The University of Texas at Arlington

Assessment of the Potential of Self-Incorporation as a Solution

to Roadway Maintenance in Texas Colonias.

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Abstract:

Colonias are communities that lack basic infrastructures such as water, sewer, and paved roads and that are located within 100 miles of the US-Mexico border. They are generally found in unincorporated areas, and the literature, as well as policy makers, have extensively called for their annexation as a solution to solve the infrastructure issues. This paper examines self-incorporation as an alternative to annexations as cities have consistently avoided colonias when they expand through annexation. The paper has two focuses. The first one consists of analyzing the economic and social aspects of a colonia to determine whether they resemble the ones of a typical city. The second focus consists of determining whether a colonia can mobilize the essential resources to finance infrastructure and run as a city. The study found that a colonia can raise enough revenues to maintain its infrastructure, but whether it can effectively run as a city remained unanswered as it requires more studies that take into consideration the complexities of city management.

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To Kian and Malaika,

May they grow up to become ambitious individuals

that will greatly contribute to their communities.

Introduction

Statement of problem

Definitions of the term "colonia" vary among researchers and policymakers, but most definitions include inadequate infrastructure, substandard housing, and lack of services (firefighters, utilities, etc.) as characteristics of a colonia. For the purpose of this study, I have adopted the Office of the Attorney General of Texas' definition of colonias: "substandard developments, often found along the Texas-Mexico border, where residents lack basic services such as drinking water, sewage treatment, and paved roads" (Liberty and Justice for Texas | Office of the Attorney General). Although colonias also exist in New Mexico, Arizona, and California, this study will solely focus on those located in Texas for in-depth analysis because differing legislation across states has affected colonias in unique ways, thus creating singular challenges in each state. In Texas, the original appearance of colonias resulted from developers' purchase of unproductive agricultural land with the intent to convert them to affordable residential subdivisions (Davies and Holz 1992). The affordable housing problem that sparked those developers' initiatives is believed to have resulted from an economic boom caused by industrial programs between the United States and Mexico in the 1950s (Arizmendi et al., 2010). Although free trade between these two countries generated economic growth in the border area, the benefits from that growth were not distributed equitably, which led to the inability of low-income earners to afford housing in incorporated communities of the border area (Giusti 2010).

Taking advantage of Texas counties' weak land use regulating powers at the time, developers sought to capitalize on the growing demand for affordable housing by selling plots without first servicing them with basic infrastructures such as sewage treatment, safe drinking water, and paved roads. As a matter of fact, Texas counties were completely granted the authority to enforce subdivision regulations only in 2001 (Arizmendi et al., 2010). That lack of

subdivision regulating authority in unincorporated areas thus accelerated the growth of colonias in the state. Developers also took advantage of the poor literacy of some buyers by convincing them to sign contracts that they did not fully understand since a significant portion of colonia residents were only proficient in Spanish at that time (Olmedo and Ward 2016).

As per the latest comprehensive report on colonia produced by the Office of the Secretary of State of Texas, a total of 2087 colonias were identified in the state. The OAG maintains a GIS shapefile of colonias, and it is publicly available on their website (https://coloniadata.oag.state.tx.us/). Of particular importance to this study is the database's classification of colonia based on the risk that they pose to residents' health. The safest colonias are classified as green colonias, the least safe ones are classified as red, and the remainder is classified as yellow. Figure 1 provides more information about that classification system.

Table 1. Colonia classification system

	Green	Yellow	Red	Unkown
Drinkable water	✓	✓	✗	—
Wastewater disposal	✓	✓	✗	—
Legal plats	✓	✓	✗	—
Paved roads	✓	✗	—	—
Adequate drainage	✓	✗	—	—
Solid waste disposal	✓	✗	—	—

SOURCE: Senate Bill 99: "Tracking the Progress of State Funded Programs that Benefit Colonias." Presented by the Colonia Initiatives Program, Office of the Secretary of State, 2010.

Source: The Federal Reserve Bank of Dallas, 2015

Although this system offers useful information about colonias, OAG has been able to classify only 1381 of the 2087 colonias that it has identified, meaning that the state lacks essential infrastructure information about approximately 34% of the identified colonias. The

reason for this lack of information is the decision of the state agencies in charge of responding to the colonia problem to prioritize the study of colonias in the six counties containing the highest concentration of colonias in the state: Hidalgo, Cameron, Starr, Webb, Maverick, and Webb (The Federal Reserve Bank of Dallas, 2015). Furthermore, the Office of the Secretary of State discontinued its program of identification and classification of colonias after Governor Abbott vetoed a bill that sought to add funding to the program. Obtaining information on those colonias has thus become more difficult since the governor's veto because there is no longer a single agency gathering comprehensive data about identified colonias. For this study, I have decided to focus only on those colonias that have been classified, and since the challenges that colonias face are similar, I expect that the results from this study will be applicable to those colonias that have not been classified.

The prevailing wisdom proposes annexation – a process through which a municipality extends its boundaries to incorporate an adjacent unincorporated area – as an effective solution to the problem of colonias. In order to encourage municipalities to annex colonias, the Texas legislature has pledged to continue funding infrastructure projects in colonias up to 5 years after their annexation, and to ensure that municipalities provide infrastructure to colonias, the Texas legislature has also made it mandatory for municipalities to fully service an annexed area within four and a half years of the annexation date (Durst 2014). Data seem to confirm the idea that annexation can constitute a viable solution for infrastructure provision in colonias. Figure 1 shows that colonias that are located within a municipality fare better in infrastructure quality than unincorporated colonias as the share of green colonias in the former is considerably greater than the latter. The share of red incorporated colonias is also considerably lower than the share of red

unincorporated colonias as only 8.5% of incorporated colonias are red, while 34.4% of

unincorporated colonias are red.

Figure 1. Distribution of colonias by their classification for incorporated and unincorporated colonias
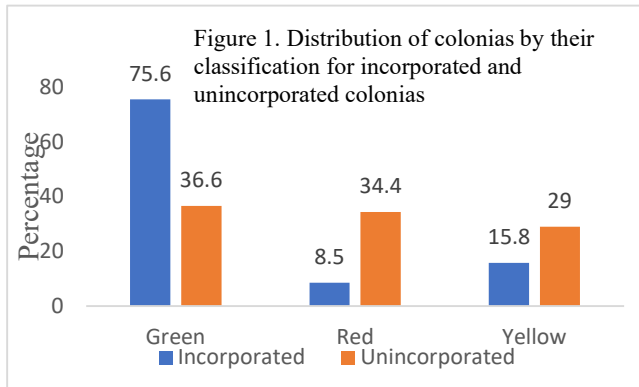
Source: Office of the Attorney General of Texas Colonias Database

Even though annexation seems promising as a solution to colonias problems, it is important to

note that cities can only annex the colonias that their respective extraterritorial jurisdictions (ETJ)

encompass. Table 2 lists the different ETJ sizes defined by the Texas legislature. Out of the 109 cities

located in the 32 counties containing identified colonias, 95 cities have a population below 25,000. In

other words, 87% of the cities that could potentially annex colonias have an ETJ of either 1 mile or ½

mile. The ETJ rule thus automatically rules out annexation as a solution for an important number of

colonias because a significant amount of colonias is located beyond municipalities' ETJ. In fact, if

municipalities neighboring colonias were to annex all colonias within their ETJ's, 706 colonias

(approximatively 36% of all identified colonias) would remain unincorporated. Figures 3 and 4 provide a

representation of cities' ETJ and the extent to which they overlap with colonias. Figure 4 mainly shows

colonias in Hidalgo county, and cities' ETJ encompass virtually all colonias located within the county.

However, that situation is not common in Texas counties. Indeed, Figure 3 better reflects colonias

reality because most border counties containing colonias do not have large cities. They thus cannot

annex colonias to the same extent as Hidalgo county's cities.

Table 2. Extraterritorial sizes defined by the Texas Legislature

Population	ETJ
< 5,000	½ mile
5,000 – 24,999	1 mile
25,000 – 49,999	2 miles
50,000 – 99,999	3 ½ miles
100,000 +	5 miles

Source: Texas Local Government Code Chapter 42

Figure 2. Incorporated cities and colonias in Cameron County
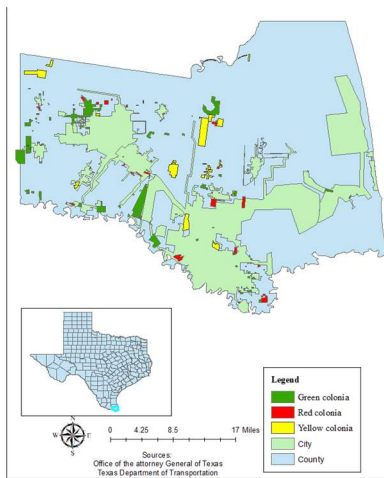
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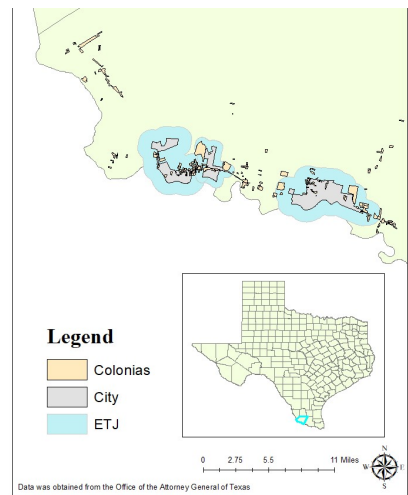
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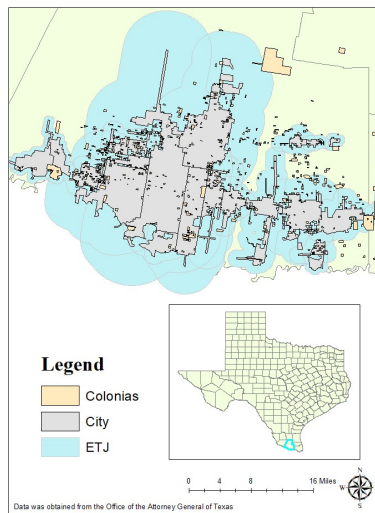
Given annexation's unsuitability to solve the problem of a significant portion of colonias,

the purpose of this paper is to assess the viability of self-incorporation as an alternative method

to provide adequate infrastructure to colonias. Self-incorporation is the process through which an

unincorporated community obtains the status of a city in the state of Texas. The conditions for a

community to self-incorporate are listed in tables 3 and 4, and several colonias

would meet those conditions.

Table 3. Types of municipalities and population size conditions for incorporation

Type	Population
General-law type A	600+
General-law type B	201-9,999
General-law type C	201-4,999
Home rule	5,000+

Sources: Texas Local Government Code (chapters 6,7,8) and Texas Constitution Article XI section 5

Table 4. Population density requirements for general law cities

Population	Maximum area
<2,000	2 square miles
2,001-4,999	4 square miles
5,001-9,999	9 square miles

Source: Texas Local Government Code

Theoretical framework

A model for a city needs to be established before any attempt to assess whether colonias

could constitute a viable city. The concept of a city has been extensively studied in the planning

literature because the profession has traditionally sought to build the optimal city, and the

optimal city has been perceived differently by the various minds that reflected on the subject. For

Ebenezer Howard, the ideal city would be the one in which the best attributes of urban centers

and those of rural areas would be perfectly balanced, the best features of cities being the economic opportunities that they provide, and the best attributes of rural areas being the preservation of the natural environment (Clark 2003). Howard also sought social reforms through his proposed design of the optimal city. To achieve that goal, he advocated for collective ownership of urban land, and he suggested that public decisions be made collectively as well (Hugel 2017).

Unlike Howard, however, some planners focused mainly on the built environment and did not address issues of social reform. According to Taylor (1995), the period going from the end of World War II to the 1960s was dominated by such planners, and most of them came from either the architecture or the civil engineering professions. That focus on the physical aspect of the city existed even before the period that Taylor mentioned. Cook (1969) traces it back to the renaissance, a period during which the main urban design style was constituted of a large boulevard ending with a façade. That style influenced David Burnham and the City Beautiful movement in the United States.

Another substantive theory of planning is that of the functional city developed by the planners of the modern era. That theory posits that a good city has to provide four main functions to its residents: dwelling, work, leisure, and circulation (Calderon 2017). This theory departs from the strictly physical planning theory because by introducing aspects such as work and leisure, it infers that a city is more than the sum of its buildings. In other words, there are intangible elements that are crucial for the existence of a city. Some authors even suggest that those intangible elements are the most prominent underlying cause for the creation of cities.

Indeed, Max Weber noted that cities generally formed for reasons of trade and commerce (Parker 2015). Storper and Scott (2016) defined the city as "a very specific scale of

economic and social interaction generated by agglomeration processes and focused on the imperative of proximity, and almost always endowed with governance arrangements that attempt to deal with the problematical effects of density and propinquity." This definition may seem to negate the importance of the physical aspect of the city on which planning pioneers focuses as it describes the city as a "scale of interaction," but Storper and Scott (2016) believe that the city is first and foremost a physical entity with well-established physical boundaries. Indeed, they oppose the planetary model of urbanism, which suggests that cities exist only ideologically since social and economic interactions cross the political boundaries of cities. Taylor (1995) refers to such theories that focus on interactions instead of the built environment as "systems" theories because they view cities as systems or the sum of multiples activities that interact with each other. Post-colonialism, another theory of urbanism mentioned by Storper and Scott (2016), constitutes another example of systems theory because it posits that all types of urban developments have intrinsic value and should be studied to understand the way it functions. That theory mainly opposes considering developing countries' cities as poorly planned cities.

In sum, this research mainly uses Taylor's (1995) concept of system theory to determine whether colonias could constitute regular cities. However, to social and economic interactions as well as the built environment, I added politics as the third element of my city model because an essential element in a city – the provision of infrastructures – has been the responsibility of municipal governments in the United States since the second half of the 19th century (Marcus 1991). It is thus difficult, if not impossible, to picture a city without a governing body. In the case of colonias, the importance of a city might be even of greater importance than it generally is because of colonias lack of infrastructure and the difficulties in mobilizing funds to fund the construction of those infrastructures.

Figure 5. Model of a viable city for the study
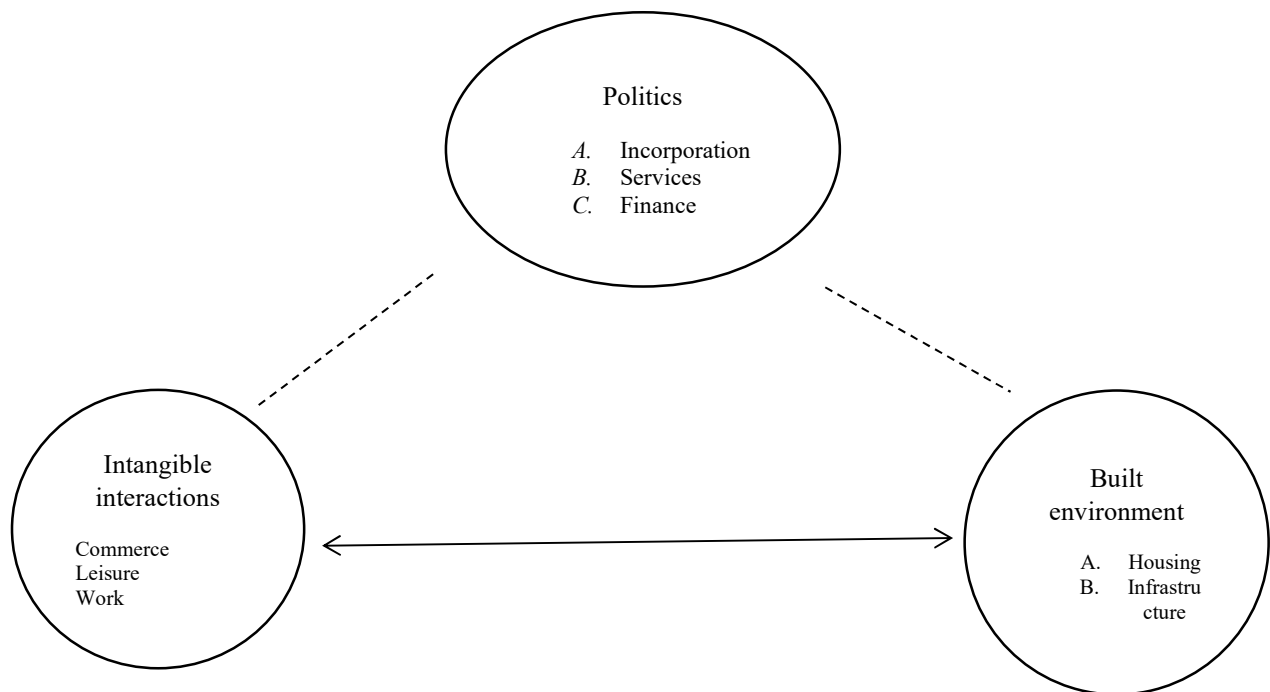
The diagram above summarizes the theoretical framework of the research project. Politics is the biggest component because it is the only one among the three that can lead to the creation of a city without the other two. The solid line with two arrows between intangible interactions and the built environment means that each of them imperatively needs the other if a city is to be formed. The discontinued lines mean between politics and each of the other two elements of the model means that although politics do not need the others to create a city, it will eventually need to find a way to foster the other two conditions if the city is to subsist.

Research questions

The first question that the present study will address is whether colonias could become viable cities. The purpose of this question is to determine whether the idea of transforming colonias into self-governing municipalities is not utopian. Several models of cities such as Howard's Garden Cities or Le Corbusier's *Ville Radieuse* never truly materialized and were later

described as utopias in the planning literature. It is thus necessary to ensure that the idea of incorporating colonias is realistic before assessing their capacity to self-fund infrastructure projects. The theoretical model presented in the previous section will help make that determination.

However, that question could seem unimportant to the person who is well acquainted with the issue of colonias because there are already colonias that have self-incorporated and have existed for years. For example, El Cenizo self-incorporated to raise enough revenue for infrastructure provision (Wilson and Guajardo, 2000). El Cenizo is discussed further in later sections of this thesis. Rio Bravo also constitutes an example of a colonia that self-incorporated. Both colonias are located in Webb County, and they have existed for years as incorporated communities. However, although the existence of such colonias may prove that the idea of self-incorporation is not utopian, it does not explain why such colonias have subsisted. The question that I am asking with this research will provide a theoretical foundation that would explain the conditions under which colonias may succeed as cities. As will be detailed in the literature review section of this paper, some unincorporated areas that became cities failed and disincorporated while others subsisted. More details on failed incorporations are provided in the literature review section. There is thus a chance that some colonias may fail if they incorporate too. Therefore, it is crucial to determine the factors that make cities successful.

To determine whether colonias could become viable cities, this study will ask these questions: (1) Do colonias offer enough work opportunities to their residents? (2) Do colonias provide affordable housing options to their residents? (3) Are there enough commercial activities in colonias to sustain their existence as cities? (4) Do colonias provide adequate transportation

options to their residents? (5) Do colonias provide leisure activities to their residents? These questions are based on the theoretical model summarized in figure 5 in the last section.

Once that determination is made, the research will proceed by asking the following additional questions: (1) What are the typical costs of infrastructure projects in colonias? (2) how much revenue could colonias earn from property tax?; (3) how much revenues could colonias earn from sales tax?

Significance

When colonias are unincorporated, they depend on county governments for the provision of infrastructure and services. However, counties in Texas have limited taxation powers and therefore limited revenues. Salinas (2015) points out that although counties have the power to levy both property and sales tax, they have to reduce the rate on one if they wish to increase the rate on the other. Cities, on the other hand, are not restricted in this fashion. This restriction limits counties' ability to raise funds as well as their capacity to provide infrastructure and services to colonias. As can be seen in table 5, counties indeed raise significantly less money than municipalities. In 2007, cities generated twice as much revenue as counties did. Table 6 provides more details on taxation revenues for counties and cities. Although counties raised more funds than municipalities from property taxes, they raised significantly less in sales tax. This supports Salinas' (2015) assertion that counties have to forgo taxing privileges on sales taxes if they increase tax rates on property taxes and vice versa.

As mentioned in the problem statement section of the introduction, a considerable portion of the colonias is located beyond annexable areas. Therefore, they cannot benefit from the advantages that cities could procure them with their higher fund-raising capacity. The findings from this research could potentially offer colonias a better solution than annexation because it would have the advantage of being applicable to more colonias (both colonias beyond ETJ and colonias that

cities avoid as they expend through annexation). In addition, self-incorporation could constitute a more sustainable infrastructure provision method than the grants that the Federal and States governments provide for colonias through programs such as the Economically Distressed Area Program (EDAP). Grant funds may vary from a year to another, as shown in figure 6, and colonias compete with each other for the obtention of those grants. In other words, the availability of grants is not guaranteed for colonias. On the other hand, if a colonia self-incorporates, it will have funds dedicated to itself every year. It will not have to compete with other colonias for grants coming from higher levels of government.

Table 5. Total revenues for Texas municipalities and counties in thousands of dollars

2002		2007		2012	
Counties	**Municipalities**	**Counties**	**Municipalities**	**Counties**	**Municipalities**
10,110,167	19,979,909	14,826,272	33,265,589	19,160,970	35,959,962

Source: Census of Governments, US Census Bureau

Table 6. Funds raised from Taxes in 2012 in thousands of dollars

	Counties	**Municipalities**
Taxes	9,201,742	13,232,780
Property	8,372,961	6,748,038
Sales and gross receipts	486,903	6,027,385
General sales	391,221	4,295,935
Selective sales	95,682	1,731,450
Motor fuel	0	0
Alcoholic beverage	0	0
Tobacco products	0	0
Public utilities	0	1,218,732
Other selective sales	95,682	512,718

Source: Census of Governments, US Census Bureau

Figure 6. Evolution of federal and state grants to all municipalities in the United States between 2002 and 2012

	2002	2007	2012
Federal	540,905	1,249,253	1,162,979
State	539,813	714,425	1,047,169
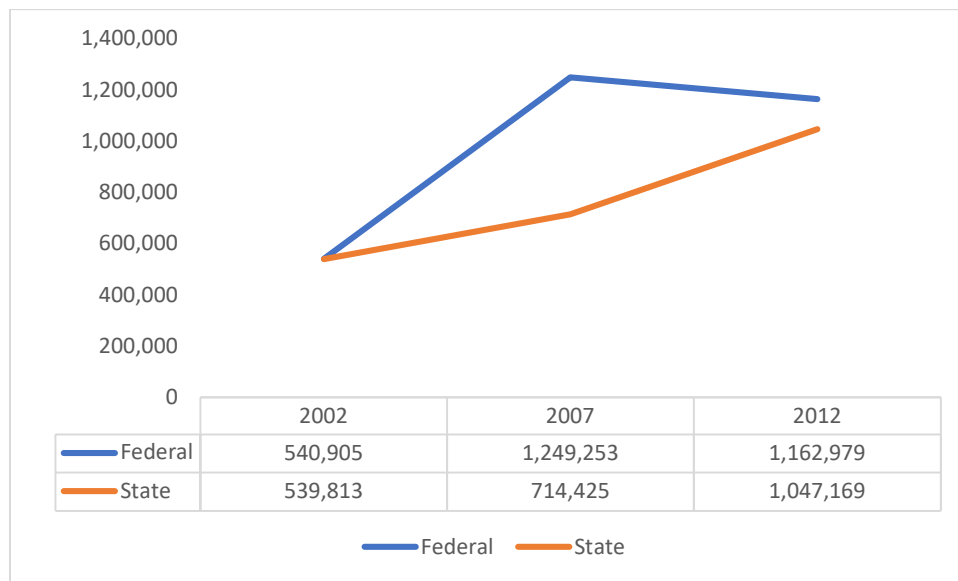
Source: Census of Governments, US Census Bureau

Bowyer (1993) argues that strong Capital Improvement Programs (CIP), which are documents detailing cities' plans for infrastructure funding and construction, always help municipalities secure federal grants. He claims that in his experience as a planner, the availability of funds is inversely correlated with the number of requirements for receiving grants. In other words, when the federal government has a significant amount of money to spend in the forms of grants to municipalities, they tend to set fewer requirements to qualify for those grants than when funding is scarce. In any case, having a strong CIP would help colonias secure grants. A CIP is a document that assesses the current infrastructure needs of a municipality then proposes projects to either create new infrastructure or improve or maintain existing ones. A CIP usually plans infrastructure for a period of three to five years, although it can sometimes be longer (Elmer 2004). By assessing the ability of colonias to fund infrastructure through self-incorporation, this

study will help those communities draft strong CIP as the study will show different sources of funds for municipalities and how they could be used for maximum impact.

Lastly, the results from this study will provide the Texas government with an additional tool to solve the infrastructure problem in the colonias. Up to now, both the legislative and executive branches of the Texas government have adopted grants and annexations as their preferred strategy to solve the problems facing colonias. The results of this study could offer an additional solution to the state government. Moreover, self-incorporation could help state agencies allocate their resources as they no longer need to spend money on self-incorporated colonias. They would then focus on colonias whose infrastructure are in worse states.

Literature Review

In the literature on infrastructure provision in colonias, annexation has extensively been discussed as a potential solution to colonia problems. Salinas (2015) and Arizmendi et al. (2010) point to the weak county regulatory power as one of the major causes for colonias development. Salinas (2015) then recommends that municipalities in close proximity to or containing fracking sites annex colonias and use revenues from fracking to provide infrastructure.

Other researchers have focused on the obstacle to annexation. Mukhija and Mason (2013), though studying colonias in California, found that two factors were important for successful annexation of colonias: the promise of federal or state funding for infrastructure provision and consent from colonia residents. Indeed, some colonia residents resist annexation because they fear increased life costs resulting from additional municipal taxes and regulations such as stricter zoning regulations and building codes that would prevent them from using cheaper construction materials.

Concerns of colonia residents have also been pointed out by Holz and Davies (1993), who found that even in colonias that had access to water pipes, residents chose not to connect their houses to them because the cost of service would be too expensive for them. In addition to the unwillingness of residents to connect to utility lines, there is also the problem of lack of capacity to use public utility lines. In their report on the Lower Rio Grande Valley, which is the region with the largest concentration of colonias in the State of Texas, the Lyndon Baines Johnson School of Public Affairs (1977) found that several colonias houses did not have plumbing systems and thus could not connect to municipal water system even if they wished to do so. In that report, they also pointed out that all colonias in Cameron could not be connected to the wider public sewage system because of their distance to them. They recommended on-site sewage treatment systems for every identified colonia in that county.

A further obstacle to annexation is municipal under bounding, which is the process of avoiding colonia when annexing new territories. Durst (2014) found that municipalities systematically avoid annexing colonias when expanding their territories. Moreover, the likeliness of annexation further decreased for colonias when they lacked basic infrastructure.

As for the incorporation of colonias as a method for infrastructure provision in colonias, the only study on the subject that I have found is the one conducted by Wilson and Guajardo (2000). The study examines the case of El Cenizo, a colonia that was incorporated to solve the problems of infrastructure. Wilson and Guajardo (2000) found that El Cenizo was not able to fully fund the three sectors that they planned to focus on: street lighting, ambulance service, and garbage collection. Further, El Cenizo was not able to collect the amount of property tax that they projected. Wilson and Guajardo (2000) suggest that the lack of training in municipal management was one of the major causes of the failure of El Cenizo's government. Another

important finding from Wilson and Guajardo's study is that El Cenizo financed most of its infrastructure with funds from settlement of litigation against the developer that started the colonia by selling non-serviced parcels of lands.

Although there does not seem to be any other published work that addresses incorporation as a solution to infrastructure problems in colonias, there is an extensive body of research that focuses on incorporation as a way to provide infrastructure and services to unincorporated areas. Upon close inspection of colonia, one could find that the problems affecting colonias are not unique to them. Instead, those problems plague unincorporated communities across the United States.

In a study of newly incorporated cities, Rice, Waldner, and Smith (2014) found that provision of services was the fourth most mentioned reason for incorporation. The study mentioned a Texas city named Bedias (not located in the border area and therefore not a colonia), which was incorporated in order to build a better sewage system. Waldner, Stilwell, and Smith (2019) found that improving services was one of the reasons for the incorporation of communities of color (Communities where an ethnic group other than white constitute the majority of the population). None of the four cities included in Waldner et al. (2019)'s study was located in Texas, further proving that the infrastructure problem in unincorporated communities is unique neither to colonias nor to Texas. The prevalence of such issues highlights the inability of county governments to adequately service communities, which is a problem that Salinas (2015) and Arizmendi et al. (2010) found to be existing in Texas in relation to colonias. Studies of other unincorporated communities across the United States could help obtain insights into colonias problems since their problems are similar.

Several studies on the effectiveness of incorporation have highlighted the difficulties that newly incorporated communities face in terms of financing their expenditures. Waldner et al. (2019) found that all the newly incorporated cities faced serious fiscal problems before achieving solvency through grants, economic development initiatives, increased taxes, and negotiations for debt forgiveness with counties. The paper also pointed to weak tax bases as a major cause of those cities' financial problems. Property taxes are usually the largest source of municipal revenues (Daniels, Keller, Lapping, Daniels, and Segedy 2007). In unincorporated communities lacking basic infrastructure, the average income is likely to be relatively small. Consequently, housing quality, as well as property values, are likely to be low, too, leading to lower tax revenues and the limited ability of a newly incorporated community to provide services to their residents.

Alternative funding methods have been extensively discussed in the literature. Adams (1988) reported that because the costs of infrastructure projects are typically high when compared to other local government expenditures, cities tend to fund them with long-term bonds or grants. However, there are several aspects to consider when considering the borrowing route. Daniels et al. (2007) mentioned state-defined debt ceilings. That is, some states do not allow municipalities to pass a certain cap of outstanding debt. On the other hand, Grants are not subject to this restriction, and according to Bowyer (1993), there are cycles of federal and state grants to municipalities, and sometimes those grants go unnoticed.

Although grants have clear advantages over bonds for low-income communities, they are not a source of funds on which municipalities can always rely. Daniels et al. (2007) emphasize the competitiveness of governments grants, which means that some cities may not obtain funds that are theoretically available because they will be awarded to more competitive communities.

A further revenue source for infrastructure provision is reserve funds, which are funds that municipalities set apart and invest for more revenues (Steiss 1978). Such funds could remedy fluctuations in federal grants, highlighted by Daniels et al. (2007). They can also be useful in maintaining existing infrastructure. Adams (1988) wrote that federal governments tend to finance mainly new constructions. Obtaining grants to replace an existing sewer system may thus prove difficult, and reserve funds could be perfect for filling the gap.

In addition to property taxes, sales tax also constitutes an important source of municipal revenues. Steiss (1978) describes the general sales tax as the most productive source of nonproperty tax revenue. He also insists that the productivity of that source also depends on the tax base, that is, the local economy. If the community is home to several thriving businesses, then the sales tax will produce more revenues for the city. Research has shown that colonias are building strong local economies (Durst 2015). Giusti (2003) reported that the portion of single-person businesses in Rio Bravo colonia was twice as big as the national average, which suggests that colonias are indeed building reliable local economies to get access to the goods and services that they need. Giusti (2006) found that colonias have stable populations as people live in the same house for long periods of time. That stability drives demand for goods and services supplied by microbusinesses in colonias (Giusti 2008). Giusti (2006) has also found that microbusinesses in Texas are used to the practice of paying sales tax.

In addition to local microbusinesses, colonias residents also get supplies from flea markets known as "pulga." Pulgas are market places where vendors coming from different places can register to sell their products. Although vendors are not exclusively colonia residents, Dean, Sharkey, and St. John (2011) found that 78.8% of vendors came from colonias. Several buyers in pulgas come from colonias as well. Dean, Sharkey, Cassandra, and Valdez (2011) found that

consumers went to pulgas not only to get food supplies but also to enjoy the many entertainments that pulgas provide, such as live music. Pulgas thus constitute vibrant centers of economic activities for colonia residents.

Another source of revenue for Texas cities is the alcohol tax grant from the state government (Texas Municipal League 2017). The state of Texas grants cities a percentage of the sales tax that they collect on alcoholic beverage boundaries. Unlike federal grants, cities do not have to apply for this particular grant. They are automatically granted a share of the tax revenue from alcoholic beverages sold within their corporate boundaries. That constitutes a further incentive for colonias to boost economic development.

Steiss (1988) warns that municipal governments should be aware of other taxing entities when setting their tax rates. As a matter of fact, residents do not pay taxes only to the municipalities where they reside, but they also pay taxes to school districts, county governments, and sometimes to special government districts such as public authorities. Setting tax rates is thus a complex task that requires proper training for individuals that are elected to the city governing commission.

To sum up, the literature has extensively discussed the benefits that incorporation offers in terms of infrastructure, the difficulties facing newly incorporated communities, and the opportunities that incorporation brings. The literature also includes many case studies of cities that incorporated to solve their infrastructure problems. However, the literature on the potential of incorporation for colonias is scarce. Wilson and Guajardo (2000) studied an incorporated colonia, but they did not examine the potential of incorporation as a solution for infrastructure problems. Instead, they focused on the performance of El Cenizo's government after incorporation, and they recommended better training in city management for the governing body

of that city. Other than that study, Durst (2015) mentioned incorporation as a potential solution, but he did not conduct an analysis of the question. This research will fill the void that currently exists in the subject. The study will seek to determine if and to what extent the many funding sources mentioned in the literature could be used in colonias and will estimate whether those sources could enable colonias to fully self-finance infrastructure projects.

Methodology

The study's methodology will take into account the specificity of each subquestion and will be adapted accordingly. The case study will focus on a single colonia (Cameron Park) because of the wealth and accuracy of data that I was able to find about it. Indeed, the boundaries of Cameron Park align perfectly with the boundaries of one of the US Census Bureau's designated places. That allowed me to obtain accurate housing costs data and the latest population estimates. I initially intended to study the five largest colonias in population size, but I excluded two of them because they already incorporated (El Cenizo and Rio Bravo), and I excluded the remainder because their boundaries did not perfectly align with any census-designated places. However, although I excluded the incorporated colonias, they will serve as references for some analyses that I will conduct, and the results obtained with Cameron Park will certainly be applicable to the other unincorporated colonias because they have similar characteristics.

As a matter of fact, both Olmito and Canutillo Industrial Park are located on the edge of a city. In the case of Olmito, it is located on the edge of the same city as Cameron Park. Canutillo Industrial Park is located on the Edge of El Paso city. As will be detailed in the results section, proximity to a city proves to be crucial for employment opportunities. All those colonias are also classified as yellow colonias by the OAG. The population thus seems to be the only significant

difference between those colonias. Cameron Park has a population that exceeds 5,000 while the other two do not. Cameron Park's population makes it eligible to incorporate as a home-rule city, setting a property tax rate that goes up to $2.50 per hundred dollars of value. The other two cities can only tax up to $1.50 (Lane 2017). That difference will likely not be significant because no taxing entity in Cameron Park has a property rate as high as $1.50 per $100 of the property value (see table 16).

Brief Profile of Cameron Park

Cameron Park is a community of 6,241 residents (2019 ACS 5-year estimates). Although it is in excellent condition for a colonia, it would still be considered as an impoverished community by the typical American standards. As a matter of fact, the US Census Bureau declared Cameron Park the poorest place in America after completing the 2000 census (Seifert, 2018). That was determined by comparing the median income of the colonia to the one of the State of Texas and the national one. Cameron Park had a median income of just $4,895, while the state's median income was $19,617, and the national one was $21,587 (Balli, 2003). In other words, Cameron Park's median income four times lower than the state's median income. It is important to note that while the colonia lacked basic infrastructures such as paved roads at the time, it was still one of the best colonias in terms of living conditions. As a matter of fact, Davies and Holz (1992) hailed Cameron Park as one of the colonias with the highest housing quality. The fact that Cameron Park was designated the poorest place in America thus says a lot about living conditions in colonias. They are a problem that needs proper governmental attention, and this thesis is attempting to assist policymakers and scholars in undertaking the rights initiative to tackle the problem.

The situation in Cameron Park today is not nearly as alarming as it was in 2000, and it is even less critical as it was in the early stages of its developments. All roads are paved, residents

have access to safe drinking water, a proper wastewater system was developed, all parcels are platted, and as will be demonstrated later in the paper, businesses are thriving in the colonia. Cameron Park residents have been able to change the situation of the colonia for the better over the years through their hard work and dedication to improve their community. As a symbol of the improvement of living conditions in the colonia, the income gap between the colonia and the state has significantly reduced. Today, the latest ACS 5-year estimates (2019) report Cameron Park's median income as $31,583, and the state's estimated median income is $38,588. The improvement of Cameron Park can also be seen with other indicators.

The educational attainment of the colonia's residents has increased over the years. Although I do not possess historical data on the topic, an improvement in educational attainment over the years can be deduced from the Census Bureau's data on educational attainment by age. As can be seen from Table 7, the share of people holding at least a high school diploma decreases as the population gets older. That means that younger residents tend to be better educated than older ones. It shows that education is more and more valued in the colonias, and the residents are dedicated to pursuing their studies further than previous generations. Higher levels of education certainly play a role in the increase of income level observed in the colonia between 2000 and 2019.

Table 7. Educational Attainment by age in Cameron Park in 2019

Age group	Number of people	Percentage
Population 18 to 24 years	**860**	**100%**
Less than high school graduate	106	12.30%
High school graduate (includes equivalency)	440	51.20%
Some college or associate's degree	314	36.50%

Bachelor's degree or higher	0	0.00%
Population 25 to 34 years	**1,019**	**100%**
High school graduate or higher	637	62.50%
Bachelor's degree or higher	126	12.40%
Population 35 to 44 years	**848**	**100%**
High school graduate or higher	533	62.90%
Bachelor's degree or higher	47	5.50%
Population 45 to 64 years	**1,157**	**100%**
High school graduate or higher	412	35.60%
Bachelor's degree or higher	7	0.60%
Population 65 years and over	**452**	**100%**
High school graduate or higher	72	15.90%
Bachelor's degree or higher	40	8.80%

Source: US Census Bureau

Tables 8 and 9 seem to support the suggestion that higher levels of education contribute to the increased income in Cameron Park. Table 8 lists occupation in Cameron by descending order of income. By looking at table 9, one can notice that the shares of workers in higher-paying occupations have increased between 2000 and 2019. As a matter of fact, the only shares of workers that have decreased are the last two rows of the table. A quick glance at table 8 indicates that the occupations listed in the last two rows of table 9 are among the lowest-paying jobs. It is reasonable to assume that the remaining occupations whose shares have increased are occupations that require higher levels of education. Indeed, such occupations as management and office work certainly require people to hold some sort of degree. The data thus seems to suggest

that Seifert's (2018) that Cameron Park residents worked hard to improve their living conditions

is true. Now that general improvements on the state of the colonia have been presented, the paper

can go to the main stage of the study: data analysis to determine whether the colonia possesses

enough resources to self-fund its infrastructure maintenance work.

Table 8. The median income for some occupations in Cameron Park in 2019

	Number of people	Median income
Management occupations	59	52,679
Management, business, and financial occupations:	86	41,413
Production occupations	204	34,000
Office and administrative support occupations	267	33,646
Personal care and service occupations	157	30,950
Community and social service occupations	44	27,708
Sales and related occupations	314	23,431
Installation, maintenance, and repair occupations	126	22,895
Construction and extraction occupations	288	22,547
Material moving occupations	66	21,222
Food preparation and serving related occupations	174	20,743
Healthcare support occupations	296	14,009
Building and grounds cleaning and maintenance occupations	117	12,933

Source: US Census Bureau

Table 9. Employment status and occupation in Cameron in 2000 and 2019

	2000 Share of workers/people	2019 Share of workers/people
EMPLOYMENT STATUS		
Population 16 years and over	100%	100%
In labor force	46.50%	58.40%
Civilian labor force	46.50%	58.40%
Employed	36.30%	54.10%
Unemployed	10.20%	4.30%
Armed Forces	0.00%	0.00%
Not in labor force	53.5%	41.60%
OCCUPATION		
Management, professional, and related occupations	7.30%	11.60%
Service occupations	25.30%	32.10%
Sales and office occupations	13.30%	23.70%
Construction, extraction, and maintenance occupations	22.30%	20.20%
Production, transportation, and material moving occupations	27.90%	12.40%

Source: US Census Bureau

Can colonias become viable cities?

Does Cameron Park offer enough work opportunities to its residents?

I will use ArcGIS Business Analyst to determine the number of businesses operating in Cameron Park as well as the total number of individuals employed by those businesses. ArcGIS Business Analyst also computes a ratio of employed individuals per 100 residents in an area. That ratio would be useful to assess the colonia's capacity to provide enough work opportunities to its residents. ArcGIS Business Analyst obtains its data on business locations from Data Axle, a company specializing in business data collection for marketing and business strategy purposes.

Is housing adequate in Cameron Park?

Measures of housing adequacy are plentiful in the housing literature. Cox et al. (2016) review different measures of housing adequacy and retain six main characteristics of proper housing: housing stability, housing quality, housing affordability, housing safety, neighborhood safety, and neighborhood quality. They stressed the importance of the cost of housing, but they also emphasized the need for housing units to have all necessary amenities such as plumbing systems, air conditioning, heating, etc.

Focusing on all the aspects that Cox et al. mentioned is beyond the scope of this paper. Also, questions of such things as servicing housing units with proper water are addressed in other sections of this paper. On the issue of adequate housing in Cameron Park, I will thus focus on housing affordability.

To measure housing affordability in Cameron Park, I will use the monthly housing costs as a percentage of income estimates from the American Community Survey's housing characteristics dataset. I will compare those numbers to Brownsville, Texas, which is the closest city to Cameron Park. If housing is sufficiently affordable in Cameron Park, especially when compared to Brownsville, then there would be no need for annexation, and self-incorporation would be viable.

Are there enough commercial activities in Cameron Park to sustain its existence as a city?

For this question, I will review studies on commercial activities in colonias. I will supplement that survey of the literature with data from ArcGIS Business Analyst, which provides estimates of yearly sales volumes in the colonia. More details on how the employed methodology are given in the results section when commercial activities are discussed. I also examined data from Cameron County Appraisal District to ensure the validity of the data provided by ArcGIS business analyst on the location of businesses. Since the appraisal district

assesses the value of properties within the county, I consider their data on business locations as the most reliable data on the topic. ArcGIS business analyst's data align with those from the appraisal district, although ArcGIS business analyst does not seem to account for several businesses that are located in mixed-use buildings. Therefore, the sales volumes that ArcGIS Business analyst presents are likely underestimated.

Does Cameron Park offer enough transportation options to its residents?

The analysis will be conducted by comparing the means of transportation available to residents in the colonia to those available in the county, the state and the country. The same will be done with data on the number of vehicles available per household. Data will be obtained from the US Census Bureau in this case too.

Do colonias provide leisure activities to their residents?

The same process used to analyze Cameron Park's business activities will be used to assess whether colonias provide enough leisure options.

Can colonias finance infrastructure projects?

What are the typical costs of infrastructure projects in colonias?

Most of the data will be obtained from TXDOT, which maintains a comprehensive dataset of all roads in Texas. They also provide estimates of pavement maintenance costs per length of the road section. Using ArcGIS Pro, I will find the total length of local roads in Cameron Park, multiplied by the unit cost of maintenance.

How much revenue could be earned from property tax?

GIS Shapefiles of appraised properties will be obtained from the website of Cameron County's appraisal district. Using the software ArcGIS, I have selected all properties whose centroids completely fall within Cameron Park's boundaries. I have set Cameron Park's property tax rate at $0.50 per hundred dollars of appraised value because it is the tax rate that El Cenizo has set for several years. It seems reasonable to use it as a potential tax rate for another colonia if

it were to self-incorporate. The estimated revenue was computed by multiplying the tax rate by the total appraised value.

How much revenue could be earned from sales tax?

The estimated revenues were obtained by multiplying the business sales receipts by the maximum tax rate that Cameron Park could set as a city. The business sales receipts are the sales volume estimates obtained from ArcGIS Business Analyst.

Results and discussion

Resemblance to a typical city

Employment Opportunities

Data from ArcGIS Business Analyst indicate that Cameron Park has a total of 45 businesses operating within its boundaries. Those 45 businesses employ 314 people, representing a ratio of 4 employees for every 100 residents in the colonia. Table 10 shows how that ratio is significantly smaller than the ratio of other geographic entities in the United States. This indicates that Cameron Park offers fewer employment opportunities than other municipalities in the United States overwhelmingly, as the typical American city offers employment to 44 out of every 100 residents. Even within Cameron County, which is reputed as one of the poorest counties in the United States, Cameron Park falls far below the county's ratio of 26 jobs for every 100 residents.

Table 10. Ratio of Business Employees Per 100 Residents in Selected Geographic Entities in the United States

Geography	Total Population	Number of Businesses	Number of Employees	Employees/100 Residents
Cameron Park	8,397	45	314	4
Brownsville	190,696	4,838	53,230	28
Cameron County	441,985	10,235	113,334	26
Coleman	29,806,340	983,518	11,310,246	38
Diboll	333,793,101	11,994,763	146,120,824	44

Source: Data Axle and ESRI population Projections from 2010 US Census

However, this poor performance does not automatically confirm the unsuitability of Cameron Park's self-incorporation as a solution to its issues. As mentioned in the methodology section, Data Axle underestimated the number of businesses in the colonia because it did not include the many locations identified as mixed commercial and residential use by the Cameron County Appraisal District. Those are likely the small businesses that thrive in colonias, according to Giusti (2003). The inclusion of those businesses would somewhat increase the ratio, even though it would still remain relatively low when compared to other geographical areas. In fact, such a poor ratio was to be expected because colonias are mainly constituted of residential development. As explained earlier in the paper, colonias were originally created for the sole purpose of providing affordable housing options to people who could not afford housing in incorporated areas. From their genesis, colonias have always relied on neighboring cities for employment. Thus, instead of asking whether colonias provide enough employment opportunities, one should ask whether the unemployment rates of colonias are unsustainable. To

answer this question, I will compare the unemployment rate of Cameron Park to the ones of other Cameron County cities of similar populations.

With an unemployment rate of 7.4%, Cameron Park also sits below the Cameron County average of 5.8% (ACS 2019 5-year estimates). However, a comparison of Texas cities of similar size reveals the resemblance of the colonia to a typical Texan small town. Among the 43 Texas incorporated municipalities whose 2010 population count varied from 4,500 to 5,000 (which was approximately Cameron Park's 2010 population), 24 underperformed their respective counties in unemployment. They represent 55.8% of municipalities in that category. In that respect, Cameron Park would find itself in the norm rather than exception should it incorporate as a city.

Table 11 lists all the 24 municipalities that underperformed their respective counties' unemployment along with the corresponding unemployment rates. The last column of Table 11 lists the difference between cities' and counties' unemployment rates. The median for all these differences is 1.6%, which is also the difference between Cameron Park's unemployment rate and Cameron County's unemployment rate. Figure 7 further stresses that as a city, Cameron Park would be far from being an outlier in terms of the unemployment rate.

In sum, with regards to employment, it could be argued that Cameron Park could perform as well as a typical American city of a similar size. However, it should be noted that according to the US Census Bureau (commuting characteristics by sex dataset), 93.6% of Cameron Park workers worked outside their place of residence. It is reasonable to assume that they work in the nearby city of Brownsville. The similarities in household income between Cameron Park and Brownsville confirm this assumption. Indeed, a quick glance through table 12 reveals that the proportions of households in each income bracket are not considerably different between Cameron Park and Brownsville. The emerging trend in the table is that Cameron Park tends to

have higher proportions of households than Brownsville for income brackets below $75,000, while the inverse is true for brackets above $75,000. Nevertheless, those differences are not enormous, as evidenced by the fact that the difference in median income is only half as big as the difference in mean income.

The greater takeaway from this data is that Cameron Park residents hold the same jobs as Brownsville residents, but Cameron Park residents hold more lower-wage jobs. Another significant takeaway is that while this reliance on jobs beyond its boundary would generally constitute a negative sign for a city, it would be beneficial in the case of Cameron Park. Not having to focus on job creation would allow the city government to focus plainly on more pressing issues of infrastructure provision.

Table 11. Unemployment rate of Texas small towns compared to their respective counties' unemployment rate for towns whose unemployment rate exceeded counties'

City	Unemployment	County	Unemployment	Difference
Brookshire	6.90%	Waller	5.20%	1.70%
Carrizo Springs	14.90%	Dimmit	13.40%	1.50%
Center	14.90%	Shelby	7.70%	7.20%
Coleman	3.80%	Coleman	3.40%	0.40%
Diboll	14.80%	Angelina	6.60%	8.20%
Edna	4.40%	Jackson	3.40%	1.00%
Giddings	4.40%	Lee	2.50%	1.90%
Gilmer	5.90%	Upshur	5.30%	0.60%
Granite Shoals	6.70%	Burnet	4.10%	2.60%
Hutchins	7.50%	Dallas	4.80%	2.70%
Jacksboro	5.40%	Jack	3.90%	1.50%
La Grange	6.40%	Fayette	3.30%	3.10%
Lake Worth	6.00%	Tarrant	4.70%	1.30%

Lucas	3.80%	Collin	3.70%	0.10%
Mathis	5.30%	San Patricio	5.10%	0.20%
Muleshoe	3.10%	Bailey	2.50%	0.60%
New Boston	5.70%	Bowie	5.60%	0.10%
Oyster Creek	12.90%	Brazoria	4.40%	8.50%
Palmview	8.10%	Hidalgo	6.90%	1.20%
Pinehurst	6.70%	Orange	5.00%	1.70%
Post	3.20%	Garza	2.60%	0.60%
Rio Bravo	8.10%	Webb	4.90%	3.20%
Sansom Park	9.10%	Tarrant	4.70%	4.40%
Windcrest	8.30%	Bexar	5.30%	3.00%

Figure 7. Differences in unemployment rate for cities whose unemployment rate exceeeds their county's unemplyment rate
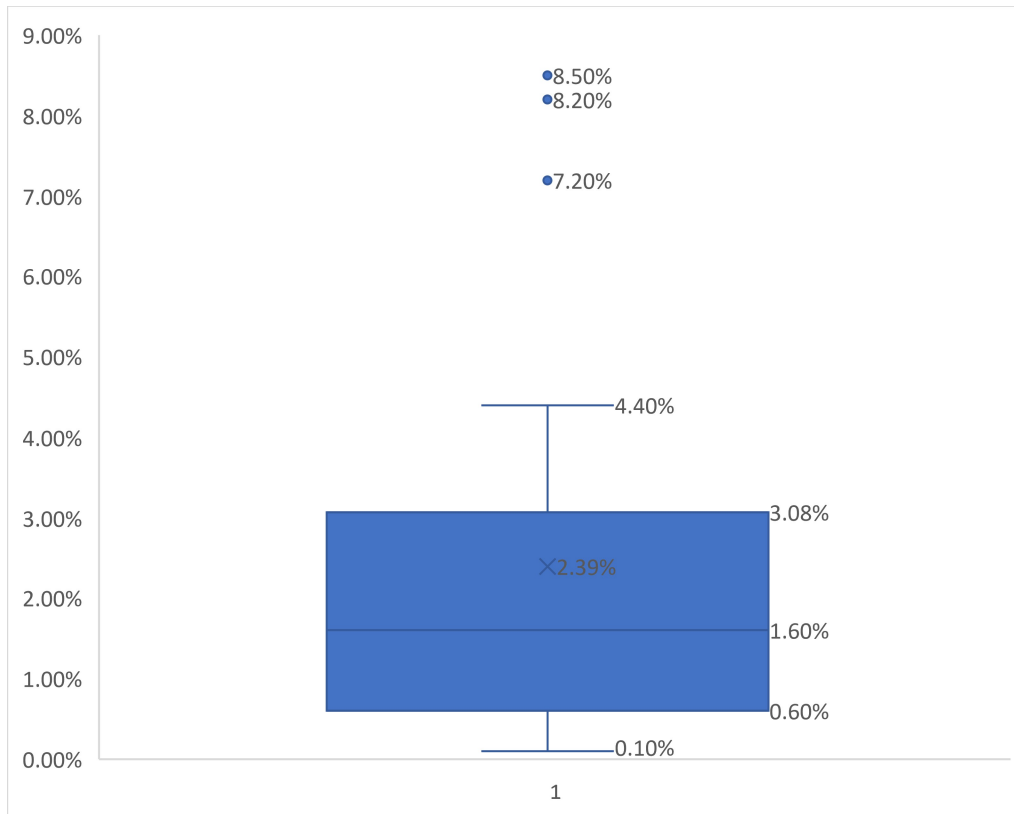
Table 12. Household income in 2018 for Cameron County, Brownsville, and Cameron Park

Label	Cameron County	Brownsville city	Cameron Park
	Estimate	Estimate	Estimate
Total	124,605	52,162	1,540
Less than $10,000	11.4%	12.1%	11.1%
$10,000 to $14,999	7.9%	8.1%	11.8%
$15,000 to $24,999	14.7%	14.3%	18.2%
$25,000 to $34,999	12.6%	12.3%	13.4%
$35,000 to $49,999	12.5%	12.7%	12.9%
$50,000 to $74,999	16.5%	16.3%	19.4%
$75,000 to $99,999	10.0%	10.3%	6.1%
$100,000 to $149,999	9.3%	9.5%	7.1%
$150,000 to $199,999	2.9%	2.3%	0.0%
$200,000 or more	2.3%	2.2%	0.0%
Median income (dollars)	38,758	38,588	31,583
Mean income (dollars)	55,520	53,996	40,723

Source: US Census Bureau, American Community Survey

Housing

The main indicator for housing affordability that is used in this study is the US Census Bureau's selected monthly costs as a percentage of household income. The maximum limit for housing affordability selected for this study is 30% of household income. As shown in tables 13 and 14, housing is considerably more expensive in Cameron Park for units with a mortgage than it is in other geographical areas. The total share of unaffordable mortgaged units in Cameron Park is 49.3%, while that share is 32.6% and 32.8% for Cameron County and Brownsville,

respectively. On the other hand, Cameron Park seems to offer more affordable housing for households that do not have mortgaged units. The share of households spending 30% or more of their incomes on housing is 5% for Cameron Park, 14.9% for Brownsville, and 14.3% for Cameron County. As for renting, there does not seem to be any major difference among the three locations: 54.4% of rented units are unaffordable in Cameron Park, 53.9% are unaffordable in Brownsville, and 53.5% in the county.

Table 13. Monthly costs as a percentage of household income for homeowners in Cameron County, Brownsville, and Cameron Park

	Cameron County	Brownsville	Cameron Park
	2015-2019 Estimates	2015-2019 Estimates	2015-2019 Estimates
Housing units with a mortgage	**33,358**	**14,164**	**243**
Less than 20.0 percent	44.6%	41.4%	40.3%
20.0 to 24.9 percent	12.3%	13.9%	4.1%
25.0 to 29.9 percent	10.5%	11.9%	6.2%
30.0 to 34.9 percent	7.8%	8.6%	1.2%
35.0 percent or more	24.8%	24.2%	48.1%
Not computed	366	160	0
Housing unit without a mortgage	**46,827**	**16,861**	**764**
Less than 10.0 percent	40.6%	41.3%	42.4%
10.0 to 14.9 percent	21.5%	21.5%	27.6%
15.0 to 19.9 percent	12.5%	12.0%	18.6%
20.0 to 24.9 percent	6.6%	6.6%	2.0%
25.0 to 29.9 percent	4.5%	3.7%	4.5%
30.0 to 34.9 percent	3.4%	3.6%	0.0%
35.0 percent or more	10.9%	11.3%	5.0%

Not computed	1,546	461	45

Table 14. Gross rent as a percentage of household income in Cameron County, Brownsville, and Cameron Park for the year 2019

	Cameron County	Brownsville	Cameron Park
	2015-2019 Estimates	2015-2019 Estimates	2015-2019 Estimates
Occupied units paying rent	37,447	18,440	360
Less than 15.0 percent	13.7%	13.9%	21.7%
15.0 to 19.9 percent	11.6%	10.9%	23.9%
20.0 to 24.9 percent	10.4%	11.1%	0.0%
25.0 to 29.9 percent	10.8%	10.3%	0.0%
30.0 to 34.9 percent	9.4%	8.7%	13.3%
35.0 percent or more	44.1%	45.2%	41.1%
Not computed	5,061	2,076	128

The relatively higher affordability of non-mortgage housing units in Cameron Park is significant because an overwhelming majority of homeowners in the colonia are not financing their homes. As a matter of fact, among homeowners in Cameron Park, 75.7% do not have a mortgage. In Brownsville, only 54.3% of homeowners have fully paid homes, and in Cameron County, that share is 58.4%. It can thus be concluded that Cameron Park outperforms both Brownsville and Cameron County in terms of housing affordability. However, it should be noted that affordability in itself is not sufficient to determine housing adequacy.

As pointed out in the methodology section, several other factors such as housing quality are usually considered when assessing housing adequacy. Although such considerations are beyond the scope of this study, table 15 is included in the paper to provide a somewhat fuller picture of the housing situation in Cameron Park. The table indicates that except for telephone services, housing quality does not widely differ across the three locations. The matter requires further exploration, but given reports in the literature, it is likely that housing quality in Cameron Park is adequate. Indeed, several and nongovernmental institutions have invested in colonias upgrading over the years (see appendix E), and Davies and Holz (1992) cited Cameron Park as one of the colonias with the best housing quality.

Table 15. Some housing facilities in Cameron County, Brownsville, and Cameron Park

	Cameron County	Brownsville	Cameron Park
Occupied housing units	124,605	52,162	1,540
Lacking complete plumbing facilities	0.5%	0.6%	0.2%
Lacking complete kitchen facilities	0.5%	0.5%	0.0%
No telephone service available	2.9%	3.3%	9.1%

Source: American Census Bureau. American Community Survey.

The significantly higher mortgage costs incurred by Cameron Park's residents also deserve increased research attention. The determination of this phenomenon's underlying causes would lead to further improvement of living conditions for Cameron Park's residents through research-backed policies. One reason for these higher costs could be higher interest rates for the colonia's residents because their lower-income causes increased fears of default. It can be observed from table 16 that virtually all (97%) unaffordable units with a mortgage in Cameron

Park are owned by individuals in the two lowest income brackets. Those income brackets are mainly constituted of individuals earning less than the colonia median income of $31,583 (see table 12). I thus cautiously posit that the observed unaffordability of mortgages for colonias is due to the income level (further research is still needed). Policymakers at the state or federal level could charge an agency with the responsibility of providing affordable loans to the poorest colonias residents.

Table 16. Shares of total unaffordable housing mortgaged units by income brackets

Income	Cameron county	Brownsville	Cameron Park
<20,000	27.56%	25.61%	75%
20,000-34,999	36.17%	38.99%	22.5%
35,000-49,999	17.81%	20.28%	2.5%
50,000-74,999	12.14%	12.35%	0%
75,000+	6.32%	2.75%	0%

Source: US Census Bureau. American Census Bureau

Commercial activities and leisure

As mentioned in the literature review section of the paper, Giusti (2003) found that colonias build strong micro-economies as they tend to have higher proportions of entrepreneurs than the national average. These findings on strong local economies in colonias were confirmed in a more recent study (Durst 2015). Data from ArcGIS Business Analyst seem to support those findings as various businesses are located in Cameron Park.

Food-related businesses are the most prevalent business type in the colonia with eight establishments: 4 restaurants and four grocery stores. As can be seen in figure 8, grocery stores are spread out evenly enough to enable residents to travel relatively short distances to purchase groceries. The largest distance from a property to the nearest grocery store is 0.62 miles. The importance of shorter commute time cannot be overstated in a community where residents are

wary of transportation costs (Davies and Holz 1992). However, the even distribution of grocery stores contrasts with the general distribution of businesses in Cameron Park.

Indeed, businesses tend to concentrate on the eastern end of the city. The presence of a state highway on the eastern boundary of the colonia might justify the cluster of businesses on that side of the city since the business would seek to attract potential traveling customers using that highway. Examples of businesses on that highway include all 3 restaurants, a spa center, a real estate loan office, etc. As for establishments that are located further inside the colonias, they are mainly nonprofit institutions even though ArcGIS business analyst classifies them as businesses. They include 2 churches, social services, and welfare organization, a clinic, and a tire shop. Three of the four grocery stores in figure 8 are also located further inside the colonia. Thus, the institutions located further inside the colonia seem to be those that seek to reach a higher share of Cameron Park residents. This is because of their philanthropic purpose (the case of nonprofits) or because of a business strategy seeking to capture a more focused section of the population (the case of grocery stores).

Figure 8. Grocery Stores in Cameron Park   Figure 9. Other Businesses in Cameron Park
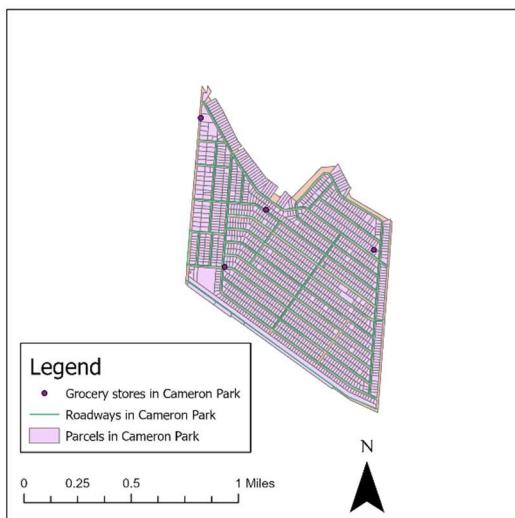
Source: ArcGIS Business Analyst, TX DOT, and

Cameron County Appraisal District

Source: ArcGIS Business Analyst

Figure 10. Land Use in Cameron Park Obtained from the Cameron County Appraisal District

The ArcGIS Business Analyst data on businesses is consistent with data that I obtained from the Cameron County Appraisal District, which increases my confidence in their reliability. Some of the similarities that I found in the two sets of data include the tendency of business establishments to locate on the western end of the city, two of the four grocery stores reported in ArcGIS Business Analyst, and one medical center that figures in both sets of data. A notable difference between the two sets of data is the complete absence of convenience stores in the ArcGIS Business Analyst tool, while I could find three of them in the Cameron County Appraisal District's data.

ArcGIS Business Analyst estimates the total sales volume for the year 2020 in Cameron Park at $26,074,000, which is low when compared to other Texas cities of similar population size. Indeed, among the same cities that I used when studying unemployment rates, Cameron Park outperformed only one city in terms of sales volume: Providence Village in Denton county, whose sales volume was estimated at $26,551,000. In fact, Cameron Park massively underperforms cities of similar sizes in terms of sales volume as the median sales volume is $201,718,000. The smallest sales volume after Cameron Park's is Terrell Hill's, which stands at

$61,506,000. It also should be noted that the inclusion of businesses in figure 9 that Data Axle did not include in their data raise the sales volume of the colonia.

Another noteworthy fact is that sales volume does not seem to be correlated to household income for those cities. Indeed, the Pearson correlation coefficient between household income and sales volume is 0.16. The absence of correlation between those two concepts is best exemplified by the city of Falfurrias. Its household median income of $25,854 is below Cameron Park's income of $31,583, yet Falfurrias' sales volume of $104,936,000 is four times higher than Cameron Park's. Further studies on factors predicting commercial activities in cities would thus be useful to help improve commercial activities in colonias, thus providing more revenues sources for taxation and incorporation.

Because of the tendency of Cameron Park businesses to open along the highway on the eastern boundary of the colonia, I hypothesize that location in a region with a high concentration of state highways might be one of the predictors of sales volumes. Using ArcGIS Pro, I created a state highway density map based on the ratio of total road length over the area. The result can be seen in Figure 10, where darker shades of blue represent areas of greater road density. The map comprises a total of 10 density areas which were coded with a number from, where 0 represents the lowest road density. I used that density data to compute a correlation coefficient between road density and sales volume. Because the measurement of road density used in this study is ordinal, the Pearson coefficient test would not be appropriate to assess the correlation between road density and sales volume (Khamis 2008). A Spearman correlation coefficient was computed instead, and its value was 0.429. That number testifies to the existence of a much stronger correlation between regional road concentration and sales volume than between income and sales.

Nevertheless, 0.429 is still far from the perfect correlation coefficient of 1. This means that other factors are in play in the performance of a city in sales. A complete model to predict sales volumes is thus needed. The analysis that I have conducted in this paper should serve as a basis for future studies into drivers of commercial activities in cities. In the meantime, policymakers should look at colonias in regions of high regional roads concentration as potential candidates for self-incorporation.

Figure 11. State Highway Density in Texas
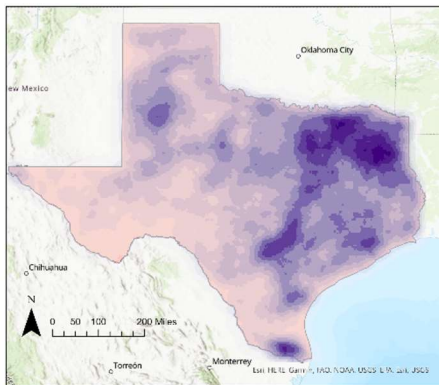
Source: TX DOT

As for leisure activities, Cameron Park offers its residents a variety of options, which are listed in table 17. The most popular activities are at-home activities, and they tend to be related to television (DVD rental, video games, etc.). Although Cameron Park residents spend considerably less than Americans at the national level, Cameron Park resembles a typical city in terms of recreational expenditures as evidenced by the percentage of total recreational spending that each activity represents, which are roughly similar at different geographic levels.

However, television-related activities receive a slightly greater share of residents' money in Cameron Park. I was inclined to think that this indicated a lack of outdoor leisure activities in the colonia, but the same occurrence of higher spending on television leisure in Brownsville's discredits this theory. As a matter of fact, while the prevalence of housing land use may explain a

relative scarcity of outdoor leisure activities in Cameron Park, it certainly does not do so in Brownsville, which is a typical city with a variety of land uses. Therefore, people in that area might just have a strong interest in television leisure.

In sum, although Cameron Park spends less money on leisure and commercial activities in general than the average American city, the residents seem to have access to all commercial activities that they need within the colonia's boundaries. In terms of commercial activities, they have access to grocery stores, day care, a health clinic, automobile parts and repair shops, churches, loaning institutions, convenience stores, etc. With these stores, residents can have access to necessary life goods and services. As pointed out in the transportation section of this paper, the proximity of essential goods and services is crucial to colonias in order to limit transportation expenses in a community where income is relatively low. As for leisure activities, Cameron Park residents spend more money on television programs than the average American community, but Cameron Park is similar to Brownsville in that respect. Cameron Park would thus not be an extreme oddity as a city should it self-incorporate.

The study of commercial activities in the colonia has also revealed that income is not correlated to retail, commercial expenditures. This finding calls for further studies of commercial activities in colonia to find how commercial expenditures can be boosted. Higher spending would yield higher sales tax revenues, which will always be useful to colonias. A correlation was found between access to a dense regional transportation network and commercial expenditures. This might suggest that cities in such regions might benefit from non-resident spenders who use the regional network. Researchers may look for ways to help colonias attract those non-resident spenders to increase sales tax revenue without straining residents' income too much.

Table 17. Recreation Expenses per household in Cameron Park, Brownsville, Texas, and the United States

Lesisure Activitties	Cameron Park	%	Brownsville	%	Texas	%	US	%
TV/Video/Audio	$536.24	49.32	$728.87	49.62	$1,164.73	47.39	$1,189.35	46.99
Entertainment/Recreation Fees and Admissions	$294.49	27.08	$390.65	26.59	$678.07	27.59	$702.32	27.75
Toys/Games/Crafts/Hobbies	$53.83	4.95	$71.92	4.90	$122.38	4.98	$123.14	4.87
Recreational Vehicles and Fees	$44.72	4.11	$63.60	4.33	$132.02	5.37	$153.51	6.07
Sports, Recreation and Exercise Equipment	$95.34	8.76	$128.65	8.76	$209.78	8.54	$204.11	8.06
Photographic Equipment and Supplies	$20.20	1.85	$27.20	1.85	$49.67	2.02	$51.09	2.02
Reading	$42.42	3.90	$58.01	3.95	$101.20	4.12	$107.53	4.25

Source: ArcGIS Business Analsyst

Transportation

The findings on employment opportunities stress the importance of a reliable

transportation system in Cameron Park if the colonia is to be a viable city. As a matter of fact,

the presence of a transportation system capable of connecting Cameron Park residents to their

employment locations – which are mainly located beyond the colonias' boundaries – is crucial

for residents to earn the necessary income to pay for household expenses as well as to pay the

taxes that the city would need to provide services and infrastructure. According to records from

the Office of the Attorney General of Texas, all roads are paved in Cameron Park, which

constitutes a strong basis for a reliable transportation system in the colonia. The inquiry that

needs to be made is whether people have access to vehicles to ensure their mobility.

Data from the American Community Survey seem to suggest that Cameron Park residents

have sufficient access to a vehicle for their needs. Table 18 reveals that only 87 out of the 1540

households in Cameron Park do not have access to a vehicle. That represents a mere 5.6% of

households. Also, carpooling is common among Cameron Park residents, as highlighted in table

15, meaning that those who do not have vehicles find ways to get to their jobs.

Table 18. Number of vehicles available per houshold type in Cameron Park

Household Type	Total	0 vehicle	1 vehicle	2 vehicles	3 vehicles	4+vehicles
All Households	1540	87	495	558	233	167
1-person Households	194	60	127	7	0	0
2-person Households	310	7	161	73	49	20
3-person Households	181	0	60	34	54	33

4+-person Households	855	20	147	444	130	114

Table 19. Means of transportation to work per vehicle available in Cameron Park

	Total	**0 vehicle**	**1 vehicle**	**2 vehicles**	**3+ vehicles**
Working population	2,433	22	481	876	1,054
Drove alone	1,852	0	263	773	816
Carpooled	373	22	99	89	163
Public Transportation	31	0	31	0	0
Taxicab/Motorcycle/Bicycle/Other	78	0	25	14	39
Walked	9	0	0	0	9
Worked from home	90	0	63	0	27

While the availability of cars offers enough transportation options to residents, it also strains the already meager income. Indeed, colonia residents have complained about the cost of vehicle maintenance and fuel. They would prefer a reliable public transit system so that they may reallocate their income to other pressing needs (Secretary of State 2006). Self-incorporation could potentially help to create that reliable mass transit system with the funds that will be raised from taxation, further improving mobility in the colonia while also freeing up funds in households' budget since data from ArcGIS Business Analyst estimate the yearly transportation expenses of an average household at $4,438.56. However, estimating the cost of providing a transit system in Cameron Park as well as the potential savings that such a system could generate

is beyond the scope of this paper. Texas agencies running colonia programs or other researchers

should delve deeper into the concept.

Ability to fund infrastructure
Sources of data

As can be seen in Appendix A, the state of Texas has assigned various state agencies

missions in colonias. Some of the agencies that have worked in colonias include TXDOT,

TWDB, TDHCA, The Office of the Secretary of State, etc. The fact that different agencies have

worked on different infrastructures makes the quest for inclusive data on a single colonia

challenging. Adding to the already complex web of agencies working across colonias, some

agencies such as TXDOT and TWDB ran projects that were executed in more than one colonia

simultaneously (An example can be found in Appendix D). It was thus difficult to follow the trail

of funding to determine how much was spent on each specific colonia.

The Office of the Secretary of State used to publish a quadrennial report that summarized

the activities of all agencies that worked in colonias, but that program was discontinued in 2017

after Governor Abbott vetoed a bill aimed at renewing funding for the program (Mekelburg

2017). The program thus lasted from 2006 to 2017. The data on colonia color classification

published by the Office of the Attorney General that I have used in this thesis originates from the

coordination efforts that the Office of the Secretary of State used to lead. Since those

coordination efforts ended, I had to contact every single agency to request relevant data. Those

efforts were not always fruitful, but I could obtain enough information on road infrastructure to

conduct an analysis. This analysis may constitute a basis for further research into infrastructure

costs in colonia because the data exist, but it is dispersed across different agencies.

In addition to the web of state agencies working in colonias, counties, special districts

(such as water or irrigation districts), and some neighboring cities participate in efforts to provide

services to colonias. In Cameron Park, water and wastewater are provided by the Brownsville

Water Utilities Board. I requested data from them, but they did not send me their records in time

to conduct an analysis. I have also requested road maintenance data from Cameron County, but

they have not sent them in time either. That is the reason why this study, which originally sought

to study three different infrastructure systems, finally focused exclusively on transportation. To

perform my analysis, I used pavement cost maintenance estimates from TXDOT as well as

TXDOT's road inventory GIS shapefile for the latest dates maintenance was performed on each

road. The shapefile contains extensive information on both the roads that the agency oversees

and those that it does not. Details on cost estimations are provided in Appendix B. From the

shapefile, I have also computed the total length of existing roads in Cameron Park.

As for potential revenue, I have used data from ArcGIS Business Analyst and the

Cameron County Appraisal District(CAD). CAD provided me with properties values, which I

used to estimate potential property tax revenue. I have used a rate of $0.5 per $100 of property

value because it is the tax rate set by El Cenizo for several consecutive years. As a matter of fact,

Wilson and Guajardo (2000) reported the same tax rate in their study, and data from Webb

County Appraisal Districts report the same tax rate for El Cenizo in 2020 (see table 20).

However, it is important to note that that rate is probably not the standard rate for self-

incorporated colonias. For example, Rio Bravo, which is located in the same county as El

Cenizo, set a tax rate of $0.512971 per $100 of property value. I nonetheless chose El Cenizo's

rate because they maintained that rate for at least 20 years, which clearly indicates a preference

of the governing body. As can be seen in table 20,, $0.5 per $100 of property value is not even

the voter approval rate, and the voter approval rate is the maximum rate that the governing body

may set without requiring an election. El Cenizo's retention of that rate might indicate a

reluctance of residents to spend higher shares of their revenue in taxes. It is especially important in regions where income is particularly low such as colonias.

Table 20. Property Tax Rates for Different Taxing Entities in Webb County

Taxing Entity	Adopted Tax Rate (1)	Maintenance & Operations Rate (2)	Debt Rate (3)	No New Revenue Tax Rate (formerly Effective Tax Rate) (4)	No New Revenue Tax M&O Rate (formerly Effective Maintenance and Operations Tax Rate) (5)	Voter Approval Tax Rate (formerly Rollback Tax Rate) (6)
City of El Cenizo	.500000	.399618	.100382	.506992	.405642	.595380
City of Laredo	.634000	.491536	.142464	.620730	.479847	.639105
City of Rio Bravo	.512971	.499207	.013764	.517384	.504931	.522603
Drainage District	.046420	.046420	.000000	.046420	.046473	.048099
Laredo ISD	1.39290	.966400	.426500	1.59570	1.03760	1.50110
LCC	.325509	.252857	.072652	.325509	.252858	.346198
United ISD	1.19884	.966400	.232440	1.20868	.966088	1.207185
WEBB CISD	1.16640	.966400	.200000	1.18036	1.015870	1.166400
Webb County	.412000	.375041	.036959	.461819	.507725	.562499

Source: Webb County Appraisal District

As for sales tax revenue, I will use ArcGIS Business Analyst to find all businesses located in Cameron Park as well as their estimated yearly volumes of sales. Local entities may levy sales taxes. By state law, that may go up to a combined 2% for all taxing entities in a specific region (The Comptroller of Public Accounts). Using geographic data from the Cameron County Appraisal District with tax information from the Comptroller of Public Accounts' shapefile, I have determined that no entity is currently levying taxes in Cameron Park. As an incorporated city, Cameron Park would thus have the possibility of setting a tax rate of 2%, which is the rate that I will use in this study.

The estimated revenues obtained from sales volumes will be added to the estimated property tax revenue to determine the total annual revenue that Cameron Park could raise as a city. The estimated revenue will then be compared to maintenance costs estimates to determine the potential of self-incorporation as a viable solution to the colonia problem. Maintenance costs estimates were adjusted for inflation, and detailed calculations are presented in Appendix B.

Pavement assessment model

My estimates for maintenance needs are aged-based, which means that I assume a steady deterioration of road pavement over time. However, TxDOT as well as the Minnesota Department of Transportation (MnDOT), mostly base their estimates of maintenance need on in-field inspection of roads. Both agencies developed a system of assessment of pavement that assigns a score to a road section out of a total of 100 points. MnDOT uses a system called Pavement Condition Index, while TxDOT seems to have created its own system. Figure 12 provides different types of maintenance work based on values of PCI. TXDOT also defines different types of maintenance, although it does not provide detailed information such as those provided in figure 12.

The types of maintenance work defined by TXDOT include preventive maintenance, light rehabilitation, medium rehabilitation, and heavy rehabilitation (Texas Department of Transportation, 2018). TXDOT has its own benchmark values based on its classification system. A road is considered good if its TXDOT assessment value exceeds 70. The road is considered fair if its assessment lies between 50 and 70, and anything below 50 is considered poor (Texas Department of Transportation). Figure 13 gives a time-based estimate of pavement deterioration. This study will mainly use the figure 13 graph coupled with infrastructure lifetime estimates from the Bureau of Economic Analysis (BEA). BEA estimates the useful lifetime of highway and street pavement at 45 years (Bennett et al., 2019).

Figure 12. Pavement Condition Index Benchmark Values
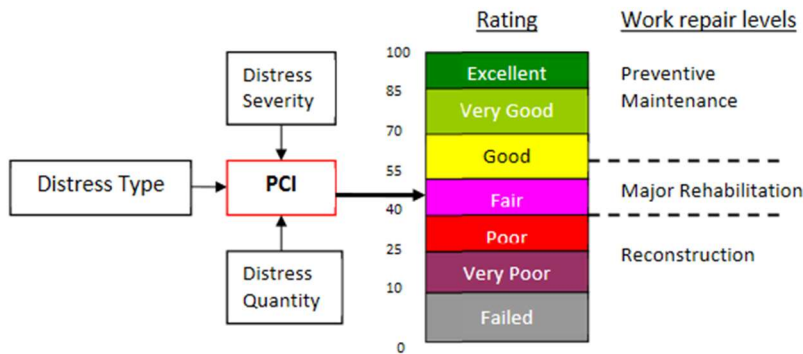
Source: Minnesota Department of Transportation

Figure 13. Life Cycle of Pavement Condition
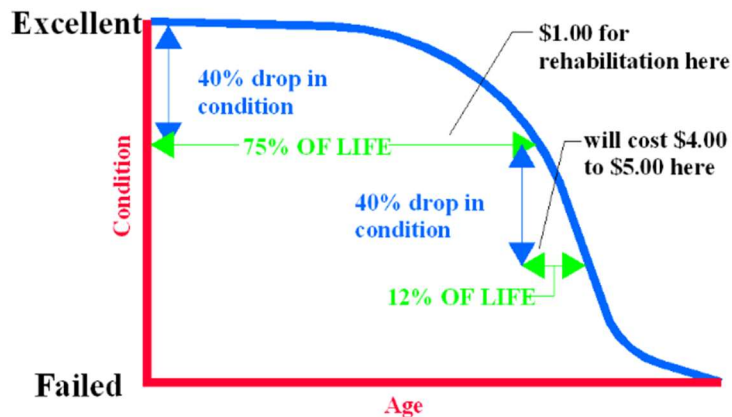
Source: Minnesota Department of Transportation

However, age-based assessment of pavement conditions is suboptimal because it does not consider the variability and unpredictability of factors that affect pavement condition. Some of those factors include road usage, weather conditions, weather events, pavement type, etc. (Texas Department of Transportation, 2018). Those elements cannot always be controlled to ensure that road deterioration will follow a predefined deterioration cycle. Moreover, taking into account all those elements in my analysis would require a substantive amount of time, and it would require engineering knowledge that I do not possess. Basing my analysis on BEA estimates and the

pavement lifecycle used by MnDOT should suffice for this study. Agencies working in colonias could use my findings to perform more advanced analyses because they possess the resources to do so.

Infrastructure cost

In this study, I will measure infrastructure costs in dollar amount per lane-mile, which is the total length of a roadway multiplied by the number of lanes it contains (Texas Department of Transportation, n.d.). I determined the total lane-mileage of Cameron Park by multiplying the total length of the roadways in Cameron Park by two because all roadways comprised two lanes. From this estimate, I excluded the roadway on the western boundary of the colonia because it is a state road maintained by TXDOT. The total lane mileage in the study is thus 22.9341.

Using figure 13 as a reference and assuming that 2018 was the year that the roads were initially paved (for the sake of simplicity), I calculated the latest year to perform preventive maintenance on those road sections. As per figure 12, the cutoff PCI value for preventive maintenance is 60, meaning that preventive maintenance should be performed after a 40% drop of quality from the time construction was completed. Figure 13 suggests that a 40% drop of quality occurs after 75% of the useful life. Using BEA's 45 years of useful life for highways and streets, that drop will occur after 33 years and nine months. Cameron Park will thus have until 2051 to perform preventive maintenance and not to have infrastructure repair costs quadruple.

Two examples of road maintenance work performed by TXDOT include resurfacing and seal coating. Resurfacing consists of removing the top layer of pavement and replacing it with a new one, while seal coating consists of first applying hot oil on the pavement then adding rocks to on top of that oil (Texas Department of Transportation, 2011). According to the Texas Department of Transportation (2011), both methods extend the lifetime of the roadway in addition to preventing further deterioration (see figure 14), but seal coating is cheaper than

resurfacing. I estimated the costs of seal coating one lane mile of a roadway to range from

$47100 to $87440 in June 2021 US Dollar, using the Highway Cost Index to adjust 2011 dollar

values (See Appendix B for more details). With the cost of maintenance determined, the next

step is to determine the frequency of maintenance.

Figure 14. Effect of maintenance on roadway pavement life cycle
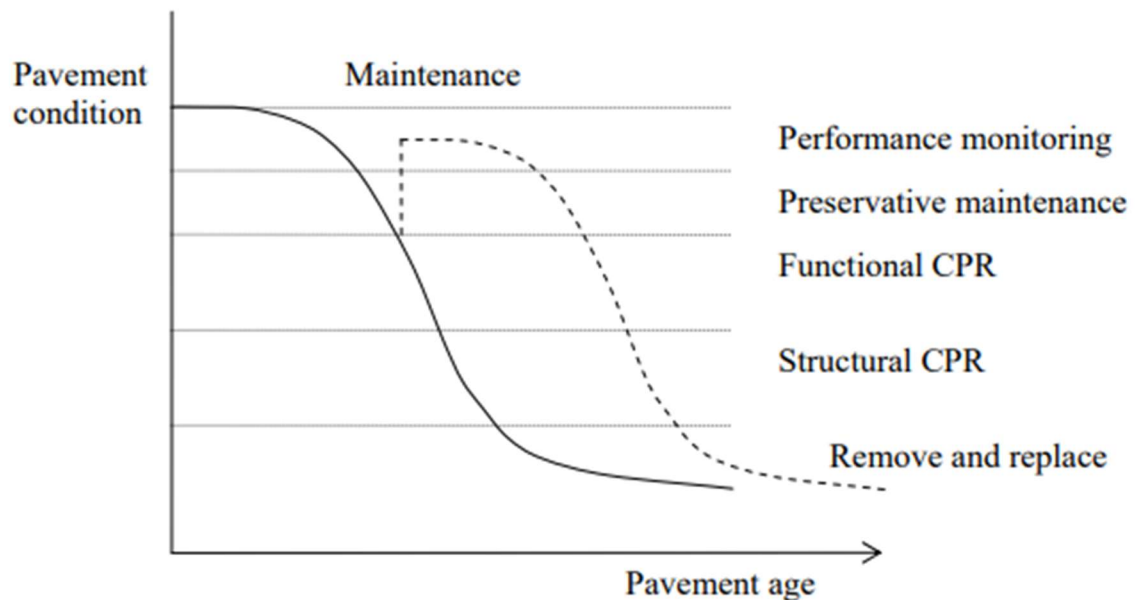
Source: Jung et al. (2008)

It is certainly good practice not to wait for all the 33 years that I determined from

suggestions of BEA and MnDOT to perform maintenance on existing roads. Maintenance at

regular intervals of time would undoubtedly be beneficial to Cameron Park because beginning

deterioration can be identified and remedied before they grow, thus increasing repair costs. Jung

et al. (2008) list several minor deteriorations such as joint cracks, joint separation, joint failure,

etc. TXDOT recommends applying seal coat every 6 to 8 years as a preventive measure,

although that recommendation is not always followed because of funding constraints (Texas

Department of Transportation, 2010, and Estakhri and Senadheera, 2003). My analysis will thus

consist in determining whether Cameron Park could raise sufficient revenue every eight years to

perform maintenance work on pavement. Since it is not uncommon for local entities to fail to raise enough revenue to perform seal coating, I will also determine whether Cameron Park could raise sufficient revenue in 10 years if eight years is not enough.

Figure 15. Roadways with Unidentified Pavement in Cameron Park
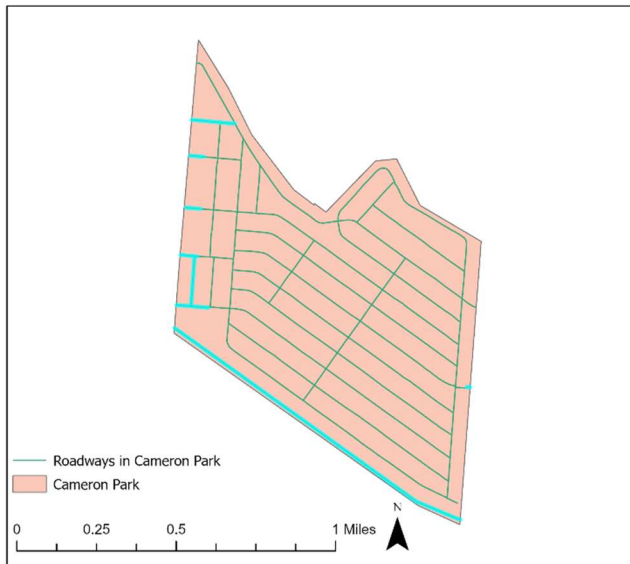
Source: Texas Department of Transportation

Given that Cameron Park contains 22.9341 lane miles of roadway, the total maintenance cost would range between $1,080,196.11 and $2,005,357.704 that the colonia would need to raise within eight years. Cameron Park would need to raise an annual average ranging between $135,024.514 and $250,669.713. For an interval of 10 years between maintenance works, the range would be $108,019.61 and $200,535.78.

Table 21. Cost of Roadway Maintenace in Cameron Park

Lane mileage	Minimum cost	Maximum Cost
1	$47,100	$87,440
22.9341	$1,080,196.11	$2,005,357.71

Table 22. Average Annual Revenue Required for Roadway Maintenance

Maintenance Frequency	Minimum Average annual tax revenue (USD)	Maximum Average annual tax revenue (USD)
6 years	180,032.685	334,226.285
8 years	135,024.5138	250,669.7138
10 years	108,019.611	200,535.771

Tax Revenues

The total assessed value of parcels in Cameron Park in 2020 was $84,062,807. With a property tax rate of $0.5 per $100 of property value, the city would annually raise $420,314. As for sales volumes, the colonia is estimated to have generated $26,074,000 of sales in 2020. Applying the 2% local tax rate would generate $521,480. Assuming that volumes of sales and property values remain constant over the years, Cameron Park would raise a total of $941,794 as a city. This total is amply sufficient to fund road maintenance, as evidenced in Table 23. Indeed, Cameron Park needs to save between 11.5% and 35.5% of its annual tax revenue to fund road maintenance, depending on the frequency and cost of maintenance. The crucial question to answer then becomes whether those shares are sustainable for a city.

Table 23. Potential Share of Municipal Revenue to Be Spent on Road Maintenance in Cameron Park for Different Frequencies of Maintenance

Maintenance Frequency	Minimum Share of Revenue (%)	Maximum Share of Revenue (%)
6 years	19.1	35.5

| 8 years | 14.3 | 26.6 |
| 10 years | 11.5 | 21.3 |

Source: Author's calculations

Indeed, having municipal revenue exceed road maintenance costs might not suffice to declare self-incorporation a viable solution to the colonia problem. A city needs to fund other infrastructure and services, and if road maintenance takes a relatively large share of the revenue, the city might lack the necessary funding for its other activities. What is then the sustainable share of municipal revenue to spend on road maintenance? That question requires more specialized studies, and it will not be answered in this paper. However, this paper can confirm that Cameron Park could raise enough revenue to maintain its roads properly. The figures used in this study come from TXDOT's suggestions on the optimal frequency of maintenance. Thus, while Cameron Park's roadway maintenance expenditures could potentially be higher than the average American city's, such levels of expenditures should not necessarily be seen negatively.

It has repeatedly been reported that American cities underspend on infrastructure maintenance. Miller (2007) reported that the United States ran a $1.6 trillion deficit in infrastructure spending through the year 2010. According to the same author, engineers also warned against the state of infrastructure in the United States. Kahn and Levinson (2011) have found that federal infrastructure funds are primarily used for new facilities or expansion of existing facilities, while the need for maintenance is more pressing. The findings of Kahn and Levinson (2011) are confirmed by more recent data from the US Census Bureau. Table 24, taken from the Census Bureau's state and local finances by levels of government and by state dataset, clearly shows the state and local government's preference of construction over other expenses in

terms of capital outlay. It is reasonable to assume that those other expenses are likely

maintenance expenses.

Table 24. State and Local Governments' Expenditures in Texas in 2019

Type of Expenditure	State	Local
Intergovernmental expenditure	32,071,780	2,963,930
Direct expenditure	132,137,591	158,503,727
Current operations	88,006,209	119,371,563
Capital outlay	19,800,104	26,397,736
Construction	16,261,114	21,466,130
Other capital outlay	3,538,990	4,931,606
Assistance and subsidies	3,783,241	1,030
Interest on debt	1,842,390	9,895,914
Insurance benefits and repayments	18,705,647	2,837,484
Exhibit: Salaries and wages	20,328,197	61,894,328

Source: US Census Bureau

In sum, even though I could not compare the share of revenues that would be spent on

infrastructure maintenance in Cameron Park to the typical share in American cities, I can attest

that Cameron Park would be able to maintain its roads as a city properly. Indeed, they have the

potential to raise enough revenue for that purpose. As for water and wastewater services, they are

already provided to Cameron Park by the Brownsville Utilities Board. There is little reason for

the colonia to seek to provide those services as a city because the quality of services provided by

the Public Utilities Board has been found adequate by the Office of the Secretary of State of

Texas. This would also ease pressure on the municipal government to provide a variety of services on a limited budget.

Other services to consider would be public safety (firefighters and police force), street lighting, and emergency services. According to Davies and Holz (1992), those are the services colonia residents demand the most. For emergency services, Cameron Park could rely on those available in Brownsville as that would be the most cost-effective way to ensure their residents have access to those services. Davies and Holz (1992) also pointed out that colonias complained about the lack of public transportation that connected them to essential emergency services in nearby cities. With the meager revenue obtained from taxes in Cameron Park, the municipal government could purchase vehicles dedicated to transporting people to emergency centers when problems arise. Not having to run an emergency service within the colonia would further ease pressure on the municipal government. As for the other services, this study does not have the necessary data to delve deeper into the analysis. Other researchers could further explore the subject as the findings would provide more tools to address the colonia problem. Given the lack of access to such data, the study cannot conclusively state that Cameron Park would be viable as a city. Nevertheless, the study proves that the colonia would have sufficient resources to fund some important services within its boundaries.

Conclusion
Key Takeaways

This study sought to determine whether self-incorporation could constitute a viable solution to the colonia problem. To this day, state policies have favored providing incentives for neighboring cities to annex colonias. However, cities keep avoiding colonias as they expand. As a result, the state government continues spending money in colonias to remedy several infrastructure problems. Self-incorporation would increase some colonias' autonomy, which will

alleviate the strain on state resources and enable the state to focus on colonias that face the most pressing needs. As a matter of fact, as colonias remain unincorporated, they lack the resources to remedy their problems, perpetuating their dependence on the state government. One of the consequences of this dependence is the fact that colonias whose infrastructure has improved after state action will need further state monetary assistance in the future to either maintain or expand the existing infrastructure. Cameron Park constitutes a perfect example of this phenomenon. Indeed, all roads in the colonia were paved by 2014 (and possibly by 2006), but maintenance work was then again performed on these roads in 2018. Since the community is unincorporated, funding for that maintenance likely came either from the state or the federal government. In other terms, the state government continues working in a colonia where it already worked in the past, while there are colonias whose state is a considerably worse condition than Cameron Park.

Cameron Park is indeed one of the colonias with the best quality of life even though it is not classified as a green colonia. A 1992 study already found that Cameron Park was one of the colonias with the best houses in the state with a great portion of brick houses, while many colonias houses are either ramshackle or abandoned trailers and train cars (Holz and Davies 1992). The reason for which Cameron Park is classified as a yellow colonia is the occurrence of flooding after heavy rains. Apart from that issue, all the essential infrastructure and services required by the state exist in Cameron Park: safe water system, adequate wastewater, paved roads, and garbage collection. This study has also found that Cameron Park resembles a typical Texan city of a similar population size in terms of employment. Houses are more affordable to Cameron Park homeowners than they are in the neighboring Brownsville. A variety of businesses also exist in the colonia, providing Cameron Park residents with essential goods and services from groceries to childcare.

The flooding problem that Cameron Park experiences is not due to the fact that it is a colonia but it is due to its location in a low altitude region. The problem is compounded by a lack of coordination between the government of the neighboring Brownsville and different drainage districts operating in the area (City of Brownsville, 2009). Opposing the self-incorporation of Cameron Park because of the flooding problem would thus be unfair because a well-established city such as Brownsville also struggles with the issue. Furthermore, annexation is unlikely to solve the problem because the city of Brownsville lacked a drainage capital improvement budget, and it severely underfunded maintenance of existing facilities (City of Brownsville, 2009). Although the city may have improved on that area since the adoption of the comprehensive plan in 2009, I doubt that they would be willing to increase their drainage spending by providing infrastructure to Cameron Park. As a matter of fact, Brownsville still has not annexed Cameron Park as can be seen in figure 16.

Figure 16. Expansion of Brownsville Through Annexation Between 2000 and 2020
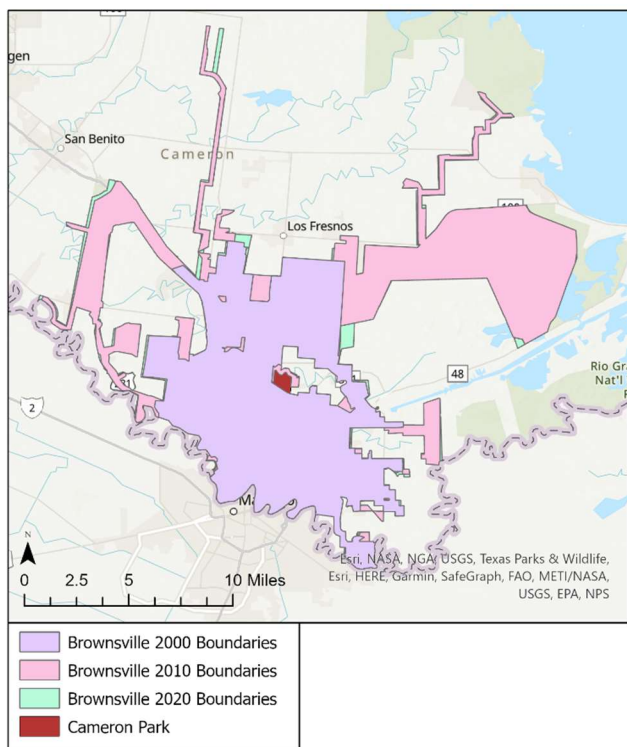
Source: US Census Bureau, TIGER Shapefiles

Besides the drainage issue, Cameron Park is thus in excellent condition for a colonia. Such colonias should no longer receive assistance from the state, and the state should focus on those colonias that are in dire need of infrastructure. The results of this thesis indicate that Cameron Park has sufficient resources to finance adequate road maintenance. To the question of the colonia's potential viability as a city, this study does not provide a definitive answer. It just paves the way for further studies on the topic.

Policy Recommendations

Although the study was not comprehensive with respect to different municipal services to be provided by a city government, some recommendations may be considered with the available information:

I. **Use the data from this research to convince cities to annex colonias:** The main reason that prevents cities from annexing colonias is that they see them as liabilities rather than assets. Indeed, they think (rightly) that those communities will not bring a significant increase in property tax, and the cost of providing infrastructures and services to such communities would exceed the benefits they could reap from them. However, this study proves that Cameron Park already possesses excellent infrastructures, and taxes that will be levied in the colonia would be enough to fund infrastructure maintenance. Economic activities are also vibrant in the community, which means that the city will not necessarily need to provide extensive assistance for food and other essential provisions.

II. **Encourage the self-incorporation of colonias that are in similar conditions as Cameron Park**: In the case that cities nonetheless remain reluctant to the idea of annexing colonias, self-incorporation would constitute a more sustainable solution to the colonia problem than constant state and federal grants. Colonias in a similar situation as Cameron Park would include colonias that have relatively strong economies (commercial activities), good infrastructure, sufficient

employment options either inside the colonia or in the neighboring cities, and transportation means to employment locations.

III. **Promote and support colonia businesses:** One of the findings of the study is that sales tax have higher revenue-raising potential than property taxes in Cameron Park. That is understandable because colonia residents seek to minimize housing construction as much as possible, and that leads to low property values. The study also found a correlation between dense regional road networks and commercial activities. Promoting businesses in colonias in such road-dense regions would include attracting travelers to stop in colonias to shop for diverse goods. More studies need to be conducted, but there certainly is a potential to promote commerce in colonias.

IV. **Provide assistance to the municipal government:** In their study of El Cenizo's self-incorporation, Wilson and Guajardo (2000) found that the governmental body of the newly incorporated communities faced difficulties with tax raising. They suggested that lack of experience and education in city management was the major reason for these issues. State agencies addressing the colonia problem could provide the city assistance in that respect.

Contributions to the Literature

The most obvious contribution to the literature is the in-depth analysis of a previously understudied solution to the colonia problem: self-incorporation. Durst (2015) only mentioned that as a potential solution, and he called for further studies on the topic. To this day, Wilson and Guajardo (2000) conducted the most elaborate study on the question of colonia's self-incorporation for infrastructure purposes. This thesis differs from Wilson and Guajardo's work by assessing the suitability of self-incorporation before the colonia petitions for incorporation. Indeed, Wilson and Guajardo (2000) examined El Cenizo's performance post-incorporation to determine whether they achieved the objectives they were pursuing with their self-incorporation.

This thesis, on the other hand, sought to determine whether a colonia has sufficient resources to even consider annexation. Wilson and Guajardo (2000) emphasized the many problems that El Cenizo faced in city management, one of the most serious being difficulties in meeting revenue forecast. However, they did not detail the forecast methodology. This thesis presented a detailed forecast process using sales tax and property tax as revenue sources for a colonia should it incorporate. The model used in this study can be replicated for other colonias to determine their ability to self-fund infrastructure. The present research project thus complements the works of Wilson and Guajardo, and together they provide a solid foundation for further research on the topic of colonias' self-incorporation for both policymakers and scholars.

In addition to complementing the existing literature and providing a novel analysis framework, this thesis also introduces a new method of research about colonias. In the introduction section of this paper, it was noted that the data maintained by the OAG classified colonias only for the 6 counties with the highest concentration of colonias. Classifying colonias is a task that required a considerable amount of work because it required the Office of the Secretary of State to send workers to individual colonias to assess the state of its infrastructure. As pointed out earlier in the paper, the program was discontinued in 2017 after a gubernatorial veto of a bill seeking to provide more funding for the program. Following the termination of the program, researchers face increased difficulties in studying colonias because they will certainly need to physically be in colonias to gather the most accurate data. However, that can be cost-prohibitive for a single researcher or even for an organization. Parcher and Humberson (2009) pointed out the issues associated with field research in colonias. They suggested that they were the reason why so many colonias are unclassified, and they proposed GIS as a solution for the scarcity of data in colonias. This thesis extensively relied on GIS as no field research was

conducted. Two particular tools which Parcher and Humberson did not use were used in this study, and they could be useful for researchers considering examining colonias: Appraisal District Data and ArcGIS Business Analyst. ArcGIS Business Analyst provides a significant amount of data on businesses such as their locations, the number of employees, the estimated sales volume, etc. A problem that was identified during the research for this thesis was that the boundaries of the US Census Bureau's designated places did not necessarily align with colonias' boundaries, which rendered the use of the Census Bureau's data unreliable for most of the colonias. With ArcGIS Business Analyst, on the other hand, the researcher can define the boundaries of an area, and the software will search for businesses within that defined area. The reliability of ArcGIS Business Analyst's data was discussed in the results section of the paper. As for the Appraisal District, they provide the most reliable data on land use and property value because they identify every property in the county yearly for taxing purposes. ArcGIS Business Analyst's data also aligned with the Appraisal District's data, which increased my confidence about the accuracy of the data used in the analysis.

Data from ArcGIS Business Analyst and from the Appraisal District also confirmed the findings of Giutsi (2003) on emerging colonias' microeconomies. Indeed, Giutsi performed field analysis and found that colonia residents started informal businesses that provided essential goods and services. She concluded that colonias were becoming viable communities because residents found ways to meet their needs even with their relatively low income. Using ArcGIS Business Analyst and data from the Appraisal District, this thesis showed that the economy of a colonia can be strong enough to constitute the main revenue source for the municipal government should the colonia self-incorporate. This fact is particularly impressive because property tax is typically the main revenue source for a municipality in the United States. Another

important detail to note is that the sales volume estimate was based only on the businesses identified by ArcGIS Business Analyst, which included fewer businesses than the Appraisal District. The sales volume will be even higher should call the Appraisal District's businesses to be included. Most of those businesses that did not figure in ArcGIS Business Analyst's data were mixed-use residential and commercial establishments. They likely are the informal businesses that Giutsi (2003) mentioned in her study. The Federal Reserve Bank also confirmed that colonia residents tended to start businesses from their residences (see fig. 17)

Figure 17. Example of an informal business in a colonia

A small business operated from a colonia resident's home lot

In sum, in addition to providing new tools for colonia analysis, the present thesis confirmed that colonias are developing strong economies. Even though more studies are needed to determine whether colonias can become viable cities on their own, the viability of colonias as communities where people can have access to decent housing, leisure activities, and essential commercial goods and services is difficult to deny. Indeed, colonias have changed since the time they first appeared. Although there are still communities where inadequate housing is still the norm, there are also several communities such as Cameron Park, where housing has significantly

improved, and thriving businesses have emerged. The images below testify to the improvement

of colonias.

Figure 18. Wooden house in Cameron Park

Figure 19. Brick house in Cameron Park

Source: Google maps

Source: Google maps

Figure 18 shows a wooden house in great condition, which is different from the typical

low-quality housing units for which colonias are known (see fig. 20). Colonias residents usually

start building their houses with any material that is available at the lowest possible cost, and they

improve their houses incrementally as their income increases. That explains why a mobile house

is attached to a wooden structure in fig. 20. A completed house such as the one shown in fig. 18

thus shows improvement of living conditions in colonias, and houses such as the one in fig. 18

are not rare in Cameron Park. Figure 19 shows a house in a brick house in great condition,

which is particularly noteworthy because the construction material is more expensive than wood.

It demonstrates that some colonia residents have reached a level of income, allowing them to

afford better construction materials. They thus have found ways to overcome the problems of

extreme poverty that they faced as they first appeared. It confirms the findings of some

researchers, such as Giutsi (2003), who claim that colonia residents actively work to improve

their living conditions.

Figure 20. Typical low-quality hybrid house in a colonia

These are "hybrid" colonia homes—an RV or mobile home with a wooden or cinder block structure attached. Photo credit: Federal Reserve Bank of Dallas

Future research directions

This studied used a model of municipal revenue that only had two sources of revenue: sales tax and property tax. However, municipalities have several other sources of revenues, which would increase the total municipal revenue of a colonia should it self-incorporate. Some of those revenue sources include municipal bonds, intergovernmental transfers (grants from either the state or the federal government), franchise taxes, etc. An important aspect of municipal governments' taxing power that was not taken into account in this study was potential tax exemptions. As a matter of fact, some properties are usually exempted from taxes, and there are some sales taxes that are exclusively reserved for the state government.

Another obvious consideration for further research that was not taken into account in this thesis is estimates of other infrastructure and services costs. Services such as the police force and firefighters usually constitute a significant portion of municipalities' expenditures. An in-depth study of such expenditures in colonias would be crucial to determine whether a colonia can

constitute fiscally viable cities. The possibility of agreements with neighboring cities for shared services should also be considered. That would not be a novel practice since colonias have received services from neighboring cities before. For example, the water and sewer service in Cameron Park is provided by the Brownsville Public Utilities Board. The possibility of such an agreement for police and firefighters should also be studied to determine the potential for colonias to become adequate cities.

Lastly, it would also be helpful to measure the relationship between the extent to which colonia residents engage in advocacy or other types of civic activities and the state of infrastructure in a given colonia. Michael Seifert – a former priest that served in Cameron Park for several years before eventually joining an organization that fights for the improvement of living conditions of marginalized communities in the Lower Rio Grande Valley region – revealed that Cameron Park residents have always worked hard for better lives. They never considered demanding governmental attention for the problems that they faced on a daily basis until different organizations started teaching them about voting and advocating for better infrastructure and services (Seifert, 2018). According to Seifert, the state of infrastructure in Cameron Park today is mainly due to the increased civic participation resulting from the effort of those different organizations. Colonias might thus not need to incorporate and just exert pressure on the existing governmental entities that have jurisdiction over them, such as counties, special districts, the state legislature, and different state agencies.

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Appendix A: Texas State Laws on Colonias

1987	SB 585	TWDB authorized to provide grants and loans for water and wastewater in colonias
1989	SB 2	Established the Economically Depressed Areas Program (EDAP) for water and wastewater provision
1991	SB 1189	Required local regulation of water and wastewater services in economically depressed areas
1991	SB 818	Set water quality standards and establishes a colonia plumbing law
1993	HB 2079	Counties authorized to request assistance from OAG to enforce state and health safety laws
1993	HB 997	Expanded receipt of funds to further assist economically depressed areas
1995	SB 542	Authorized cancellation of subdivisions not meeting infrastructure requirements
1995	SB 450	Authorized city of El Paso to conduct regional water and wastewater planning
1995	HB 2726	Classified and simplified allocation process for tax-exempt private activity bonds
1995	HB 1001	Authorized counties to impose platting and service requirements for people selling properties in economically distressed areas
1997	HB 2798	Allowed flexibility to Bond Review Board to administer the Private Activity Bond Allocation Program
1997	HB 2252	Provided funding for various colonia-related social service programs administered by the Center for Housing and Urban Development

1997	HB 540	Started educational programs to colonia residents through the Texas Department of Housing and Community Affairs
1999	SB 1421	Established provisions about subdivision regulations in economically depressed areas
1999	SB1287	Authorized the Department of Housing and Community Affairs to provide housing loans to low-income owner-builders through colonia self-help centers
1999	SB 89	Revised annexation regulations to require full provision of services within a time frame
1999	HB 1982	Allowed colonias to receive funding up to 5 years after annexation
2001	SB 649	Required training from recipients of EDAP assistance
2001	SB 322	Established the model subdivision program, model subdivision revolving loans, and self-help centers
2001	SB 312	Created colonia advisory committee and pilot program for water and wastewater loans for rural communities
2001	SB 198	Provided regulations concerning contract for deed
2001	SB 1	Established the colonia bootstrap program to enable families to purchase or refinance real property
2001	HB 2700	Authorized the Health and Human Services Commission to establish telemedicine pilot program in medically underserved areas
2001	SB 1296	Authorized the Texas Public Finance Authority to issue general obligation bonds to assist roadway in colonias

2003	HB 3420	Provided more funds for colonia roadways from general obligation bonds established under SB 1296
2003	HB 18750	Created a program for low interest loans for water projects and authorized larger political entities to provide water to distressed areas
2005	HB 775	Required a portion of Community Development Block Grant to be used for street lights in colonias
2005	HB 1823	Established more regulations on contracts for deed
2005	HB 1924	Called for deployment of more physicians in border counties
2005	HB 467	Authorized EDAP applicants to enforce subdivision regulations
2005	HB 425	Authorized counties within 100 miles of international border and containing a city with a population of 250,000+ residents to prevent substandard development, be eligible for EDAP, and receive assistance from the Office of the Secretary of State of Texas
2005	SB 1202	Increased the number of agencies involved in the colonia issue
2005	SB 827	Required the creation of a colonia identification system

Source: The Office of the Secretary of State of Texas

Appendix B: Highway Cost Index Definition and Calculations

The Highway Cost Indez (HCI) is an indicator that assesses assess inflation of highway construction and maintenance prices. Highways specialists have found that price inflation for those materials does not correlate with inflation in the general economy. The HCI was thus designed to make the most accurate estimates of highway construction costs (Huntsman et al, 2018).

The latest Texas HCI table uses June 2012 as the base year. However, the data that I obtained for seal coating and resurfacing were published in July 2011. I thus had to adjust those amounts to the June 2012 12-month HCI, converting the June 2012 amount to the June 2021 HCI. The Texas Department of Transportation estimated the value of seal coating between $35,000 and $65,000. Resurfacing costs were estimated to range from $105,000 to $125,000.

The formula to obtain the HCI for a specific month is $HCI = \frac{Current\ price}{Base\ price} \times 100$ (Huntsman et al., 2018). From this formula, I derived that $Base\ price = \frac{Current\ price}{HCI} \times 100$. If we have two prices c_1 and c_2, with two different HCI i_1 and i_2, then $Base\ price = \frac{C1}{i1} \times 100 = \frac{c2}{i2} \times 100$. From this equation, I derived $c2 = c1 \times \frac{i2}{i1}$ which enabled me to adjust prices from a year to another. Since the values I obtained from TXDOT dated from July 2011, I first had to adjust it to the June 2012 index, and from there, I could adjust it with the June 2021 index.

I used 12-month HCI estimates obtained from the Texas Department of Transportation (2012) and (2021) to perform the calculations.

2011 Dollar Amount	August 2011 HCI (1997 base)	June 2012 HCI (1997 base)	2012 Equivalent	June 2012 HCI (2012 base)	June 2021 HCI (2012 base)	June 2021 Equivalent
35,000	170.42	187.46	38,499.59	100	122.3	47,084
65,000	170.42	187.46	71,499.24	100	122.3	87,443.57
105,000	170.42	187.46	115,498.77	100	122.3	141,254.99
125,000	170.42	187.46	137,498.53	100	122.3	168,160.70

Appendix C: Land Uses in Cameron Park Parcels

Land Use	Frequency
UNCLASSIFIED	205
C-AUTOMOTIVE SERVICE CENTER	1
C-CAR WASH	1
C-CLUBHOUSES	4
C-CONVENIENCE STORE	3
C-GROCERY STORE	2
C-LAUNDROMAT	1
C-MEDICAL OFFICE W/O ELEV	1
C-NEIGHBORHOOD SHOPPING STRIP	4
C-RESTAURANTS	3
C-RETAIL STORE	17
C-SERVICE GARAGE	5
C-SMALL OFFICE W/ELEV	1
C-SMALL OFFICE W/O ELEV	6
C-STORAGE WAREHOUSE	1
CLSROOM-AVG-CLS-D	1
MULTI-PLEX MASONRY 2	1
MULTI-PLEX MASONRY 4	1
MULTI-PLEX VENEER 3	3
MULTI-PLEX VENEER 4	3
R-RESIDENCE FRAME 1	7

R-RESIDENCE FRAME 2	137
R-RESIDENCE FRAME 2 MINUS	31
R-RESIDENCE FRAME 2 PLUS	2
R-RESIDENCE FRAME 3	306
R-RESIDENCE FRAME 3 MINUS	76
R-RESIDENCE FRAME 4	85
R-RESIDENCE FRAME 4 MINUS	22
R-RESIDENCE FRAME 5	5
R-RESIDENCE FRAME 5 MINUS	1
R-RESIDENCE MASONRY 2	23
R-RESIDENCE MASONRY 2 MINUS	5
R-RESIDENCE MASONRY 3	89
R-RESIDENCE MASONRY 3 MINUS	17
R-RESIDENCE MASONRY 4	47
R-RESIDENCE MASONRY 4 MINUS	26
R-RESIDENCE MASONRY 4 PLUS	2
R-RESIDENCE MASONRY 5	12
R-RESIDENCE MASONRY 5 MINUS	2
R-RESIDENCE MASONRY 6	1
R-RESIDENCE STUCCO 2	3
R-RESIDENCE STUCCO 3	19
R-RESIDENCE STUCCO 3 MINUS	4
R-RESIDENCE STUCCO 4	16

R-RESIDENCE STUCCO 4 MINUS	5
R-RESIDENCE STUCCO 5	5
R-RESIDENCE STUCCO 5 MINUS	1
R-RESIDENCE STUCCO 5 PLUS	2
R-RESIDENCE STUCCO 6	1
R-RESIDENCE VENEER 2	3
R-RESIDENCE VENEER 3	51
R-RESIDENCE VENEER 3 MINUS	6
R-RESIDENCE VENEER 4	93
R-RESIDENCE VENEER 4 MINUS	9
R-RESIDENCE VENEER 4 PLUS	2
R-RESIDENCE VENEER 5	10
R-RESIDENCE VENEER 5 MINUS	1
RC-ENCLOSED SHED STEEL-1	1
RC-PLEX FRAME 2	8
RC-PLEX FRAME 3	19
RC-PLEX FRAME 4	6
RC-PLEX FRAME 5	3
RC-PLEX MASONRY 2	3
RC-PLEX MASONRY 3	13
RC-PLEX MASONRY 4	6
RC-PLEX VENEER 3	7
RC-PLEX VENEER 4	14

RC-PLEX VENEER 5	6
RC-TRAVEL TRAILERS 1	19
RC-TRAVEL TRAILERS 2	1
RCM-MOBILE HOME 2	3
RCM-MOBILE HOME 3	4

Source: Cameron County Appraisal District

There is a total of 1135 identified parcels in Cameron Park. I simplified this classification in the following way:

Land use	Codes included
Residential	R, Multiplex Masonry 2, Multiplex Masonry 4, Multiplex Veneer 3, Multiplex Veneer 4
Commercial	C
Mixed use Residential-Commercial	RC

Appendix D: Examples of Projects Targeting Several Colonias at once

Project Number	Project Name	Colonia	County	Start Date	End Date	Status	Project Scope
		Tanquecitos South Acres	Webb	7/26/2012	7/26/2016	Complete	County
		Tanquecitos South Acres II	Webb	7/26/2012	7/26/2016	Complete	County
712013	Colonia Self-Help Center						
		Colonia Lucero del Norte	Hidalgo	6/26/2012	6/26/2016	Complete	County
		Country View Subd.	Hidalgo	6/26/2012	6/26/2016	Complete	County
		El Charro #2	Hidalgo	6/26/2012	6/26/2016	Complete	County
		Indian Hills East	Hidalgo	6/26/2012	6/26/2016	Complete	County
		Indian Hills West	Hidalgo	6/26/2012	6/26/2016	Complete	County
712023	Colonia Self-Help Center						
		Cameron Park	Cameron	1/17/2013	1/17/2017	Complete	County
		Cielito Lindo	Cameron	1/17/2013	1/17/2017	Complete	County
		La Paloma	Cameron	1/17/2013	1/17/2017	Complete	County
		Laguna Escondida Heights #2	Cameron	1/17/2013	1/17/2017	Complete	County
		Lasara	Willacy	1/17/2013	1/17/2017	Complete	County
714213	Colonia Self-Help Center						
		Cienegas Terrace	Val Verde	8/4/2014	8/4/2018	Complete	County
		Escondido Estates	Val Verde	8/4/2014	8/4/2018	Complete	County
		Lake View Addition	Val Verde	8/4/2014	8/4/2018	Complete	County
		Town of Comstock	Val Verde	8/4/2014	8/4/2018	Complete	County

As of 8/31/2014
Rev. 11/21/2014

Source: Office of the Secretary of State of Texas

Appendix E: Funding for Water and Wastewater in Cameron Park

Below is a newspaper article covering the project to provide wastewater and water service to the entire Cameron Park colonia. The article was sent to me alongside public records on water and wastewater that I requested from the Brownsville Public Utilities Board. The article highlights the collaborative efforts of the state government, the county, the federal government, and a nonprofit to fund the project. It demonstrates that servicing colonias with infrastructures requires a significant of resources. Colonias in a relatively good state should seek to become independent so the different actors working to resolve the colonia problem can focus on communities in dire need.

HEADLINES

Governor, PUB Officials Break Ground on Colonia Water Project

A construction crew places a section of water pipeline in Cameron Park. The $5.2 million project will be complete by October 1994.

After years of promises and dashed hopes, the residents of Cameron Park are finally getting the water and sewer service they have lived without since the colonia sprang up more than twenty years ago.

In July 1993, state and city officials broke ground on a $5.2 million project to extend the Public Utilities Board's water and wastewater system lines to the colonia. Officials estimate by October 1994, more than 800 colonia homes will be connected to the PUB system.

By October 1994, more than 800 homes will be connected to the PUB system

Located at the city's northern end, Cameron Park is the largest of several colonias scattered across Cameron County, which sprouted up during the 1970's, before zoning regulations were changed to require developers to arrange for the extension of water and wastewater lines to new subdivisions.

For years, a majority of colonia residents have lived without indoor plumbing. Forced to improvise, families survive on bottled water or water purchased from the few colonia residents with water service.

Among the notables on hand for the ground-breaking ceremony was Texas Governor Ann Richards, who called the start of construction a "dream come true."

"Nothing in my political life has made me as happy as seeing this happen," Governor Richards told an audience of community leaders and colonia residents.

Meanwhile, PUB, this year, be-

gan a similar project across town to bring wastewater service to more than 90 homes in the Hacienda Gardens subdivision. The $300,000 project, scheduled for completion in October 1994, comes three years after PUB installed water lines to the colonia.

The projects came about through the joint efforts of local, state and federal agencies, which put up the money, and Valley Interfaith, a grassroots organization whose members lobbied for the projects' passage by the state Legislature.

The work is being jointly financed by the Environmental Protection Agency and the Texas Water Development Board, through its Economically Distressed Areas Program. Locally, Cameron County will put up 5 percent of the cost of the project, with PUB raising another 29 percent through an EDAP loan.

To help defray the cost of connecting service to their homes, residents will be eligible to apply for Farmer Home Administration grants. PUB will provide an employee on site to assist residents through the loan-application process.

Governor Ann Richards attended the ground-breaking ceremony for PUB's Cameron Park project.

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