consider projects focused on both increasing access to healthcare insurance by removing barriers and increasing enrollments. The focus on programs that increase the percentage of insured residents within the four county area will bring significant benefits to lowering overall healthcare costs, increasing resident's access to healthcare, and reducing the instances of chronic healthcare problems within the community.

KCCF could consider health insurance

enrollment outreach and support programs for the purpose of assisting residents whose employers do not offer affordable coverage, those that are self-employed, or residents that are unemployed without health insurance. These programs could be organized by different organizations, to include government agencies, community-based and non-profit organizations, and health care organizations. Examples of outreach activities include community health worker driven events, mass media and social media campaigns, school-based efforts, or efforts in health care settings. These outreach efforts can occur at local events, via hotlines, or at fixed locations such as community centers,

non-profit offices, local events and can be supported through grants from federal, state, or local government agencies; private foundations, or other private organizations.

KCCF should consider enrollment outreach and support activities that can increase enrollment in health insurance programs (Hoag, et al. 2014), especially among children (Jia, et al. 2014, Cousineau, et al., 2011).

Additionally, outreach efforts designed to consider cultural and linguistic factors increase insurance enrollment among Hispanic populations (Capitman 2009, Chaves-Gnecco 2009).

## Conclusion

This report provides a framework to understand the complexity of health care challenges faced by residents of the Rio Grande Valley. The gap analysis of the data collected in the community assessment identified disparities in healthcare access and outcomes in the RGV that are areas in which the KCCF can make a positive impact with targeted grants and partnerships. All six major findings of this research are potential areas in which KCCF could target for future detailed study.

Future opportunities include conducting a targeted and detailed survey of specific communities to determine how the six major findings are applicable to their particular situation. An example of this would be to survey *colonias* located in remote areas of the counties to determine how access to transportation affects their healthcare decisions. Other areas that could benefit from additional research would be a study of how to positively impact specific health conditions that are significant within the RGV such as diabetes and heart related condition. Another area that warrants further study is education in the RGV. In our review of the literature we found a correlation

between a person's educational attainment and their decisions regarding health care. We observed in our data that RGV students are not pursuing post high school education at the same rate as the rest of Texas.

KCCF can further explore the effects of education on healthcare outcomes in the RGV and focus grant making opportunities on specific programs that can reduce teen pregnancy or increase insurance coverage. As KCCF begins subsequent rounds of soliciting grant applications, they will be able to leverage the knowledge contained in this report to inform and direct their investments in areas of maximum effectiveness that are targeted towards specific healthcare challenges in the RGV.

We recommend that KCCF consider future efforts to utilize academic institutions and graduate programs to focus on particular areas that are likely targets for further study. As of May 2015, the total effects of compliance to portions of the Affordable Care Act will not be known for a few years but the immediate effects can be measured by further research targeted to residents of the Rio Grande Valley.





Appendix A: Poverty Thresholds for 2013 by Size of Family and Number of Related Children Under 18 Years																				
Size of family unit	Weighted average thresholds	Related children under 18 years																		
		None	One	Two	Three	Four	Five	Six	Seven	Eight or more										
One person (unrelated individual).....	\$ 11,888																			
Under 65 years.....	\$ 12,119	\$ 12,119																		
65 years and over.....	\$ 11,173	\$ 11,173																		
Two people.....	\$ 15,142																			
Householder under 65 years.....	\$ 15,679	\$ 15,600	\$ 16,057																	
Householder 65 years and over.....	\$ 14,095	\$ 14,081	\$ 15,996																	
Three people.....	\$ 18,552	\$ 18,222	\$ 18,751	\$ 18,769																
Four people.....	\$ 23,634	\$ 24,028	\$ 24,421	\$ 23,624	\$ 23,707															
Five people.....	\$ 28,265	\$ 28,977	\$ 29,398	\$ 28,498	\$ 27,801	\$ 27,376														
Six people.....	\$ 31,925	\$ 33,329	\$ 33,461	\$ 32,771	\$ 32,110	\$ 31,128	\$ 30,545													
Seven people.....	\$ 36,384	\$ 38,349	\$ 38,588	\$ 37,763	\$ 37,187	\$ 36,115	\$ 34,865	\$ 33,493												
Eight people.....	\$ 40,484	\$ 42,890	\$ 43,269	\$ 42,490	\$ 41,807	\$ 40,839	\$ 39,610	\$ 38,331	\$ 38,006											
Nine people or more.....	\$ 48,065	\$ 51,594	\$ 51,844	\$ 51,154	\$ 50,575	\$ 49,625	\$ 48,317	\$ 47,134	\$ 46,842	\$ 45,037										

Source: U.S. Census Bureau.



## References

- Alton, Forrest L. 2011. "The Challenge of Preventing Teen Pregnancy in Texas." *Journal of Applied Research on Children: Informing Policy for Children at Risk* 2 (2):13.
- Anders, Robert L., Thomas Olson, Kris Robinson, John Wiebe, Rena DiGregorio, Mina Guillermina, Justin Albrechtsen, Nathaniel H. Bean, and Melchor Ortiz. 2010. "A Health Survey of a Colonia Located on the West Texas, US/Mexico Border." *Journal of Immigrant and Minority Health* 12 (3):361-9.
- Anders, R. L., T. Olson, J. Wiebe, N. H. Bean, R. DiGregorio, M. Guillermina, and M. Ortiz. 2008. "Diabetes Prevalence and Treatment Adherence in Residents Living in a Colonia Located on the West Texas, USA/Mexico Border." *Nursing & Health Sciences* 10 (3) (09):195-202. <http://lib-ezproxy.tamu.edu:2048/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=c cm&AN=2010002597&site=ehost-live>.
- Bambra, C. 2010. "Yesterday Once More? Unemployment and Health in the 21st Century." *Journal of Epidemiology and Community Health* 64 (3) (Mar):213-5.
- Boonstra, Heather D. 2014. "What is Behind the Declines in Teen Pregnancy Rates?" *Guttmacher Policy Review* 17 (3).
- Bronte-Tinkew, J., M. Zaslow, R. Capps, A. Horowitz, and M. McNamara. 2007. "Food Insecurity Works through Depression, Parenting, and Infant Feeding to Influence Overweight and Health in Toddlers." *The Journal of Nutrition* 137 (9) (Sep):2160-5.
- Bustamante, Arturo V., Hai Fang, Jeremiah Garza, Olivia Carter-Pokras, Steven P. Wallace, John A. Rizzo, and Alexander N. Ortega. 2012. "Variations in Healthcare Access and Utilization among Mexican Immigrants: The Role of Documentation Status." *Journal of Immigrant and Minority Health* 14 (1):146-55.
- Callahan, S. T., Gerald B. Hickson, and William O. Cooper. 2006. "Health Care Access of Hispanic Young Adults in the United States." *Journal of Adolescent Health* 39 (5):627-33.
- Capitman, John C. 2009. "Bilingual, Culturally Competent Community Health Workers Increase Insurance Enrollment, Access to Care, and Self-Efficacy Among Low-Income Latinos." April 10. <https://innovations.ahrq.gov/profiles/bilingual-culturally-competent-community-health-workers-increase-insurance-enrollment>
- Centers for Disease Control and Prevention. 2014. *Teen Birth Rates Drop, But Disparities Persist*.
- Centers for Disease Control and Prevention (CDC). 2013. *CDC Health Disparities and Inequalities Report — United States, 2013*. Center for Disease Control and Prevention.

- Chaudry, Ajay, and Karina Fortuny. 2010. "Children of Immigrants: Family and Parental Characteristics." *The Urban Institute*(Brief No. 2).
- Chaves-Gnecco, Diego. 2009. "Culturally Competent Outreach, Services, and Education Improve Access to Insurance, Primary Care, and Immunizations for Hispanic and Portuguese Children." April 10. <https://innovations.ahrq.gov/profiles/culturally-competent-outreach-services-and-education-...5/3/2015>
- Chilton, Mariana, Maureen M. Black, Carol Berkowitz, Patrick H. Casey, John Cook, Diana Cutts, Ruth R. Jacobs, Timothy Heeren, Stephanie E. De Cuba, and Sharon Coleman. 2009. "Food Insecurity and Risk of Poor Health among US-Born Children of Immigrants." *American Journal of Public Health* 99 (3):556-62.
- Chua, Kao-Ping, and Flavio Casoy. 2007. "The Case for Universal Health Care." *American Medical Student Association*, February 10:200.
- Cook, John T., and Deborah A. Frank. 2008. "Food Security, Poverty, and Human Development in the United States." *Annals of the New York Academy of Sciences* 1136 (1):193-209.
- County Health Rankings & Roadmaps. "Teen Pregnancy Prevention Programs." January 19. <http://www.countyhealthrankings.org/policies/teen-pregnancy-prevention-programs>
- Cousineau, Michael R., Gregory D. Stevens, and Albert Farias. 2011. "Measuring the Impact of Outreach and Enrollment Strategies for Public Health Insurance in California." *Health Services Research* 46 (1p2):319-35.
- Derose, K. P., J. J. Escarce, and N. Lurie. 2007. "Immigrants and Health Care: Sources of Vulnerability." *Health Affairs (Project Hope)* 26 (5) (Sep-Oct):1258-68.
- Duncan, Greg J., Kathleen M. Ziol-Guest, and Ariel Kalil. 2010. "Early-Childhood Poverty and Adult Attainment, Behavior, and Health." *Child Development* 81 (1):306-25.
- Evans, G. W., and P. Kim. 2007. "Childhood Poverty and Health: Cumulative Risk Exposure and Stress Dysregulation." *Psychological Science* 18 (11) (Nov):953-7.
- Feinstein, Jonathan S. 1993. "The Relationship between Socioeconomic Status and Health: A Review of the Literature." *The Milbank Quarterly*:279-322.
- Gomez, Rodney, Luis Guajardo, and William L. Turk. 2012. "Distance, Dispersion and Poverty Make Difficult Choices for Public Transit." January 28, 2015. <http://reconnectingamerica.org/news-center/half-mile-circles/2012/distance-dispersion-and-poverty-make-difficult-choices-for-public-transit/>
- Guagliardo, M. F. 2004. "Spatial Accessibility of Primary Care: Concepts, Methods and Challenges." *International Journal of Health Geographics* 3 (1) (Feb 26):3.

- Heberlein, Martha, Tricia Brooks, Joan Alker, Samantha Artiga, and Jessica Stephens. 2013. "Getting into Gear for 2014: Findings from a 50-State Survey of Eligibility, Enrollment, Renewal, and Cost-Sharing Policies in Medicaid and CHIP, 2012–2013." *Washington, DC: Henry J. Kaiser Family Foundation.* <http://kaiserfamilyfoundation.files.wordpress.com/2013/05/8401.Pdf>
- Hidalgo County Metropolitan Planning Organization. 2014. *The 2015 - 2040 Metropolitan Transportation Plan*. Hidalgo County Metropolitan Planning Organization
- Hoag, Sheila, Sean Orzol, and Cara Orfield. 2014. "Evaluation of Enroll America: An Implementation Assessment and Recommendations for Future Outreach Efforts." *Ann Arbor 1001 :48104-1912*.
- Institute of Medicine. 2002. *Care Without Coverage: Too Little, Too Late*. National Academy Press
- Institute of Medicine. 2004. *Insuring America's Health: Principles and Recommendations*. National Academy Press
- Jia, Liying, Beibei Yuan, Fei Huang, Ying Lu, Paul Garner and Qingyue Meng. 2014. *Strategies for expanding health insurance coverage in vulnerable populations*. Wiley Online Library
- Jyoti, D. F., E. A. Frongillo, and S. J. Jones. 2005. "Food Insecurity Affects School Children's Academic Performance, Weight Gain, and Social Skills." *The Journal of Nutrition* 135 (12) (Dec):2831-9.
- Kilbourne, Amy M. 2005. "Care without Coverage: Too Little, Too Late." *Journal of the National Medical Association* 97 (11):1578.
- Kushel, Margot B., Reena Gupta, Lauren Gee, and Jennifer S. Haas. 2006. "Housing Instability and Food Insecurity as Barriers to Health Care among low-income Americans." *Journal of General Internal Medicine* 21 (1):71-7.
- Liu, Jiexin. 2007. "Health Professional Shortage and Health Status and Health Care Access." *Journal of Health Care for the Poor and Underserved* 18 (3):590-8.
- Lower Rio Grande Valley Development Council. 2011. *Human service-public transit coordination plan*. KFH Group, Incorporated
- Martin, Katie S., and Ann M. Ferris. 2007. "Food Insecurity and Gender are Risk Factors for Obesity." *Journal of Nutrition Education and Behavior* 39 (1) (0):31-6.
- McAllen Chamber of Commerce. "Overview of the Business Community." October 5. <http://mcallen.org/Business-Community> .

- McKee-Ryan, Frances, Zhaoli Song, Connie R. Wanberg, and Angelo J. Kinicki. 2005. "Psychological and Physical Well-being during Unemployment: A Meta-Analytic Study." *Journal of Applied Psychology* 90 (1):53.
- MHP Salud. 2014. "Border Populations." March 12. <http://mhpsalud.org/who-we-serve/border-populations/>
- Mier, Nelda, Marcia G. Ory, Dongling Zhan, Martha Conkling, Joseph R. Sharkey, and James N. Burdine. 2008. "Health-Related Quality of Life among Mexican Americans Living in Colonias at the Texas–Mexico Border." *Social Science & Medicine* 66 (8):1760-71.
- Nagahawatte, Tanya, and Robert L. Goldenberg. 2008. "Poverty, Maternal Health, and Adverse Pregnancy Outcomes." *Annals of the New York Academy of Sciences* 1136 (1):80-5.
- Nalty, C. C., J. R. Sharkey, and W. R. Dean. 2013. "School-Based Nutrition Programs are Associated with Reduced Child Food Insecurity Over Time among Mexican-Origin Mother-Child Dyads in Texas Border Colonias." *The Journal of Nutrition* 143 (5) (May):708-13.
- National Prevention Council. 2011. *National prevention strategy*. Washington D.C.: US Department of Health and Human Services, Office of the Surgeon General Washington, DC, (accessed April 10, 2015).
- Ng, A., and K. Kaye. 2012. "Why it Matters: Teen Childbearing, Education, and Economic Wellbeing." *Washington DC: The National Campaign to Prevent Teen and Unplanned Pregnancy*.
- Ory, Marcia G., Martha Conkling, Jane N. Bolin, John D. Prochaska, Dongling Zhan, James N. Burdine, and Nelda Mier. 2009. "Sociodemographic and Healthcare Characteristics of Colonia Residents: The Role of Life Stage in Predicting Health Risks and Diabetes Status in a Disadvantaged Hispanic Population." *Ethnicity & Disease* 19 (3):280.
- Parchman, M. L., and S. D. Culler. 1999. "Preventable Hospitalizations in Primary Care Shortage Areas. an Analysis of Vulnerable Medicare Beneficiaries." *Archives of Family Medicine* 8 (6) (Nov-Dec):487-91.
- Paul, Karsten I., and Klaus Moser. 2009. "Unemployment Impairs Mental Health: Meta-Analyses." *Journal of Vocational Behavior* 74 (3):264-82.
- Ramos, Irma N., Lora B. Davis, Qiang He, Marlynn May, and Kenneth S. Ramos. 2008. "Environmental Risk Factors of Disease in the Cameron Park Colonia, a Hispanic Community Along the Texas–Mexico Border." *Journal of Immigrant and Minority Health* 10 (4):345-51.
- Raphael, Dennis. 2011. "Poverty in Childhood and Adverse Health Outcomes in Adulthood." *Maturitas* 69 (1):22-6.

- Rose-Jacobs, R., M. M. Black, P. H. Casey, J. T. Cook, D. B. Cutts, M. Chilton, T. Heeren, S. M. Levenson, A. F. Meyers, and D. A. Frank. 2008. "Household Food Insecurity: Associations with at-Risk Infant and Toddler Development." *Pediatrics* 121 (1) (Jan):65-72.
- Seligman, H. K., B. A. Laraia, and M. B. Kushel. 2010. "Food Insecurity is Associated with Chronic Disease among Low-Income NHANES Participants." *The Journal of Nutrition* 140 (2) (Feb):304-10.
- Sharkey, Joseph R., Wesley R. Dean, and Cassandra M. Johnson. 2011. "Association of Household and Community Characteristics with Adult and Child Food Insecurity among Mexican-Origin Households in Colonias Along the Texas-Mexico Border." *Int J Equity Health* 10 (1):19.
- Sharkey, J. R., W. R. Dean, C. C. Nalty, and J. Xu. 2013. "Convenience Stores are the Key Food Environment Influence on Nutrients Available from Household Food Supplies in Texas Border Colonias." *BMC Public Health* 13 (Jan 17):45,2458-13-45.
- Sharkey, J. R., C. Nalty, C. M. Johnson, and W. R. Dean. 2012. "Children's very Low Food Security is Associated with Increased Dietary Intakes in Energy, Fat, and Added Sugar among Mexican-Origin Children (6-11 y) in Texas Border Colonias." *BMC Pediatrics* 12 (Feb 20):16,2431-12-16.
- Skalicky, Anne, Alan F. Meyers, William G. Adams, Zhaoyan Yang, John T. Cook, and Deborah A. Frank. 2006. "Child Food Insecurity and Iron Deficiency Anemia in Low-Income Infants and Toddlers in the United States." *Maternal and Child Health Journal* 10 (2):177-85.
- Sonfield, Adam, and Kathryn Kost. 2013. "Public Costs from Unintended Pregnancies and the Role of Public Insurance Programs in Paying for Pregnancy and Infant Care: Estimates for 2008."
- Stephens, Jessica, and Samantha Artiga. 2013. *Key Facts on Health Coverage for Low-Income Immigrants Today and Under the Affordable Care Act*, Henry J. Kaiser Family Foundation.
- The Center for Disease Control and Prevention. 2015. February 17.  
<http://www.cdc.gov/nchs/fastats/teen-births.htm>
- The National Campaign to Prevent Teen and Unplanned Pregnancy.  
<https://thenationalcampaign.org/>
- The National Campaign to Prevent Teen and Unplanned Pregnancy. 2010. *Counting It Up: The Public Costs of Teen Childbearing in Texas in 2010*. The National Campaign to Prevent Teen and Unplanned Pregnancy

- The National Campaign to Prevent Teen and Unplanned Pregnancy. 2014. "Teen Pregnancy in the United States - Fact Sheet." February.  
[https://thenationalcampaign.org/sites/default/files/resource-primary-download/fast\\_facts\\_-\\_teen\\_pregnancy\\_in\\_the\\_united\\_states\\_aug\\_2014.pdf](https://thenationalcampaign.org/sites/default/files/resource-primary-download/fast_facts_-_teen_pregnancy_in_the_united_states_aug_2014.pdf)
- U.S. Department of Health & Human Services. "Office of the U.S. Surgeon General National Prevention Council." November 3.  
<http://www.surgeongeneral.gov/priorities/prevention/about/>
- U.S. Department of Health and Human Services. "Health Resources and Services Administration website." September 6. <http://www.hrsa.gov/shortage/index.html>
- U.S. Department of the Interior. U.S. - Mexico Border Environmental Health Initiative (BEHI). "U.S. - Mexico Border Environmental Health Initiative (BEHI)." February 4.  
<http://borderhealth.cr.usgs.gov/datatables.html>
- United States Department of Agriculture. 2013. "Food Security in the United States." October 25. <http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement.aspx#security>
- US Census Bureau. 2014. "State and County Quick Facts."
- Wang, Fahui, Sara McLafferty, Veronica Escamilla, and Lan Luo. 2008. "Late-Stage Breast Cancer Diagnosis and Health Care Access in Illinois\*." *The Professional Geographer* 60 (1):54-69.
- Weigel, Margaret M., Rodrigo X. Armijos, Yolanda P. Hall, Yolanda Ramirez, and Rubi Orozco. 2007. "The Household Food Insecurity and Health Outcomes of US–Mexico Border Migrant and Seasonal Farmworkers." *Journal of Immigrant and Minority Health* 9 (3):157-69.
- Whitaker, R. C., S. M. Phillips, and S. M. Orzol. 2006. "Food Insecurity and the Risks of Depression and Anxiety in Mothers and Behavior Problems in their Preschool-Aged Children." *Pediatrics* 118 (3) (Sep):e859-68.
- Wind, Rebecca. 2014. "U.S. TEEN PREGNANCY, BIRTH AND ABORTION RATES REACH HISTORIC LOWS." February 4. <http://www.guttmacher.org/media/nr/2014/05/05/>
- Zimmerman, C. 2011. "Undocumented Immigrants, Left Out of Health Reform, Likely to Continue to Grow as a Share of the Uninsured." *Findings Brief : Health Care Financing & Organization* 14 (9) (Dec):1-3.
- Zuckerman, S., T. A. Waidmann, and E. Lawton. 2011. "Undocumented Immigrants, Left Out of Health Reform, Likely to Continue to Grow as Share of the Uninsured." *Health Affairs (Project Hope)* 30 (10) (Oct):1997-2004.







Founded in 1997, the Bush School of Government and Public Service has become one of the leading public and international affairs graduate schools in the nation. One of ten schools and colleges at Texas A&M University, a tier-one research university, the School offers master's level education for students aspiring to careers in public service.

The School's philosophy is based on the belief of its founder, George H.W. Bush, that public service is a noble calling - a belief that continues to shape all aspects of the curriculum, research, and student experience.

Located in College Station, Texas, the School's programs are housed in the Robert H. and Judy Ley Allen Building, which is part of the George Bush Presidential Library Center on the West Campus of Texas A&M. This location affords students access to the archival holdings of the George Bush Presidential Library and Museum, invitation to numerous events hosted by the George Bush Foundation at the Annenberg Presidential Conference Center, and inclusion in the many activities of the Texas A&M community.

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