Small Businesses and Their Impact on Texas

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Small Businesses and Their Impact on Texas
Executive Summary

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Small Business Activity Study

Key Takeaways

- In 2012, small firms, defined by the Small Business Administration as those with fewer than 500 employees, represented 98.6% of Texas employers. A more useful definition may be SBF100 firms (those employing less than 100 workers) by putting more emphasis on the most entrepreneurial sector of the economy.

- In 2012, SBF100 firms hired roughly 3 million workers and had an estimated total economic impact of $844 billion in gross output.

- Of these firms, the construction ($68.8 billion), professional-scientific & technical services ($68.1 billion), retail trade ($62.4 billion) and health & social services ($53.6 billion) sectors had the most impact.

- SBF100 firms in 2012 generated $13.866 billion in state revenue and $14.97 billion in federal revenue.

- Studies have shown that SBF 100 firms provided experience and on-the-job training to a broader segment of the population, on average, than larger firms do.

- Studies have also shown that children of small business owners are more likely to start small businesses of their own.

- A growing portion of the workforce, known as "giggers", have found autonomy and increased income by putting their higher skillsets to work in multiple temporary work assignments. This portion is projected to rise, placing growing importance on the need to understand the issues associated with it.

- Recent studies have shown that job creation does not depend on firm size, but rather on firm age. In other words, newer small firms likely create more jobs (on their way to becoming large firms) than older small firms.

- Rural areas in Texas, as well as the entire US, are transitioning from an agricultural and manufacturing-dominated economy to a more sustainable and diverse urban-rural interdependence model.

- Cities with a higher concentration of creative class workers are more resilient in turbulent economic times, but studies point to the lack of focus on negative impacts this has on low-income workers dealing with higher costs of living.

- Small business development is greatly discouraged by the lack of capital, assets, information, and proper management.

Executive Summary

The Office of the Governor contracted with CCBR to investigate the economic impact of Texas businesses with fewer than 100 employees and to identify factors that contribute to their success or failure. In order to achieve this goal, a multi-prong approach was taken that includes:

- *Economic analyses estimating the impacts of small business based on region, industry and size*

- *Exploring and analyzing issues of small business ownership, birth and death rates of small businesses and their impacts on job creation and destruction*

- *Examining processes associated with export opportunities for small businesses in Texas, as well as providing input from a sample of city managers and economic development directors*

- *Compiling a summary of relevant literature identifying potential indicators that may impact small business activity*

This executive summary outlines and summarizes those findings. A full report with background information, as well as reference materials is available online.

Combined Economic Impacts of Small Businesses with Fewer than 100 Employees

The Small Business Administration (SBA) state profile for Texas shows that in 2012 small firms represented 98.6 percent of all employers.[1] In 2013, firms with fewer than 100 employees held the largest share of small business employment equating to approximately 32 percent of all workers in the Texas economy.[2] The SBA defines small business as firms having fewer than 500 employees. However, keeping in line with the previously conducted studies, *Little Companies, Big Impacts*, small businesses here is defined as firms with fewer than 100 employees (SBF100). This gives attention to the smaller firms that are usually linked with the entrepreneurial spirit of the American economy.

The present study focuses on SBF100 and estimates their contributions in Texas using economic multipliers. In addition, a series of maps demonstrate the relative strength of these small firms in association with six industrial clusters based on 28 Workforce Development Areas (WDAs).[3] SBF100 is separated into employers and nonemployers.[4]

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[1] SBA. 2015. *Small* Business Profile: Texas https://www.sba.gov/sites/default/files/advocacy/TX.pdf
[2] SBA. 2015 https://www.sba.gov/sites/default/files/advocacy/SB%20Profiles%202014-15_0.pdf
[3] Clusters as defined by the Governor's Office; See http://www.twc.state.tx.us/partners/workforce-development-boards-websites for a list of Texas Workforce Development Areas.
[4] Non-employers are defined as a business without paid employees. Source: SBA Firm Data Size, https://www.sba.gov/advocacy/firm-size-data#ne

Economic impact studies show the effects that changes in production or employment from an industry (the direct effects) have on suppliers of that industry (the indirect effects) and on the rest of the regional economy through changes in spending by households due to jobs supported by the direct and indirect impacts (the induced effects). In quantifying these changes, the studies can show the importance of the industry to the region.

The data shows that small employer firms with fewer than 100 employees hired around 3.0 million workers in 2012 (see Table 1). Small firms represented nearly 98 percent of the 398,600 private firms for that year, and their 2.9 million jobs accounted for 31.9 percent of the 9.4 million jobs in Texas.[5]

Table 1

Texas Small Business Facts (2012)		
Texas	**2012 estimates**	
Number of small businesses in Texas according to SBA	2,412,717	*
Number of small businesses in Texas with fewer than 100 workers	2,404,854	**
Small businesses with employees according to SBA	398,593	*
Small businesses with employees for firms with fewer than 100 workers	390,730	**
Small businesses nonemployers according to SBA	2,014,124	***
Total workers employed by small businesses according to SBA	9,350,029	*
Workers employed by all sizes businesses according to SBA	4,275,868	*
Workers employed by small businesses with fewer than 100 workers	2,978,361	**
* Small Business Administration definition of small business		
** Definition used in the present study		
*** Also definition used in the present study as non-employers		

Using 2012 as the base year, the estimated total economic impact of small employer firms with fewer than 100 employees, measured in terms of output, i.e. production, was $844 billion.[6] The total employment impact was estimated at 5.4 million jobs and their direct value added, i.e. gross state product (GSP), impact was calculated to be $478 billion.[7]

When adding the impacts of nonemployers, the combined total economic impact of SBF100, in terms of production, was roughly $1.02 trillion. The combined total employment impact was estimated at 6.6 million jobs, and the combined GSP impact was calculated to be at $586.1

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[5] The Census Bureau through the Statistics of U.S. Businesses (SUSB) provides national, state and metropolitan data on enterprises by size and industry. An enterprise is a business with one or more establishments under common ownership or control. For the present study, "a firm is defined as part of an enterprise tabulated in a particular industry, state or metropolitan area." Taken from www.census.gov/econ/susb/introduction.html; on January 25, 2010.

[6] These impacts should be interpreted as the upper limit impacts from these firms. The lower limits are shown as the direct impacts. Therefore, an average from the Total Impacts and the Direct Impacts for each industry will indicate a moderate estimate of the impacts.

[7] Appendix A in *Economic Impact of Small Businesses with Fewer than 100 Employees* document presents gross state product estimates by the Bureau of Economic Analysis and by the IMPLAN group.

billion. These small firms also produced a combined $13.9 billion in state revenue and a combined $14.9 billion in local governments' revenues.

Employment of SBF100

Chart 1

Employment shares by firms with fewer than 100 workers with respect to total employment * (2012)
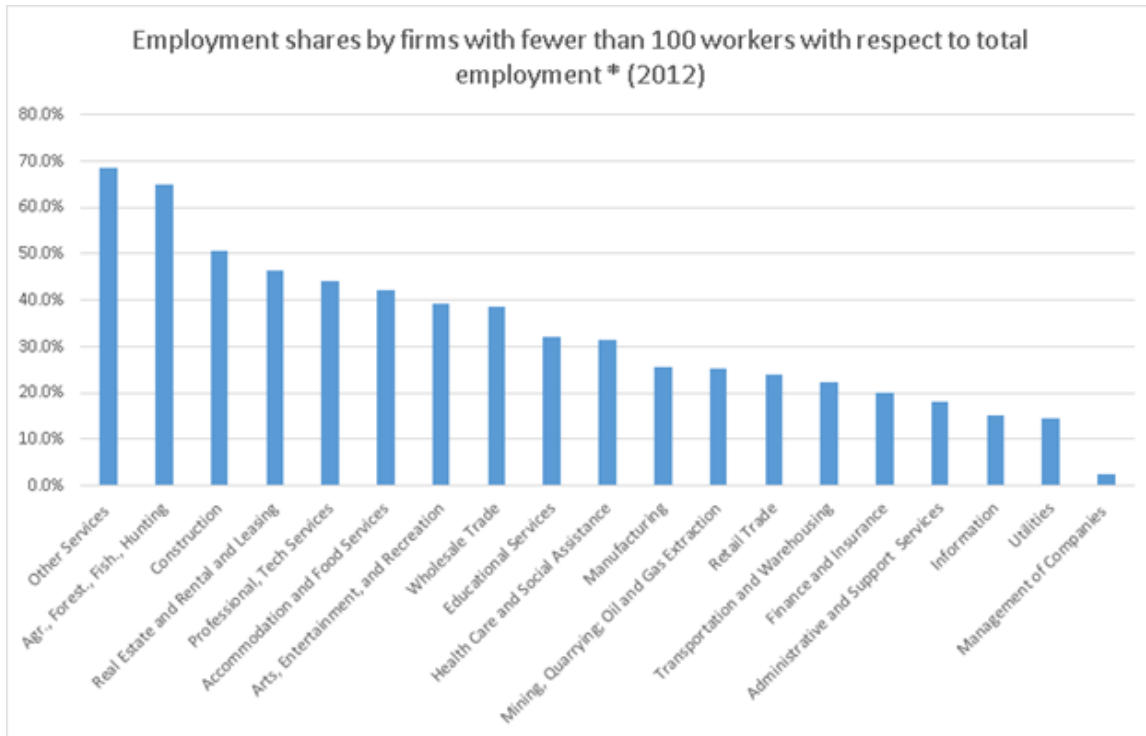
*Only direct employment

Nonemployers and employers with fewer than 100 workers totaled 3.7 million direct jobs Out of the 20 sectors, health & social services ranked the highest with a total estimated employment impact of 769,000 jobs, followed by construction with over 749,000, and retail trade with over 718,000 jobs.

Another way to understand the contributions of small firms is to calculate their relative importance by sector. Chart 1 shows sector rankings according to the percentage of employment by SBF100 with respect to the total in that sector.

Value Added

Value added is a good measure of the economic contributions of an industry to the surrounding area because it takes account of where the production of goods and services occurs. Table 12 exhibits the combined estimated value added impacts from nonemployers and employers with

fewer than 100 employees. The total direct value added of $320.4 billion and total impact of $586.1 billion in Texas for 2012.[8]

Table 2

TEXAS: EMPLOYER AND NON-EMPLOYER VALUE ADDED IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Millions of dollars for 2012)				
2-digit NAICS and Description	**Direct**	**Indirect**	**Induced**	**Total**
23 Construction	$30,510	$24,251	$14,048	$68,809
54 Professional- scientific & tech svcs	$41,539	$12,034	$14,549	$68,122
44-45 Retail trade	$44,240	$3,056	$15,086	$62,381
62 Health & social services	$27,724	$9,582	$16,277	$53,583
31-33 Manufacturing	$15,858	$23,642	$12,999	$52,499
42 Wholesale Trade	$23,534	$7,525	$9,795	$40,854
53 Real estate & rental	$27,139	$4,833	$6,988	$38,960
81 Other services	$21,081	$6,195	$6,601	$33,877
21 Mining	$20,567	$7,489	$4,910	$32,967
52 Finance & insurance	$16,123	$8,893	$7,433	$32,449
72 Accommodation & food services	$12,606	$6,557	$6,484	$25,647
56 Administrative & waste services	$12,619	$5,284	$5,463	$23,365
48-49 Transportation & Warehousing	$12,324	$5,962	$4,284	$22,571
51 Information	$4,587	$2,224	$2,080	$8,891
22 Utilities	$3,246	$1,991	$1,255	$6,493
71 Arts- entertainment & recreation	$3,032	$1,221	$1,216	$5,468
61 Educational svcs	$2,293	$975	$1,428	$4,696
55 Management of companies	$753	$669	$631	$2,053
11 Ag, Forestry, Fish & Hunting	$599	$533	$292	$1,424
92 Government & non NAICs	$30	$479	$455	$963
Total	$320,405	$133,396	$132,273	$586,073

The construction sector has the largest impact ($68.8 billion) followed closely by professional, scientific and technical services ($68.1 billion), retail trade ($62.4 billion) and health & social services ($53.6 billion).

Output

In 2012, output generated by SBF100 amounted nearly $1.02 trillion. Table 3 shows the ranking with the construction sector at the top of the list ($158.3 billion) followed by the manufacturing sector ($134.8 billion), and the professional, scientific & technical services ($107.9 billion).

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[8] This value added does not include the government sector. See the Appendix A for disaggregated value added (Gross State Product) data from the BEA.

Table 3

2-digit NAICS and Description	Direct	Indirect	Induced	Total
TEXAS: EMPLOYER AND NON-EMPLOYER OUTPUT IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Millions of dollars for 2012)				
23 Construction	$80,527	$52,835	$24,967	$158,329
31-33 Manufacturing	$45,328	$60,723	$28,836	$134,887
54 Professional- scientific & tech svcs	$63,428	$19,227	$25,258	$107,912
62 Health & social services	$48,258	$18,029	$28,007	$94,294
42 Wholesale Trade	$34,429	$12,756	$16,820	$64,005
81 Other services	$35,927	$11,273	$11,446	$58,647
52 Finance & insurance	$28,023	$15,574	$13,274	$56,870
21 Mining	$32,008	$14,060	$8,506	$54,574
44-45 Retail trade	$28,845	$4,092	$20,199	$53,136
53 Real estate & rental	$32,177	$7,363	$10,371	$49,911
72 Accommodation & food services	$23,958	$12,968	$11,440	$48,366
48-49 Transportation & Warehousing	$25,475	$12,116	$7,645	$45,236
56 Administrative & waste services	$22,348	$9,131	$9,494	$40,973
51 Information	$6,853	$3,988	$3,709	$14,550
22 Utilities	$5,671	$3,386	$2,097	$11,154
71 Arts- entertainment & recreation	$5,805	$2,069	$2,135	$10,009
61 Educational svcs	$4,553	$1,683	$2,458	$8,694
11 Ag, Forestry, Fish & Hunting	$1,838	$1,413	$684	$3,935
55 Management of companies	$1,301	$1,085	$1,095	$3,481
92 Government & non NAICs	$84	$505	$484	$1,073
Total	$526,835	$264,277	$228,924	$1,020,036

When calculating percentages of the direct output produced by SBF100 firms, with respect to their sector's output, the other services sector ranks first place with 67.0 percent of the value added. It is followed by construction with 52.0 percent; professional, scientific and technical services with 46.6 percent, arts, entertainment and recreation with 43.5 percent and health care and social assistance with 36.6 percent.

Fiscal Impacts

Another important impact is the generation of tax and other nontax revenues to the state and local governments. These revenues come in the form of sales, property, severance taxes and in fees and other nontax revenues.

Table 4

| TEXAS: EMPLOYER AND NON-EMPLOYER FISCAL IMPACTS (Dollars 2012)	
State of Texas revenues	$13,866,400
Local governments revenues	$14,965,900

For the state of Texas and all local governments in the State, the activities of SBF100 firms, generated $13.87 billion in state revenue and $14.97 billion in local governments revenue in 2012. As mentioned before, these revenues include sales and property taxes. Additionally, not included in the previous revenues, the state of Texas collects $39.7 million in franchise taxes and $251.3 million in Social Security contributions.

Clusters and small businesses by Workforce Development Areas (nonemployers firms only)

In this section, six clusters are mapped into 28 Workforce Development Areas (WDAs), indicating the relative strength of the cluster by the portion of small businesses with fewer than 100 employees with respect to the total number of businesses in the respective cluster.[9] These clusters are: petroleum refining and chemical products, biotechnology and life sciences, energy, information and computer technology, advanced technologies and manufacturing, and aerospace and defense. Based on the location quotients, each map shows WDAs that have the importance of that sector cluster above the rest of the State. The WDAs are mentioned below for each sector.

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[9] The State Legislature identifies industry clusters as: "… a concentration of businesses and industries in a geographic region that are interconnected by the markets they serve, the products they produce, their suppliers, the trade associations to which their employees belong, and the educational institutions from which their employees or prospective employees receive training" in the SB275, Government Code, Section 481.001 (6). Taken from Texas Industry Cluster Initiative Background at the Texas Workforce Commission web site: www.twc.state.tx.us/ticluster.html

Petroleum Refining and Chemical Products Cluster	Information and Computer Technology Cluster
• Permian Basin • Panhandle areas	• Capital Area • North Central Texas • Dallas
Biotechnology and Life Sciences Cluster	**Advanced Technologies and Manufacturing Cluster**
• North Central Texas • Capital Area • Gulf Coast	• Capital Area • North Central Texas • Dallas
Energy cluster	**Aerospace and Defense Cluster**
• Permian Basin • North Texas	• Middle Rio Grande • Capitol Area • Brazos Valley
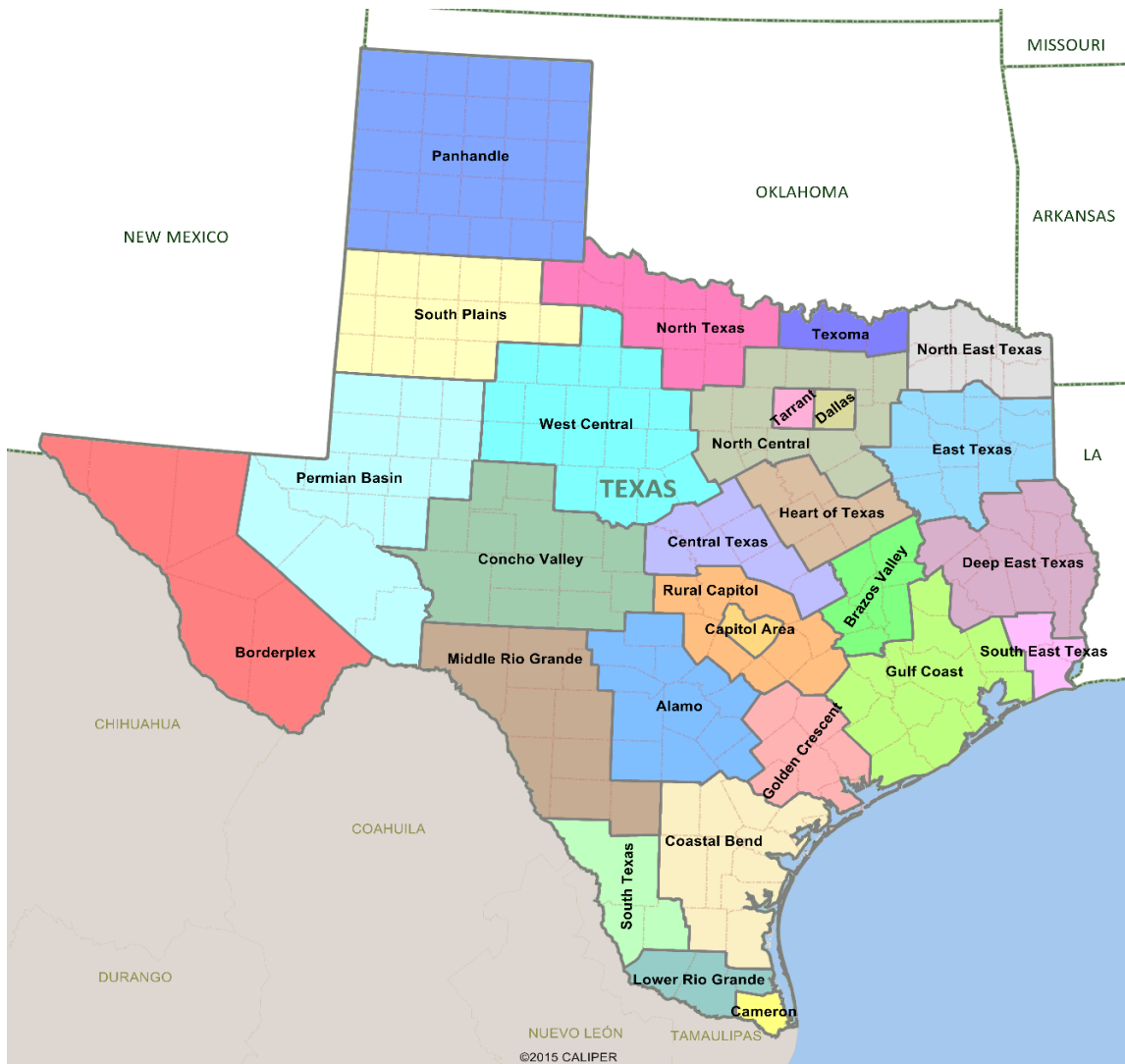
Preliminary Results for Cross-Section Study of Establishment Sizes by Sector and County-Level Income in Texas for 2012

 Several small businesses have positive impacts on wages but the majority do not pay higher wages than their larger competitors. To understand the economic impact of small businesses, particularly those with fewer than 100 employees, in the state of Texas, this part of the study analyzes the relationship between the relative importance of these firms in their respective industries and the level of households' median income across counties in the state. The study finds that in some industries the higher percentage of very small firms is positively related to higher incomes. On the contrary, in other industries this relationship is reversed: high percentage of small businesses are related to lower than average county income.

These results are consistent with studies that show that smaller firms do not hire the more educated and skilled workers but they provide experience and on-the-job training to a broader segment of the population than larger firms on average. In particular, a worker may gain more prompt exposure to a broader segment of the company's business in a smaller firm, due to a higher degree of integration across functions within the firm (Shaffer 2006).

The study partially follows Shaffer's paper on the relationship of counties' median household income growth and the size of firms in the U.S. Similar to Shaffer's paper, the present study uses a cross-section sample of counties and analyzes how a set of variables, including the relative size of businesses by sector, affects counties' incomes. Also, similar to Shaffer's study, we used percentages of units of small businesses by sector rather than the employment numbers. Different from that mentioned paper; here the dependent variable is counties' median household income level instead of income growth. What's more, instead of four industrial sectors here six sectors are studied: professional, scientific, and technical services; health care and social assistance; manufacturing; transportation and warehousing; construction; and other services.

The healthcare and social assistance sector results show a statistically significant positive relationship between counties median household income and the percentage of small business establishments. Results for the professional, scientific, and technical consultation services sector demonstrate a statistically significant negative relationship for firms with more than 20 and fewer than 50 employees.

On the other hand, the manufacturing sector is different from the previous sectors in that there are significant relationships between the size of the firms and the counties' income, but with a negative sign in one case, and a positive sign in another case.

Special Topics: Small Business Ownership, Birth and Death Rates of Small Businesses and Their Impacts on Job Creation and Destruction

This section examines self-employment and how it relates to small business ownerships, rates of birth and death rates as well as impacts on job creation and destruction.

Self-Employment in Texas and the United States

It is important to understand that the United States Census Bureau defines a worker's class in eight different categories:

- Employee of a private for-profit company
- Employee of a private not-for-profit organization
- Local government employee
- State government employee
- Federal government employee
- Self-employed in not incorporated business
- Self-employed in incorporated business
- Working without pay in family business or farm

The Census Bureau indicates that most of the non-employer businesses in the United States are self-employed workers. These self-employed and unpaid family workers accounted for slightly less than 50 percent of all jobs in this sector in 2002, however, these workers are projected to represent only about one-third of all jobs in the sector in 2022 (Industry Employment and Output Projections 2013).

Self-employed individuals working in agriculture, forestry, fishing, and the hunting sector showed the largest change in percentage points between 2000 and 2009-2013.[10] The nearly ten percent point drop shows that, at the national level, individuals are less likely to own a business in this sector. The health care sector showed the second most important drop in self-employment between 2000 and the 2009-2013 period with a two percent point decline. The fact that the rate decreased does not mean it will continue that way. It is very likely that this sector may see an increase in the self-employment rate in the near future. The rate also decreased for retail trade, by 1.26 percent points.

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[10] Rates of self-employment were estimated using the 2000 Decennial Census and 2009-2013 5-year average from the American Community Survey (ACS).

Chart 2

Self-employment in the United States
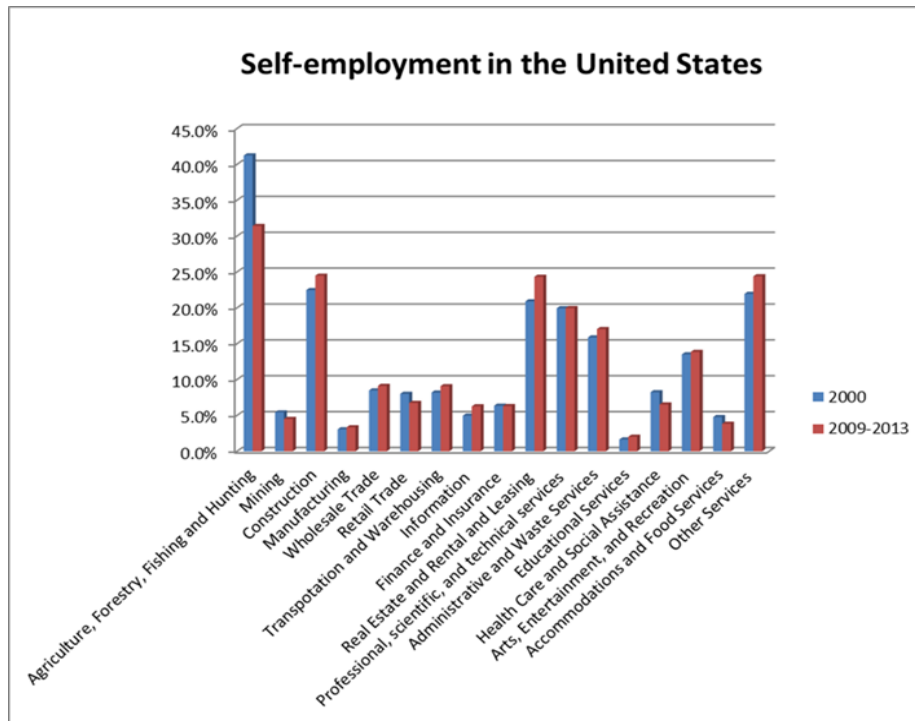
To substantiate the methodology used in the Economic Impact Study, three areas of interest were examined and summarized below:

Intergenerational Ownership Transmissions: Several studies indicate strong evidence to suggest that children of small business owners are more likely to become small business owners themselves. However, the definitive mechanisms as to why this is the case remains elusive. Studies accounted for education, race, inheritance, transference of valuable work experience, reputation, or other managerial human capital and yet the most prominent variable was whether the father had been self-employed.

Giganomics: The gig economy is not new, rather its demographic reach and mode of access has changed. A gigger is one who pieces together a full-time income by working multiple temporary work assignments. Gigs offer autonomy and increased income for those with higher skillsets and with the advent of the digital market many people find the greater flexibility intriguing. However, not all is as it seems. These non-traditional work arrangements are a cause for concern. Non-traditional work can be seen as exploitative for those with low skills and can exacerbate the marginalization of vulnerable populations. As the numbers of giggers are predicted to rise, one Inuit study estimates that by 2020 contingent workers will account for 40 percent of the U.S. workforce, so does the need to understand the issues associated with it. [11]

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[11] Intuit and Emergent Research. 2010. *"The Intuit 2020 Report: Twenty Trends That Will Shape the Next Decade."*

Job Creation and Destruction: This section reviews several studies that investigate the claim that small businesses are the primary source of job creation. The review indicates that the literature acknowledges general issues such as no universal consensus on the definition of small business, data measurements limitations, misclassification of businesses, and statistical difficulties relating to employer size as well as suffering from a limited focus on the manufacturing sector. Most studies reviewed tend to find that while smaller firms do create a majority of new jobs, they also have higher exit rates than larger firms. More recent studies indicate that it is not a matter of firm size that is driving job creation but firm age. The role of small businesses, whether start-ups or existing businesses, are important sources for job creation. Some studies suggest policy recommendations that do not focus strictly on firm size.

Examining Processes Associated with Export Opportunities for Small Businesses in Texas

Texas is the number one exporting state in the U.S., yet export opportunities for small business continue to be largely underutilized. However, the number of small companies that export from the U.S. is only about one percent of the total. Having said that, it is worthwhile to debunk some commonly-held notions about why small businesses do not export more. Many approaches taken to-date do not engage small businesses in a way that systematically generates results. For example, not all companies are in a position to export, so not all small businesses should be encouraged to try to do so.

The first basic criterion is that a company needs to be export capable. That is, the company must be established in its own domestic market and also have an exportable good or service. The next step that a small business must undertake is to establish a commitment to export. Time and money will be required, with a timeframe that is 18 months on average and a working capital outlay of $50,000 or more over that period. Foreign travel to establish relationships will be essential, and trade missions are often useful at opening doors to export opportunities.

While becoming an exporter can seem daunting to small businesses at first, the reality is that the transition process can be executed as a series of sequential steps, each of which is generally manageable. In addition, international sales often provide higher profit margins, higher average order sizes, and tend to put small businesses on a path for much stronger long-term growth. There are also intangible benefits: the ability to sell abroad increases the credibility of a small business in its home market.

In order to be effective, export assistance should be provided on two levels. First, companies typically need assistance expanding their internal capacity to accommodate the mechanics of trade. These include the ability to make pricing decisions, determine shipping logistics, and set up payment terms and financing - all of which require a mix of training and consulting. Less systematic approaches that consist of only training, or only networking events invariably fall short of success because it is difficult to know in advance at which stage in the process a small business will need assistance.

At the local level, economic development corporations, chambers of commerce, and municipal governments also attempt to provide support. However, neither export promotion agencies nor local organizations have the resources to provide the hands-on, periodic-but-regular interaction with small business that drive long-term, consistent export activity. The situation in Texas, as well as the rest of the U.S., is not unusual. Export promotion agencies in other countries also struggle to grow exports and broaden the base of companies capable of exporting. Here again, experience suggests that the SBDC methodology is the most systematic approach implemented to-date.

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┌─────────────────────────────────────────────────────┐
│     Economic Development Corporations (EDC)          │
│              Chambers of Commerce                    │
│  (First contact with small businesses in need of     │
│                   assistance)                        │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│     Small Business Development Center (SBDC)         │
│                    Network                           │
│     (Provides strategy, capacity building,           │
│       research and implementation assistance)        │
└─────────────────────────────────────────────────────┘
                          │
                          ▼
┌─────────────────────────────────────────────────────┐
│                Free Trade Agencies:                  │
│            Foreign Commercial Service                │
│            U.S. Export Assistance Centers            │
│           International Trade Administration          │
│  (Provides access to export networks and contacts    │
│                   worldwide)                         │
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At the same time, export promotion agencies are in a good position in the final stages of the process cycle to facilitate relationship networks for small businesses. With commercial posts all over the world, export promotion agencies could go a long way toward closing the loop with the SBDC network by providing export capable small businesses with additional local contacts in other countries. The combination of 600+ economic development corporations throughout Texas, export promotion agencies, and the SBDC network constitute an important support infrastructure for small business that are not otherwise available or affordable elsewhere.

Input from a Sample of City Managers and Economic Development Directors

As part of the study on the state of small business in Texas, the University of Texas at San Antonio Institute for Economic Development designed a survey *with the goal of further understanding the relationship between municipalities and small business formation/operation.* The institute developed a stratified sample identifying 180 contacts from 66 municipalities, including city managers, economic development directors, and other economic development entity leaders throughout Texas (e.g. heads of chambers of commerce, city mayors). 48 telephone interviews with city managers, economic development directors, and other economic development leaders from 41 Texas cities were conducted.

Interviews were administered using a questionnaire intended to assess the small business environment, identify barriers, and evaluate regional approaches to economic development. The research team analyzed and categorized responses based on recurring themes, which in turn formed the basis for a summary of recommendations.

Across the different regions, many respondents were interested in regional collaboration. However, there was widespread uncertainty about how formal regional policies could exist. The confusion could stem from the fact that communities often do not appear to be coordinating well and sometimes even compete with each other over projects. From a policy implementation

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perspective, there were also questions about how regional incentives, marketing resources, and economic benefits would be shared and distributed. The survey sample exhibits significant variation across localities with regard to perspectives on regionalism and with whom communities are willing to (or not) work.

One of the takeaways from the interviews, as well as ongoing research at the UT-San Antonio Institute for Economic Development is that city context is clearly an important, yet often unacknowledged factor that can drive different economic development strategies. Not all border and rural communities face the same issues or have similarities.

Municipalities on the Texas-Mexico border, for example, often look for ways to find complementary strengths and work together if possible. However, those on the border of Texas and Louisiana more typically find themselves competing for economic development projects across state lines. Similarly, rural South Texas is very different from rural West Texas. The cities and associated economic drivers vary because the population centers in West Texas have much greater geographical separation - not just from the largest cities but also from each other - compared with those in South Texas.

Regionalism is currently not the norm, however, several respondents suggested ways the state could encourage regional cooperation. Many indicated they would like to see the state take a more active role with lead generations and collaboration on regional projects. Several suggested a regional marketing budget, or state matching regional marketing funds. Respondents who were open to regionalism recommend a statewide assessment of assets, and the creation of a regional scorecard. When discussing a statewide assessment, respondents referred to a 2005 cluster initiative that sought to identify assets regionally.[12] As mentioned previously, several respondents suggested that 4A and 4B (and possibly other) funds be restructured so that communities could more easily pool resources for regional projects.

Another issue that respondents raised several times was the general emphasis on the Texas Triangle[13] geography to the relative exclusion of other areas of the state.

Other respondents indicated that collaboration between neighboring cities and counties was often problematic and that city/county issues might need to be addressed before they can work regionally. A few respondents indicated concern with the amount of emphasis on the triangle and the challenges faced when located outside of the triangle. Respondents believed that the state should know the strengths and efficiencies outside of the triangle. One suggestion was to offer state incentives to persuade companies to locate to other regions. This suggestion is interesting as some respondents from the triangle area reported infrastructure issues, space availability and real estate affordability concerns due to the amount of growth being experienced.

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[12] For more information, please see http://gov.texas.gov/files/ecodev/Texas_Industry_Clusters_Initiative.pdf
[13] This area consists of Dallas-Fort Worth, Austin, Houston, and San Antonio.

From a research standpoint, it is interesting to note that many economic studies are conducted at the county level (where data are more readily available) even though cities clearly have more economic development decision authority than counties.[14]

The interviews with key economic development leaders across Texas not only provided important insights into the small business environment at the local level, but also about mechanisms used to track effectiveness of business attraction for a given municipality. No set of best practices were found for tracking incentive effectiveness. Some of the most commonly cited barriers for small businesses were the lack of information about resources available to them, access to capital, worker skill gaps, and real estate availability/affordability issues.

Responses also shed light on issues associated with emerging trends such as the creative class, giganomic policies, and sentiments on regional collaboration. Even when respondents were unfamiliar with the term "creative class" (approximately 50% of the survey respondents) they still recognized the importance of quality of life components. While there has been substantial media attention on the topic of giganomics, most of the respondents were unfamiliar with any policies that would encourage or hinder these types of companies or the workers engaged with them.[15]

The survey responses also make clear that one size does not fit all. Incentive criteria may benefit from more transparency with regard to eligibility criteria, coupled with greater flexibility, depending on location. In this regard, many respondents reported frustration with the lack of incentive flexibility. While a small number of respondents expressed disinterest in regional collaboration or were unsure about how effective a regional policy would be, the majority of respondents were open to regional collaboration.

Relevant Literature Identifying Potential Indicators that may Impact Small Business Activity

This section of the report examined various literature pertaining to small business activity such as current local economic development practices, rural economic development, creative class, and small business barriers.

Local Economic Development

How economic development should be undertaken and what tools to use continues to be a subject of debate, particularly in light of a changing landscape. Certainly there is no shortage of study concerning the topic of economic development (see Currid-Halkett and Stolarick 2011 for a broad summary). So while ongoing research is far from definitive, there are some nuggets that can be gleaned from studies to-date.

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[14] Forwood v. City of Taylor, Supreme Court of Texas. November 1948. 147 Tex. 161.

[15] Greg Bensinger, 2015. "Amazon Taps 'On-Demand' Workers for One-Hour Deliveries." Wall Street Journal, September 29. Josh Zumbrun and Anna Sussman, 2015. "Proof of a 'Gig Economy' Revolution Is Hard to Find." Wall Street Journal, July 26.

The literature shows that economic development has undergone three waves of strategies. Yet, neither wave is mutually exclusive - each is more of an extension of the continuum from the previous wave. First wave development strategies attract firms with financial incentives. The second wave focused on retaining and expanding existing local firms. The third wave emphasizes community level economic development and public investment. Examples of each wave strategy are below, though it is not an exhaustive list:

1st Wave: Business Attraction	2nd Wave: Business Retention	3rd Wave: Community Economic Development
▪ Various tax credits	▪ Indirect assistance	▪ Public-private partnerships
▪ Infrastructure improvement assistance	▪ Entrepreneurial policies	▪ Quality of life focus
▪ Free land	▪ Technical assistance	▪ Small business development initiatives
▪ Subsidies	▪ Revolving loan fund	

The third wave also brought increased interest in human capital development and quality of life (QoL) in recent years.

Today, the general trend for economic development practitioners is still significantly tied to the practice of older waves. Incentives, for example, are widely used in local economic development. Overall, study on economic development suggests that many localities are investing in faddish strategies or old school approaches that are not necessarily effective or suitable to their locale. Municipalities that are succeeding do so because each capitalizes on its strengths and unique competitive advantages. Recommendations for moving forward require clear goals, due diligence in monitoring and assessing incentive outcomes and performance agreements, as well as incorporating a set of broader strategies other than just financial incentives. Part of the resistance to such approaches is likely rooted in the pressure for economic developers to produce short-term results.

Rural Economic Development

Lessons gleaned from studies on rural economic development indicate:

- Rural areas, not just in Texas but across the United States are clearly in a period of transition
- Conflation of nonmetropolitan as rural results in misinterpretation of rural conditions
- Rural can no longer be synonymous with agriculture
- There is no longer an urban-rural dichotomy, rather there is an urban-rural interdepedence continumm

With this shift in mind, it is important to consider how to create effective economic development policies. Rural economic development has been studied extensively, with continuous ongoing research.

Traditional Strategies	Non-traditional Strategies
Industrial recruitment	Entrepreneurship
Regional trade centers	Cluster-based initiatives
Bedroom communities	Innovation and knowledge based approaches
Amenity based development	Creative class development

Despite much study, the literature makes clear there is no one set of best practices for rural economics. In many ways, rural strategies must take approaches that mirror those in the private sector. That is to say, a successful strategy must draw upon a community's inherent strengths and must be unique to some degree.

Several studies offer insights into rural economic development policy. Most of the analysis reviewed for rural economic development agreed that policymakers are moving from traditional sector based polices to more integrated approaches. There is a growing consensus that a one-size-fits-all approach does not work ("Policy Brief: Reinventing Rural Policy" 2006; Rickman 2007; Morgan and Lambe 2009; Kilkenny and Partridge 2009; Olfert and Partridge 2010; Pender, Weber, and Brown 2014). These new integrated approaches follow guidelines such as:

- Pooling knowledge resources from the private and public sector.
- Identifying regional and local assets, e.g., quality of life, environment, infrastructure, local capacity building capabilities.
- Understanding the spatial economic structure of rural areas, i.e., ripple effect of economic relationships between rural areas and urban areas.
- Multiple economic development strategies and tools may need to be combined to create a winning combination.
- Creating regional centers of economic activity that focus on spreading economic benefits outward.
- State leadership offering incentives for local areas as a way to help leverage funds.
- Tying regional partnership participation and cooperation to subsidies and tax breaks.

Creative Class

The creative class is a term used to describe those individuals that work in knowledge intensive areas such as design, entertainment, computer sciences, management, law, engineering, education, healthcare, and the arts. While over thirty percent of all U.S. workers are part of the creative class, they make account for over half of the salaries (Florida 2014). Cities with large

portions of their working individuals employed in the creative class professions are amongst some of the fastest growing cities in the United States, while those with less creative class workers are amongst the slowest (Florida 2012).

Creative class cities have been found to have lower rates of unemployment during times of recession and a quicker rebound to pre-recession employment levels once the crisis has passed (Currid-Halkett and Stolarick 2013). The percentage of creative class workers in a city is an important factor for increasing resilience and growth during troubled and regular economic periods. However, the impacts of these creative class industries were dependent on the size of the city and the majority creative class industry clusters present.

Critics of the creative class have pointed to an uneven focus on the attraction of these workers and the effect this has on lower income populations that are not being targeted (Grodach and Loukaitou-Sideris 2007). Other criticisms include that while the increased creative class population will bring regional growth, higher wages and jobs, it will also bring a higher cost of living which will disproportionately become a burden of the lower income population.

Small Business Barriers

In 2012, small businesses in the United States accounted for 28.2 million jobs and made up forty-nine percent of all private entity employment, small businesses accounted for over 75% of those classified as non-employers (SBA Office of Advocacy 2014). [16] With such a large impact on the economy, the success of small businesses has many implications for regional economic development. There is no one characteristic that determines the probability of success for small business owners, but rather a complex web of interrelated conditions, where a shortfall in one area may be compensated by others (Watson, Hogarth-Scott, and Wilson 1998).

Some of the largest barriers to small business formation and success are access to capital, lack of assets, in addition to management and information (Loscocco, Karen A., Robinson 1991; Servon et al. 2010; Perlmeter 2015; Bates 1995; Watson, Hogarth-Scott, and Wilson 1998). Access to capital Barriers and how they affect individual groups has large implications in how small business assistance organizations should offer support to these individuals. In a study of New York City small and micro businesses, Servon et al. (2010) found that organizations often lacked the capacity to serve the demand of small businesses. It also found that services offered were fragmented among numerous private, nonprofit and government agencies with many services being duplicated.

Barriers to small business are being addressed nationwide by a variety of agencies throughout the United States. In order to be effective these agencies will need to assess the barriers for each population and focus their training and assistance on what is needed the most. Areas such as

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[16] Non-employers are defined as a business without paid employees. Source: SBA Firm Data Size, https://www.sba.gov/advocacy/firm-size-data#ne

managerial and human resource training is a service area that most organizations are not addressing effectively enough.

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Economic Impact of Small Businesses with Fewer than 100 Employees

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April 2016

Introduction

The Texas profile from the Small Business Administration (SBA) shows that in 2012 small firms represented 98.6 percent of all employers. [17] Firms with fewer than 100 employees have the largest share of small business employment, with close to 32 percent of all workers in the economy in 2013. The present study focuses on those firms with fewer than 100 employees and estimates their contributions in Texas through the use of economic multipliers. It will also show maps comparing the relative strength of these small firms in association with six industrial clusters in the state based on 28 Workforce Development Areas (WDAs). [18]

Table 1

Texas Small Business Facts (2012)		
Texas	**2012 estimates**	
Number of small businesses in Texas according to SBA	2,412,717	*
Number of small businesses in Texas with fewer than 100 workers	2,404,854	**
Small businesses with employees according to SBA	398,593	*
Small businesses with employees for firms with fewer than 100 workers	390,730	**
Small businesses nonemployers according to SBA	2,014,124	***
Total workers employed by small businesses according to SBA	9,350,029	*
Workers employed by all sizes businesses according to SBA	4,275,868	*
Workers employed by small businesses with fewer than 100 workers	2,978,361	**
* Small Business Administration definition of small business		
** Definition used in the present study		
*** Also definition used in the present study as non-employers		

As in the previous study, the current research used a definition of small businesses that focuses the attention on smaller firms with fewer than 100 employees which are usually linked with the entrepreneurship spirit of the American economy. Using this definition for the State of Texas, the data shows that small—employer—firms with fewer than 100 employees hired close to 3.0 million workers in 2012 (Table 1). These small firms numbered approximately 390,000 and represented close to 98.0 percent of the close to 398,600 private firms for that year, and their 2.9 million jobs accounted for 31.9 percent of the 9.4 million jobs in the State. [19]

Economic impact studies show the effects that changes in production or employment from an industry (the direct effects) have on suppliers of that industry (the indirect effects) and on the rest

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[17] From SBA site at: https://www.sba.gov/sites/default/files/advocacy/TX.pdf

[18] Clusters as defined by the Governor's Office; See Appendix B for a list of WDAs and their respective counties.

[19] The Census Bureau through the Statistics of U.S. Businesses (SUSB) provides national, state and metropolitan data on enterprises by size and industry. An enterprise is a business with one or more establishments under common ownership or control. For the present study, "a firm is defined as part of an enterprise tabulated in a particular industry, state or metropolitan area." Taken from www.census.gov/econ/susb/introduction.html; on January 25, 2010.

of the regional economy through changes in spending by households due to jobs supported by the direct and indirect impacts (the induced effects). In quantifying these changes, the studies can show the importance of the industry to the region.

Using 2012 as the base year, the estimated total economic impact of small—employer—firms with fewer than 100 workers, measured in terms of output (production), was $843.8 billion.[20] The total employment impact was estimated at 5.4 million jobs, and their value added (or gross state product) impact was calculated at $478.8 billion.

When adding the impacts of nonemployers, the combined total economic impact of SBF100, in terms of output (production), was close to $1.02 trillion, the combined total employment impact was estimated at 6.6 million jobs, and the combined total value added (or gross state product) impact was calculated at $586.1 billion. These small firms also produced a combined $13.9 billion in State revenues and a combined $14.9 billion in local governments' revenues.

For the study, direct employment, direct output and direct value added (or gross State product) effects for the government sector were included as they include non-profit organizations that help better understand private firms' impacts. [21]

Chart 1 displays the distribution of jobs, those labeled as direct employment in impact studies, across different sectors. Within this distribution, health & social services (close to 14.0 percent) appears first in the list followed by accommodation and food services (13.9 percent), and other services (close to 10.0 percent). At the other end, agriculture, forestry, fishing and hunting appears at the bottom (0.2 percent) preceded by management of companies (0.2 percent), and utilities (0.3 percent).

Tables and charts show 20 economic sectors under a two-digit NAICS code classification.

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[20] These impacts should be interpreted as the upper limit impacts from these firms. The lower limits are shown as the direct impacts. Therefore, an average from the Total Impacts and the Direct Impacts for each industry will indicate a moderate estimate of the impacts.

[21] But in the study, the indirect and induced effects related to the government sector were included in the estimations as they are responses to private sector activities.

Chart 1

Ranking of direct employment by small firms in percentages *
(By sectors 2012)
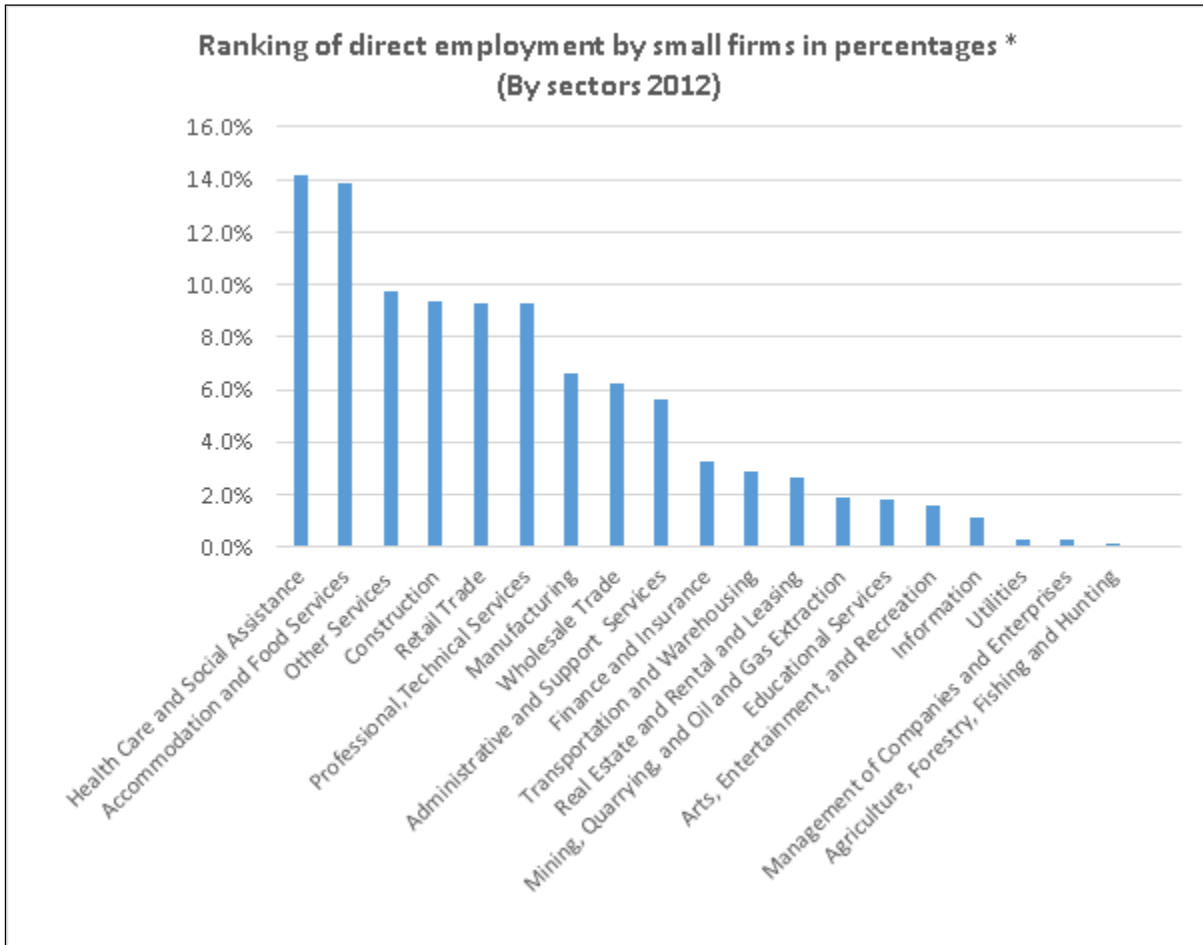
* Only direct employment

Economic Impacts of Texas Small Firms Employers

In 2012, the estimated employment impacts in Texas from SBF100 employer firms was close to 5.4 million jobs, the value added (gross state product) impact was $ 478.8 billion, and the economic impact, measured in terms of output, was $843.8 billion. The following sections explain these impacts.

Employment

Table 2 exhibits estimated employment impacts across 20 two-digit NAICS code sectors. It shows the direct, indirect, induced, and total employment effects of SBF100 firms in the State of Texas for 2012: from a direct impact of 2.9 million jobs to an estimated total impact of 5.4 million jobs. These impacts are shown in the table, ranked from largest to smallest.

Table 2

TEXAS: EMPLOYER EMPLOYMENT IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Thousands of workers for 2012)				
2-digit NAICS and Description	**Direct**	**Indirect**	**Induced**	**Total**
62 Health & social services	422	92	150	663
23 Construction	280	211	158	649
44-45 Retail trade	277	47	230	554
72 Accommodation & food services	412	56	61	529
54 Professional- scientific & tech svcs	277	95	152	525
31-33 Manufacturing	196	157	120	474
81 Other services	290	55	66	411
42 Wholesale Trade	186	64	93	343
56 Administrative & waste services	167	41	56	264
52 Finance & insurance	97	60	62	219
48-49 Transportation & Warehousing	86	51	42	179
21 Mining	56	50	48	155
53 Real estate & rental	80	25	31	136
61 Educational svcs	55	8	12	75
71 Arts- entertainment & recreation	46	13	11	70
51 Information	33	16	18	67
22 Utilities	7	10	7	24
55 Management of companies	7	3	5	16
11 Ag, Forestry, Fish & Hunting	4	4	2	11
92 Government & non NAICs	0	0	0	0
Total	2,978	1,058	1,326	5,362

At the top of the list is the health & social services sector (663,000 jobs). This sector improved its relative position in the ranking when compared to the 2006 ranking, where it stood at second place (601,000 jobs) estimated total impact is mostly explained by its relatively large induced effect (296,000 jobs).

The construction sector (649,000 jobs), and the retail trade sectors (554,000 jobs) show opposite patterns, in terms of the relative importance of indirect and induced effects. In the construction sector the indirect impacts are larger than the induced impacts, while in the retail sector: the induced effects are larger than the indirect effects. All these three sectors also share a relatively large direct employment effect. It is precisely this large direct employment that generates large induced effects. Construction moved up from the seventh place, in 2006, to the second place; whereas the retail trade sector moved down from first to third place.

Value Added

Table 3 summarizes value added impacts across the 20 sectors. The value added category offers a good measure of the economic contributions of an industry to its surrounding areas.

"Compared to sales, value added is a preferable measure of production because it indicates the extent to which a firm's sales result from their own production rather than from production that originates elsewhere, whereas sales data do not distinguish between these two sources of production."[22]

Table 3

TEXAS: EMPLOYER VALUE ADDED IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Millions of dollars for 2012)				
2-digit NAICS and Description	Direct	Indirect	Induced	Total
23 Construction	$23,753	$23,710	$13,879	$61,342
54 Professional- scientific & tech svcs	$31,930	$8,522	$13,317	$53,769
44-45 Retail trade	$38,517	$2,518	$12,429	$53,463
62 Health & social services	$24,471	$9,538	$13,123	$47,132
31-33 Manufacturing	$15,482	$20,385	$10,546	$46,413
42 Wholesale Trade	$21,188	$6,248	$8,185	$35,622
21 Mining	$18,409	$6,399	$4,220	$29,028
81 Other services	$15,357	$5,476	$5,810	$26,643
52 Finance & insurance	$13,149	$5,925	$5,411	$24,485
72 Accommodation & food services	$11,677	$6,147	$5,380	$23,205
53 Real estate & rental	$15,135	$2,534	$2,723	$20,392
56 Administrative & waste services	$9,613	$3,544	$4,878	$18,034
48-49 Transportation & Warehousing	$7,815	$4,990	$3,700	$16,506
51 Information	$4,122	$1,533	$1,612	$7,266
22 Utilities	$3,182	$1,402	$595	$5,179
71 Arts- entertainment & recreation	$1,967	$1,061	$938	$3,967
61 Educational svcs	$1,868	$950	$1,081	$3,899
55 Management of companies	$753	$334	$474	$1,561
11 Ag, Forestry, Fish & Hunting	$355	$383	$187	$925
92 Government & non NAICs	$30	$3	$8	$41
Total	$258,773	$111,603	$108,497	$478,873

As with employment impacts, the table shows the direct, indirect, induced, and total impacts of the SBF100 firms in Texas. Different from the employment impacts, the ranking based on total value added impacts is headed by construction ($61.3 billion), followed by professional, scientific and technical services ($53.8 billion), retail trade ($53.5 billion). Similar to the employment impacts, there are great variations in the relative importance of indirect and induced effects. Relatively large indirect effects indicate stronger ties with Texan suppliers.

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[22] Bureau of Economic Analysis' web site. Value added is another name for Gross State Product. From https://bea.gov/coldfusionfiles/ftp_app_display.cfm?directorate=international. Also, from this study at: http://ec.europa.eu/eurostat/documents/4187653/5753229/KS-PB-03-004-EN.PDF/0df9ccc1-dafb-4cba-b500-95133c7fce73?version=1.0

Construction moved up when compared to 2006 (from tenth to first place) while the professional sector moved down from first to second place. Retail trade (from fifth to third place), and health & social services (from sixth to fourth place) moved up in the rankings. Manufacturing moved down (from third to fifth place).

Output

Table 4 shows output impacts rankings across the 20 sectors. Output "represents the value of industry production. (…) these are annual production estimates for the year of the data set and are in producer prices. For manufacturers this would be sales plus/minus change in inventory. For service sectors production [equals] sales. For retail and wholesale trade, output [equals] gross margin and not gross sales."[23]

Table 4

TEXAS: EMPLOYER OUTPUT IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Millions of dollars for 2012)				
2-digit NAICS and Description	**Direct**	**Indirect**	**Induced**	**Total**
23 Construction	$65,243	$51,610	$24,584	$141,437
31-33 Manufacturing	$43,771	$47,238	$18,680	$109,689
54 Professional- scientific & tech svcs	$50,412	$14,470	$23,589	$88,471
62 Health & social services	$43,348	$17,961	$23,245	$84,554
42 Wholesale Trade	$31,047	$10,914	$14,499	$56,460
21 Mining	$28,783	$12,432	$7,475	$48,690
81 Other services	$27,571	$10,224	$10,292	$48,088
44-45 Retail trade	$26,534	$3,371	$16,642	$46,547
72 Accommodation & food services	$22,350	$12,259	$9,529	$44,139
52 Finance & insurance	$22,595	$10,159	$9,585	$42,339
48-49 Transportation & Warehousing	$17,056	$10,302	$6,555	$33,912
56 Administrative & waste services	$17,959	$6,591	$8,641	$33,191
53 Real estate & rental	$16,559	$4,372	$4,823	$25,754
51 Information	$6,005	$2,726	$2,855	$11,586
22 Utilities	$5,570	$2,455	$1,054	$9,078
71 Arts- entertainment & recreation	$3,991	$1,798	$1,662	$7,451
61 Educational svcs	$3,887	$1,644	$1,914	$7,446
55 Management of companies	$1,301	$542	$840	$2,683
11 Ag, Forestry, Fish & Hunting	$1,018	$910	$331	$2,260
92 Government & non NAICs	$84	$5	$15	$104
Total	$435,085	$221,984	$186,810	$843,879

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[23] From the glossary for IMPLAN, MIG's web site taken on January 25, 2010 at https://implan.com/index.php?option=com_glossary&task=list&letter=&letter=O

The greatest value of output was found in construction ($141.4 billion) while manufacturing ($109.7 billion) moved down to second place, when compared to 2006, but still ahead of the professional, scientific and technical services ($88.5 billion), health & social services ($84.6 billion), and wholesale trade ($56,460).

Manufacturing output moved down from first to second place when compared to 2006 and the professional sector moved down, too, from second to third place; while construction moved up from eighth to first place. As explained in the section about value added in reference to sales, these output measures do not distinguish between production from Texas' own resources and production from other areas of the U.S. and the world. It is usually used because it is easier to understand sales (almost the same as output) dollars numbers.

Economic Impacts of Texas Nonemployers

In 2012, the imputed total employment impact of nonemployers was close to 1.2 million jobs, the value added or (gross state product) impact was estimated at $ 107.2 billion, and the output impact was over $176.1 billion. The following sections explain these impacts in detail.

Employment

Table 5 exhibits employment impacts of nonemployers in Texas across 20 sectors for the year 2012. A direct impact of approximately 764,000 jobs to a total impact of close to 1.2 million jobs. To produce these tables, four assumptions (and the other nonemployer impacts) were made and need some explanation.

In first place, the information from Statistics of U.S. Businesses (SUSB) for nonemployers does not show any employment numbers because by definition there are no employees for these types of firms. The numbers shown in the table were imputed by the software, IMPLAN, according to the amount of receipts indicated in the SUSB data.

In second place, the values of receipts were assumed to represent output of the sectors. As discussed before, sales are not necessarily the same as output. We are assuming that the differences are not large enough to modify the main findings.

In third place, the SUSB data included the values of employment compensation that were added to the estimations in place of averages for the whole industry.

Finally, the amounts of receipts for the retail trade sector were adjusted to lower values to estimate output in this sector. As mentioned earlier, output for retail trade is equal to gross margin and not to the sales reported by the firms.

The largest sectors, based on total impacts, are: retail trade (165,000 jobs), other services (161,000 jobs), professional, scientific and technical services (143,000 jobs), and administrative, support and waste services (121,000 jobs). As before, there are differences in the relative importance of indirect and induced effects, with professional and administrative services having larger indirect than induced impacts, indicating a closer relationship with regional (Texan) suppliers.

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Table 5

TEXAS: NON-EMPLOYER EMPLOYMENT IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Thousands of workers for 2012)				
2-digit NAICS and Description	**Direct**	**Indirect**	**Induced**	**Total**
44-45 Retail trade	106	10	49	165
81 Other services	127	16	18	161
54 Professional- scientific & tech svcs	95	35	12	143
56 Administrative & waste services	68	39	13	121
62 Health & social services	53	1	52	106
23 Construction	91	7	2	101
53 Real estate & rental	48	9	17	75
52 Finance & insurance	25	25	17	68
72 Accommodation & food services	25	11	30	67
48-49 Transportation & Warehousing	46	10	6	62
71 Arts- entertainment & recreation	32	5	8	45
42 Wholesale Trade	14	8	10	32
31-33 Manufacturing	2	14	11	26
61 Educational svcs	11	1	9	21
11 Ag, Forestry, Fish & Hunting	9	6	4	19
21 Mining	7	4	2	14
92 Government & non NAICs	0	6	6	12
51 Information	2	3	2	7
55 Management of companies	0	3	1	4
22 Utilities	0	1	1	2
Total	764	214	271	1,249

Table 6 exhibits the value added impacts of nonemployer firms. Here, at the top of the ranking are: real estate and rental ($18.5 billion), professional, scientific and technical services ($14.3 billion), retail trade ($8.9 billion), and finance and insurance ($7.9 billion). As mentioned before, value added is a better indicator of the contribution of an industry or firm to the surrounding area than output.

Table 6

TEXAS: NON-EMPLOYER VALUE ADDED IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Millions of dollars for 2012)				
2-digit NAICS and Description	**Direct**	**Indirect**	**Induced**	**Total**
53 Real estate & rental	$12,004	$2,299	$4,265	$18,568
54 Professional- scientific & tech svcs	$9,609	$3,512	$1,232	$14,353
44-45 Retail trade	$5,723	$538	$2,657	$8,918
52 Finance & insurance	$2,975	$2,968	$2,022	$7,964
23 Construction	$6,757	$541	$169	$7,467
81 Other services	$5,725	$719	$791	$7,235
62 Health & social services	$3,253	$45	$3,154	$6,451
31-33 Manufacturing	$376	$3,257	$2,453	$6,086
48-49 Transportation & Warehousing	$4,509	$972	$584	$6,065
56 Administrative & waste services	$3,006	$1,740	$585	$5,331
42 Wholesale Trade	$2,346	$1,277	$1,609	$5,232
21 Mining	$2,158	$1,090	$690	$3,938
72 Accommodation & food services	$929	$410	$1,104	$2,442
51 Information	$465	$692	$468	$1,625
71 Arts- entertainment & recreation	$1,065	$159	$277	$1,501
22 Utilities	$64	$589	$660	$1,314
92 Government & non NAICs	$0	$476	$446	$922
61 Educational svcs	$425	$25	$347	$797
11 Ag, Forestry, Fish & Hunting	$244	$150	$105	$499
55 Management of companies	$0	$335	$157	$492
Total	$61,632	$21,793	$23,775	$107,200

Output

Table 7 summarizes the output impacts across the 20 sectors included in the presentation of the study. Heading the list is manufacturing ($25.2 billion), followed by real estate and rental ($24.1 billion), professional, scientific and technical services ($19.4 billion), construction ($16.9 billion), and finance and insurance ($14.5 billion).

Table 7

TEXAS: NON-EMPLOYER OUTPUT IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Millions of dollars for 2012)				
2-digit NAICS and Description	Direct	Indirect	Induced	Total
31-33 Manufacturing	$1,557	$13,485	$10,156	$25,198
53 Real estate & rental	$15,618	$2,991	$5,549	$24,157
54 Professional- scientific & tech svcs	$13,015	$4,757	$1,669	$19,441
23 Construction	$15,284	$1,225	$383	$16,892
52 Finance & insurance	$5,427	$5,415	$3,689	$14,531
48-49 Transportation & Warehousing	$8,419	$1,815	$1,090	$11,324
81 Other services	$8,355	$1,049	$1,155	$10,559
62 Health & social services	$4,911	$67	$4,762	$9,740
56 Administrative & waste services	$4,389	$2,540	$854	$7,782
42 Wholesale Trade	$3,383	$1,841	$2,321	$7,544
44-45 Retail trade	$2,311	$721	$3,557	$6,589
21 Mining	$3,224	$1,629	$1,031	$5,884
72 Accommodation & food services	$1,607	$709	$1,910	$4,227
51 Information	$848	$1,262	$855	$2,965
71 Arts- entertainment & recreation	$1,814	$272	$472	$2,558
22 Utilities	$102	$931	$1,043	$2,076
11 Ag, Forestry, Fish & Hunting	$820	$503	$352	$1,676
61 Educational svcs	$666	$39	$543	$1,248
92 Government & non NAICs	$0	$500	$469	$969
55 Management of companies	$0	$543	$255	$798
Total	$91,750	$42,294	$42,114	$176,158

Combined impacts of Texas employers and nonemployers

The estimated combined total employment impact of nonemployers and employers with fewer than 100 workers was close to 6.6 million jobs, the estimated value added (gross state product) impact was $586.1 billion, the yearly average output (production) impact was $1.02 trillion. The following sections explain these impacts.

Employment

Nonemployers and employers with fewer than 100 workers totaled 3.7 million direct jobs. Table 8 aggregates the employment impacts of SBF100 employers and nonemployers for Texas. At the top of the list of 20 sectors is health & social services with a total estimated employment impact of close to 769,000 jobs, followed by construction with over 749,000, and retail trade with over 718,000 jobs.
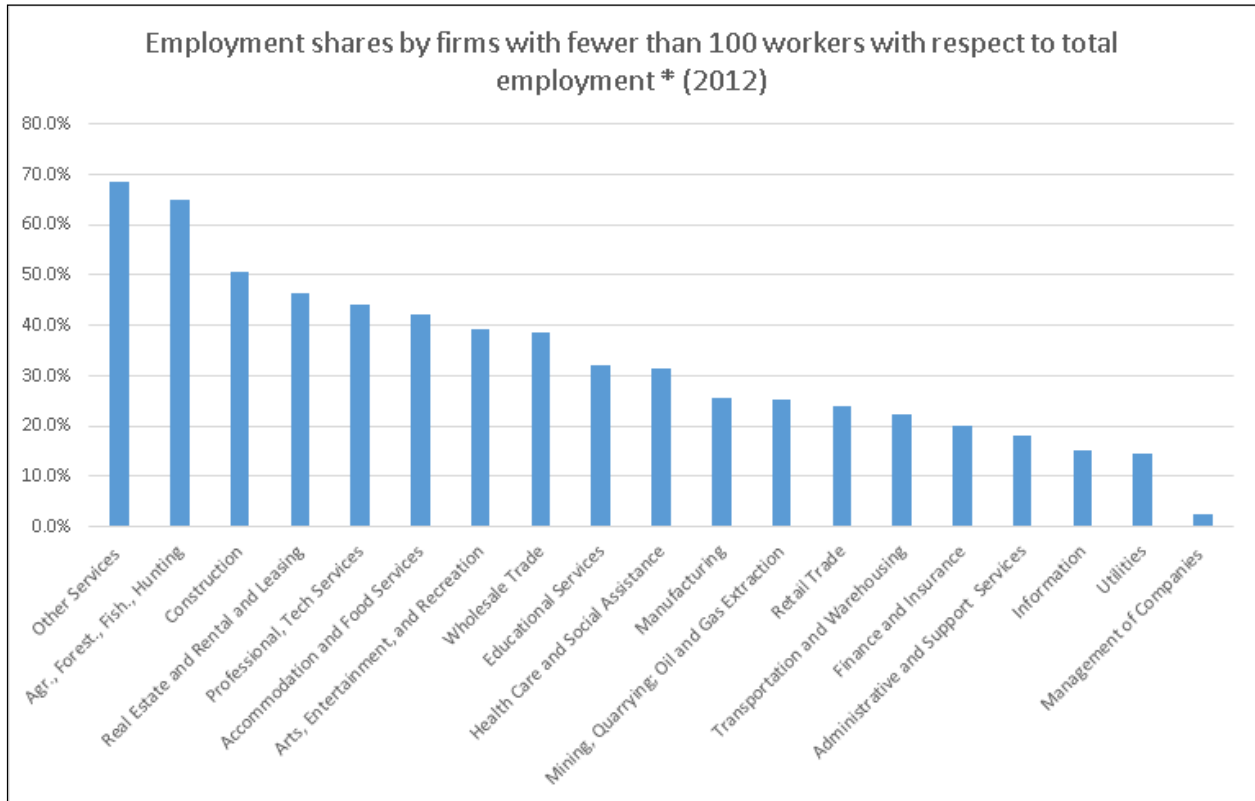
Table 8

TEXAS: EMPLOYER AND NON-EMPLOYER EMPLOYMENT IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Thousands of workers for 2012)				
2-digit NAICS and Description	Direct	Indirect	Induced	Total
62 Health & social services	475,046	92,529	201,675	769,250
23 Construction	370,653	218,023	160,714	749,390
44-45 Retail trade	383,236	56,484	278,853	718,573
54 Professional- scientific & tech svcs	372,914	130,170	164,262	667,346
72 Accommodation & food services	437,080	66,728	91,584	595,392
81 Other services	416,545	70,695	83,879	571,120
31-33 Manufacturing	198,074	171,210	130,991	500,275
56 Administrative & waste services	235,056	80,357	68,935	384,348
42 Wholesale Trade	200,855	71,444	103,320	375,619
52 Finance & insurance	121,819	85,438	78,935	286,193
48-49 Transportation & Warehousing	131,460	60,812	48,192	240,464
53 Real estate & rental	128,188	34,740	48,280	211,208
21 Mining	63,587	54,025	50,556	168,168
71 Arts- entertainment & recreation	78,084	18,098	18,977	115,159
61 Educational svcs	65,749	8,660	21,452	95,860
51 Information	35,049	19,006	20,440	74,494
11 Ag, Forestry, Fish & Hunting	13,642	9,691	6,082	29,415
22 Utilities	7,464	10,634	7,949	26,047
55 Management of companies	7,349	6,096	6,701	20,146
92 Government & non NAICs	159	6,360	6,036	12,556
Total	3,742,008	1,271,199	1,597,814	6,611,022

Another way to understand the contributions of small firms is to calculate their relative importance by sector, i.e., ranking the sectors according to the percentage of employment by SBF100 firms with respect to the total in that sector. Chart 2 shows this ranking.

Chart 2 shows in first place other services (68.5 percent) with a majority of the employees working for SBF100 firms, it is followed by agriculture, forest, fishing & hunting (65 percent); construction (50.7 percent); and real estate & rental (46.4 percent).

Chart 2

Employment shares by firms with fewer than 100 workers with respect to total employment * (2012)

* Only direct employment

Value Added

Value added is a good measure of the economic contributions of an industry to the surrounding area because it takes account of where the production of goods and services occurs. Table 9 exhibits the combined estimated value added impacts from nonemployers and employers with fewer than 100 employees. The total direct value added was $320.4 billion and $586.1 billion for total impact in Texas for 2012.

Table 9

TEXAS: EMPLOYER AND NON-EMPLOYER VALUE ADDED IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Millions of dollars for 2012)				
2-digit NAICS and Description	**Direct**	**Indirect**	**Induced**	**Total**
23 Construction	$30,510	$24,251	$14,048	$68,809
54 Professional- scientific & tech svcs	$41,539	$12,034	$14,549	$68,122
44-45 Retail trade	$44,240	$3,056	$15,086	$62,381
62 Health & social services	$27,724	$9,582	$16,277	$53,583
31-33 Manufacturing	$15,858	$23,642	$12,999	$52,499
42 Wholesale Trade	$23,534	$7,525	$9,795	$40,854
53 Real estate & rental	$27,139	$4,833	$6,988	$38,960
81 Other services	$21,081	$6,195	$6,601	$33,877
21 Mining	$20,567	$7,489	$4,910	$32,967
52 Finance & insurance	$16,123	$8,893	$7,433	$32,449
72 Accommodation & food services	$12,606	$6,557	$6,484	$25,647
56 Administrative & waste services	$12,619	$5,284	$5,463	$23,365
48-49 Transportation & Warehousing	$12,324	$5,962	$4,284	$22,571
51 Information	$4,587	$2,224	$2,080	$8,891
22 Utilities	$3,246	$1,991	$1,255	$6,493
71 Arts- entertainment & recreation	$3,032	$1,221	$1,216	$5,468
61 Educational svcs	$2,293	$975	$1,428	$4,696
55 Management of companies	$753	$669	$631	$2,053
11 Ag, Forestry, Fish & Hunting	$599	$533	$292	$1,424
92 Government & non NAICs	$30	$479	$455	$963
Total	$320,405	$133,396	$132,273	$586,073

The construction sector has the largest impact ($68.8 billion) followed closely by professional, scientific and technical services ($68.1 billion), retail trade ($62.4 billion), and health & social services ($53.6 billion).

Chart 3 exhibits the percentage of direct value added produced by these firms with respect to their sectors. In first place is the other services sector with 57.4 percent of the value added. It is followed by retail trade with 56.2 percent, construction with 44.5 percent, and by professional, scientific and technical services with 41.2 percent of the value added with respect to the total in the sector.

Chart 3

Value Added shares for firms with fewer than 100 workers with respect to total value added * (2012)
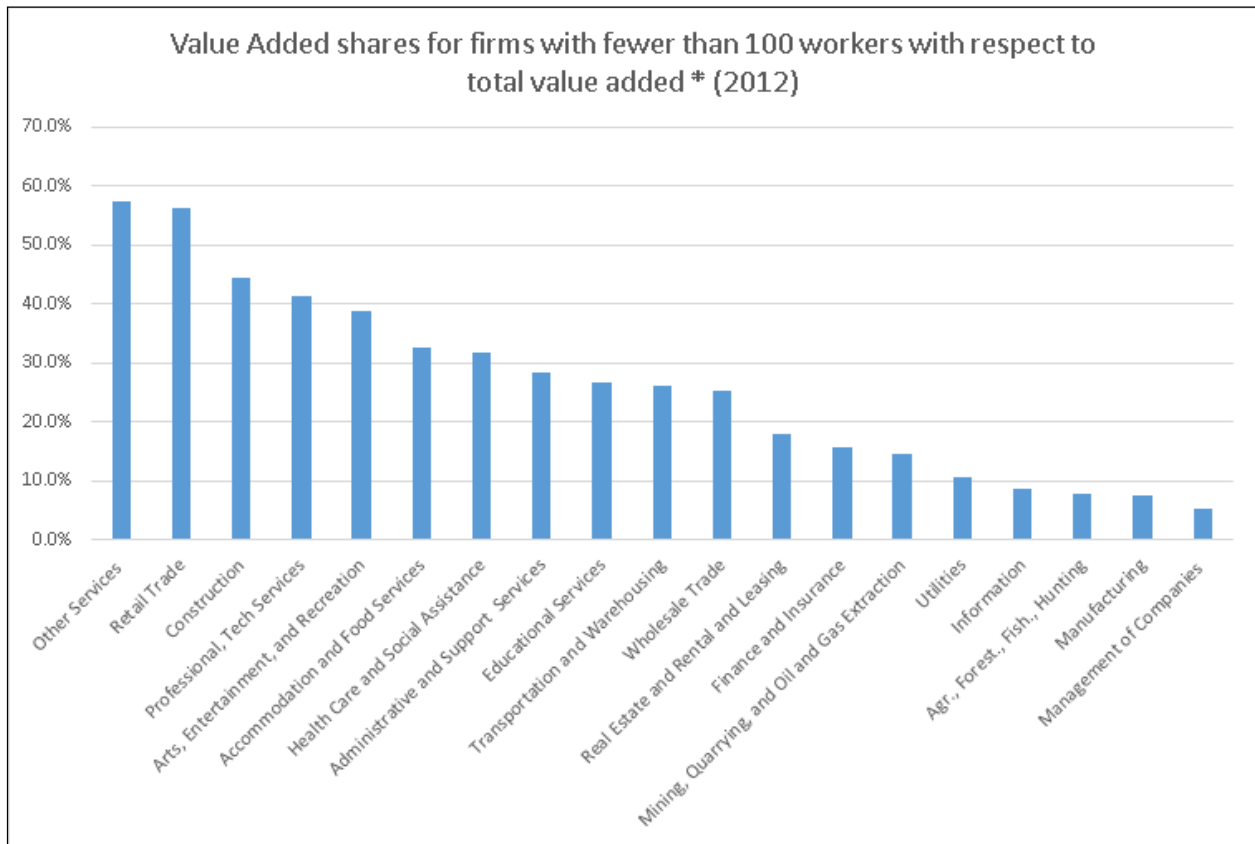
* Only direct value added.

At the bottom of the ranking is management of companies with 5.3 percent, manufacturing with 7.6 percent, and agriculture, forestry, fish and hunting with 7.8 percent.

Output

In 2012, output generated by nonemployer and small business with fewer than 100 employees in Texas amounted close to $1.02 trillion.

Table 10 shows the ranking with the construction sector at the top of the list ($158.3 billion) followed by the manufacturing sector ($134.8 billion), and the professional, scientific & technical services ($107.9 billion).

Table 10

TEXAS: EMPLOYER AND NON-EMPLOYER OUTPUT IMPACTS OF SMALL FIRMS WITH FEWER THAN 100 WORKERS (Millions of dollars for 2012)				
2-digit NAICS and Description	**Direct**	**Indirect**	**Induced**	**Total**
23 Construction	$80,527	$52,835	$24,967	$158,329
31-33 Manufacturing	$45,328	$60,723	$28,836	$134,887
54 Professional- scientific & tech svcs	$63,428	$19,227	$25,258	$107,912
62 Health & social services	$48,258	$18,029	$28,007	$94,294
42 Wholesale Trade	$34,429	$12,756	$16,820	$64,005
81 Other services	$35,927	$11,273	$11,446	$58,647
52 Finance & insurance	$28,023	$15,574	$13,274	$56,870
21 Mining	$32,008	$14,060	$8,506	$54,574
44-45 Retail trade	$28,845	$4,092	$20,199	$53,136
53 Real estate & rental	$32,177	$7,363	$10,371	$49,911
72 Accommodation & food services	$23,958	$12,968	$11,440	$48,366
48-49 Transportation & Warehousing	$25,475	$12,116	$7,645	$45,236
56 Administrative & waste services	$22,348	$9,131	$9,494	$40,973
51 Information	$6,853	$3,988	$3,709	$14,550
22 Utilities	$5,671	$3,386	$2,097	$11,154
71 Arts- entertainment & recreation	$5,805	$2,069	$2,135	$10,009
61 Educational svcs	$4,553	$1,683	$2,458	$8,694
11 Ag, Forestry, Fish & Hunting	$1,838	$1,413	$684	$3,935
55 Management of companies	$1,301	$1,085	$1,095	$3,481
92 Government & non NAICs	$84	$505	$484	$1,073
Total	$526,835	$264,277	$228,924	$1,020,036

Chart 4 exhibits the percentage of direct output produced by SBF100 firms with respect to their sectors' output. In first place is the other services sector with 67.0 percent of the value added produced by SBF100 firms. It is followed by construction with 52.0 percent; professional, scientific and technical services with 46.6 percent; by arts, entertainment and recreation with 43.5 percent; and by health care and social assistance with 36.6 percent.

Chart 4

Output shares for firms with fewer than 100 workers with respect to total output* (2012)
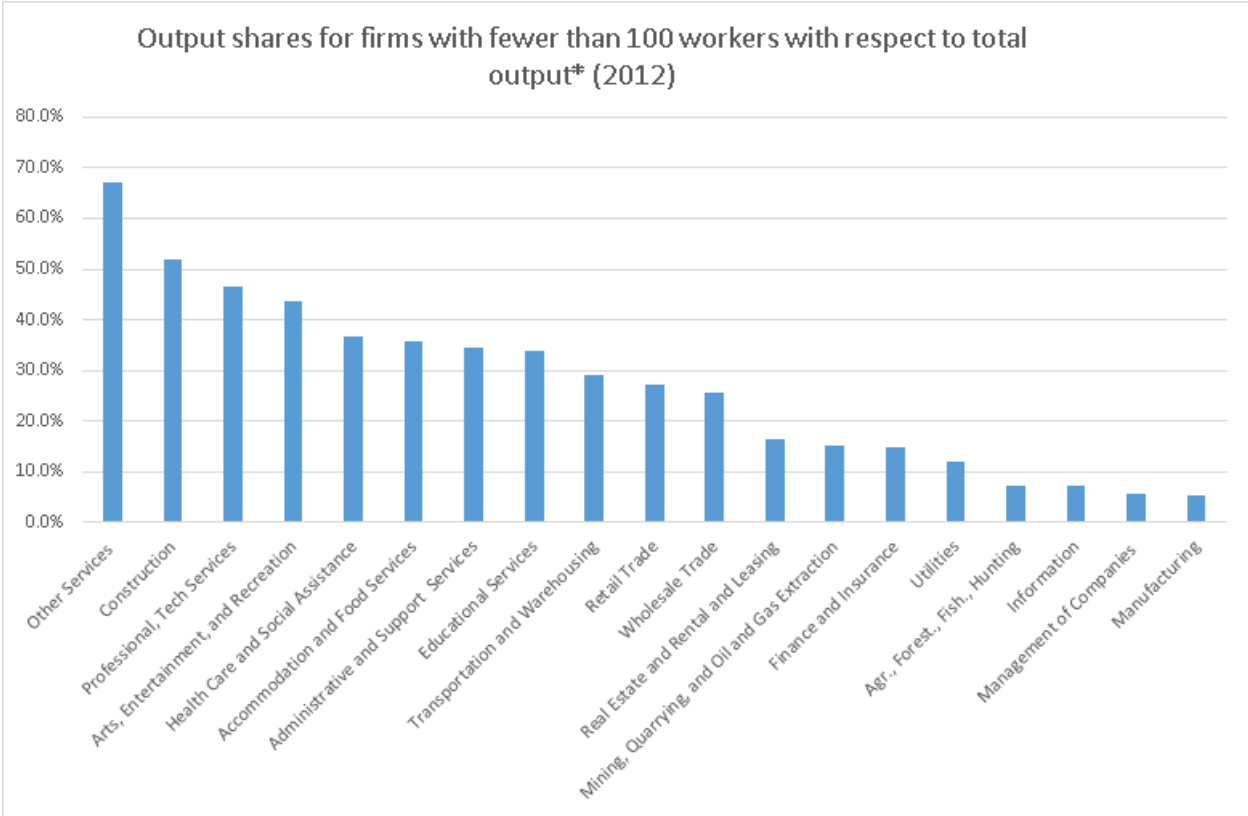
* Only direct output.

One important impact is the generation of tax and other nontax revenues to the State and to local governments. These revenues come in the form of sales, property or severance taxes; and in the form of fees and other nontax revenues.

For the State of Texas and all local governments in the State, the activities of SBF100 firms, employers and nonemployers, generated $13.9 billion in State revenues and $14.97 billion in local governments revenues in 2012 (Table 11). As mentioned before, these revenues include sales and property taxes. Additionally, not included in the previous revenues, the State of Texas collects $39.7 million in franchise taxes, and $251.3 million in Social Security contributions.

Table 11

TEXAS: EMPLOYER AND NON-EMPLOYER FISCAL IMPACTS (Dollars 2012)	
State of Texas revenues	$13,866,400
Local governments revenues	$14,965,900

Clusters and Small businesses by Workforce Development Areas (nonemployers firms only)

According to the State Legislature: "industry cluster means a concentration of businesses and industries in a geographic region that are interconnected by the markets they serve, the products

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they produce, their suppliers, the trade associations to which their employees belong, and the educational institutions from which their employees or prospective employees receive training."[24]

In this section, six clusters are mapped into 28 Workforce Development Areas (WDAs),indicating the relative strength of the cluster by the portion of small businesses with fewer than 100 employees with respect to the total number of businesses in the respective cluster. These clusters are: Petroleum Refining and Chemical Products, Biotechnology and Life Sciences, Energy, Information and Computer Technology, Advanced Technologies and Manufacturing, and Aerospace and Defense.

To this end, the number of SBF100 firms in each particular cluster was divided by the total number of SBF100 firms in the respective WDA, excluding the government related firms. The same percentage was calculated at the State level. The ratio of the WDA's percentage and the State's percentage represents a location quotient type of indicator where the number of firms replaces the number of jobs in the traditional calculation of location quotients.

The colors of the WDAs indicate possible location quotient categories with the darkest colors indicating a higher location value and the lightest colors indicating lower values. As usual, the higher values indicate a strong presence of SBF100 firms in the cluster for the particular WDA, and the lower values indicating a weaker presence in the cluster.

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[24] In the SB275, Government Code, Section 481.001 (6). Taken from Texas Industry Cluster Initiative Background at the Texas Workforce Commission web site: www.twc.state.tx.us/ticluster.html

Petroleum Refining and Chemical Products Cluster

Figure 1 maps the relative importance of the petroleum cluster among the WDAs. Based on the location quotients, the map shows two WDAs as having the importance of the petroleum cluster above the rest of the State: the Permian Basin and the Panhandle areas.

Figure 1

Petroleum cluster in Texas. Location quotients by WDA (2012 CBP data)
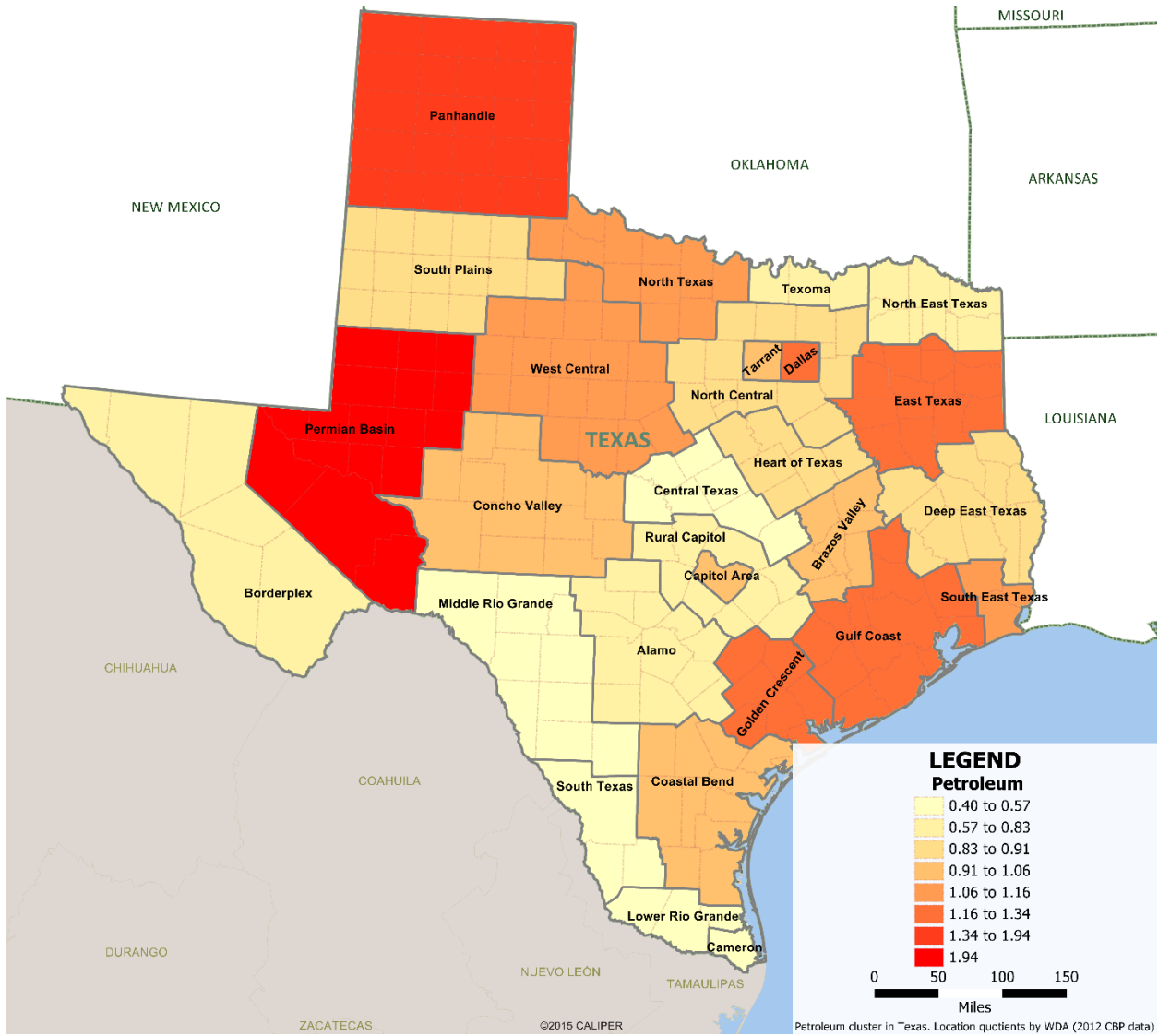
Biotechnology and Life Sciences Cluster

Figure 2 maps the relative importance of the biotechnology cluster. Based on the location quotients, the map shows three WDAs as having the importance of the biotechnology cluster above the rest of the State: the North Central Texas, the Capitol Area, and the Gulf Coast.

Figure 2

Biotechnology cluster in Texas. Location quotients by WDA (2012 CBP data)
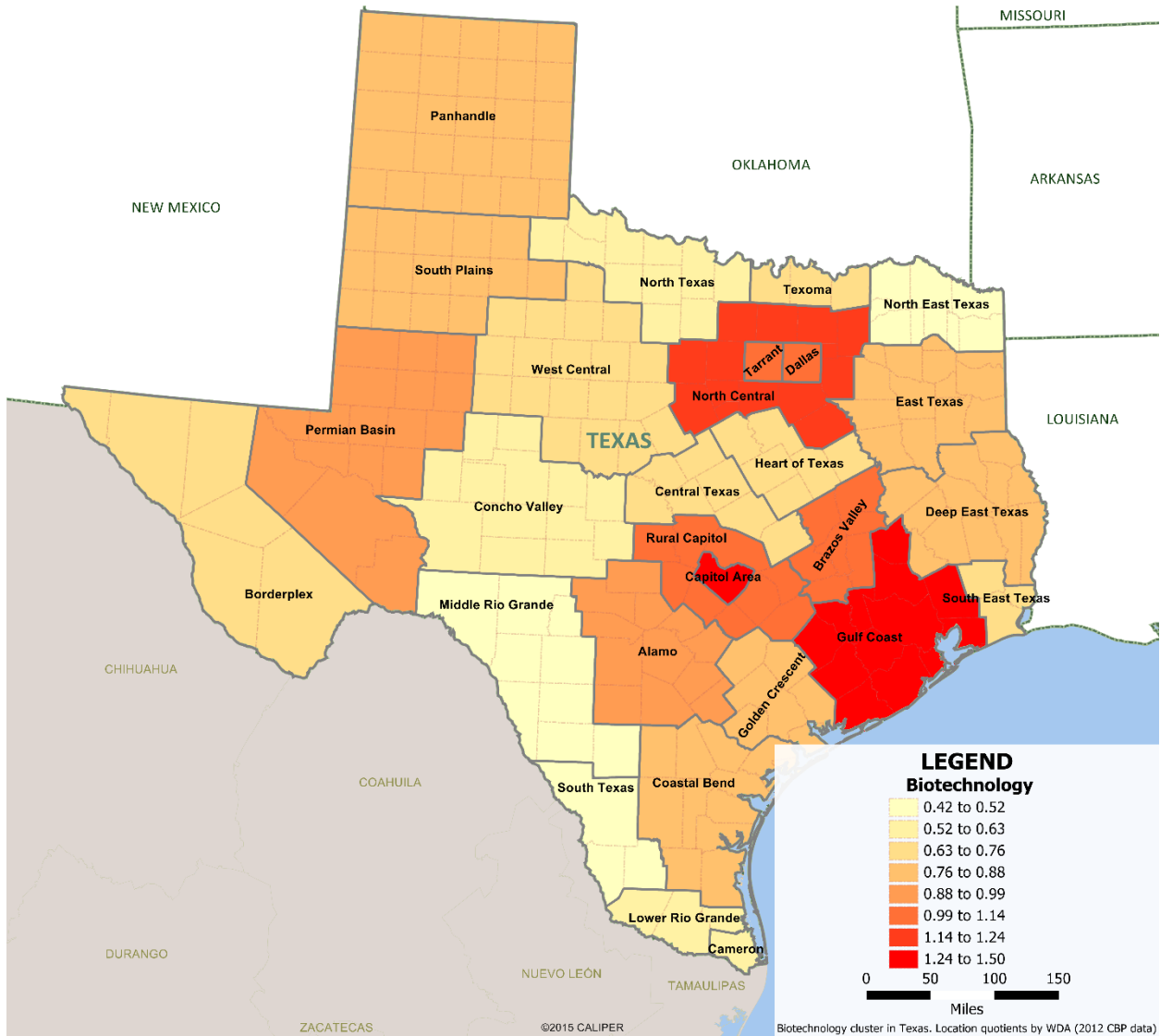
Energy Cluster

Figure 3 maps the relative importance of the energy cluster. Based on the location quotients, the map shows two WDAs with the energy cluster as relatively more important than the rest of the State: Permian Basin and the North Texas WDAs.

Figure 3

Energy cluster in Texas. Location quotients by WDA (2012 CBP data)

Information and Computer Technology Cluster

Figure 4 maps the relative importance of the information cluster. Based on the location quotients, the map shows three WDAs having the importance of the information cluster above the rest of the State: the Capitol Area, the North Central Texas, and the Dallas WDAs.

Figure 4
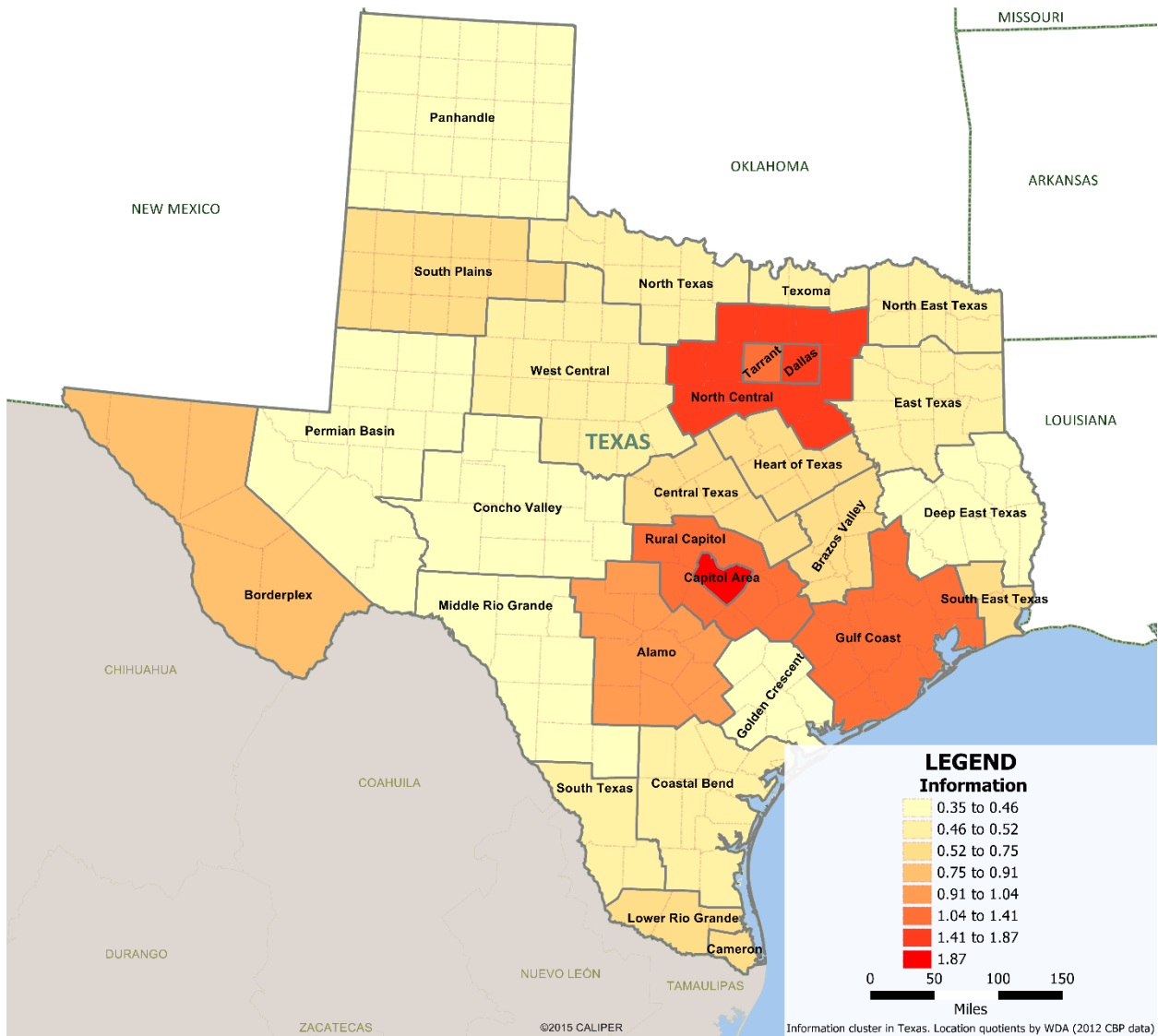
Advanced Technologies and Manufacturing Cluster

Figure 5 maps the relative importance of the advanced technologies cluster. Based on the location quotients, the map shows three WDAs having the importance of the information cluster above the rest of the State: the Capitol Area, the North Central Texas, and the Dallas WDAs. This is similar to the Information and Computer Technology cluster.

Figure 5
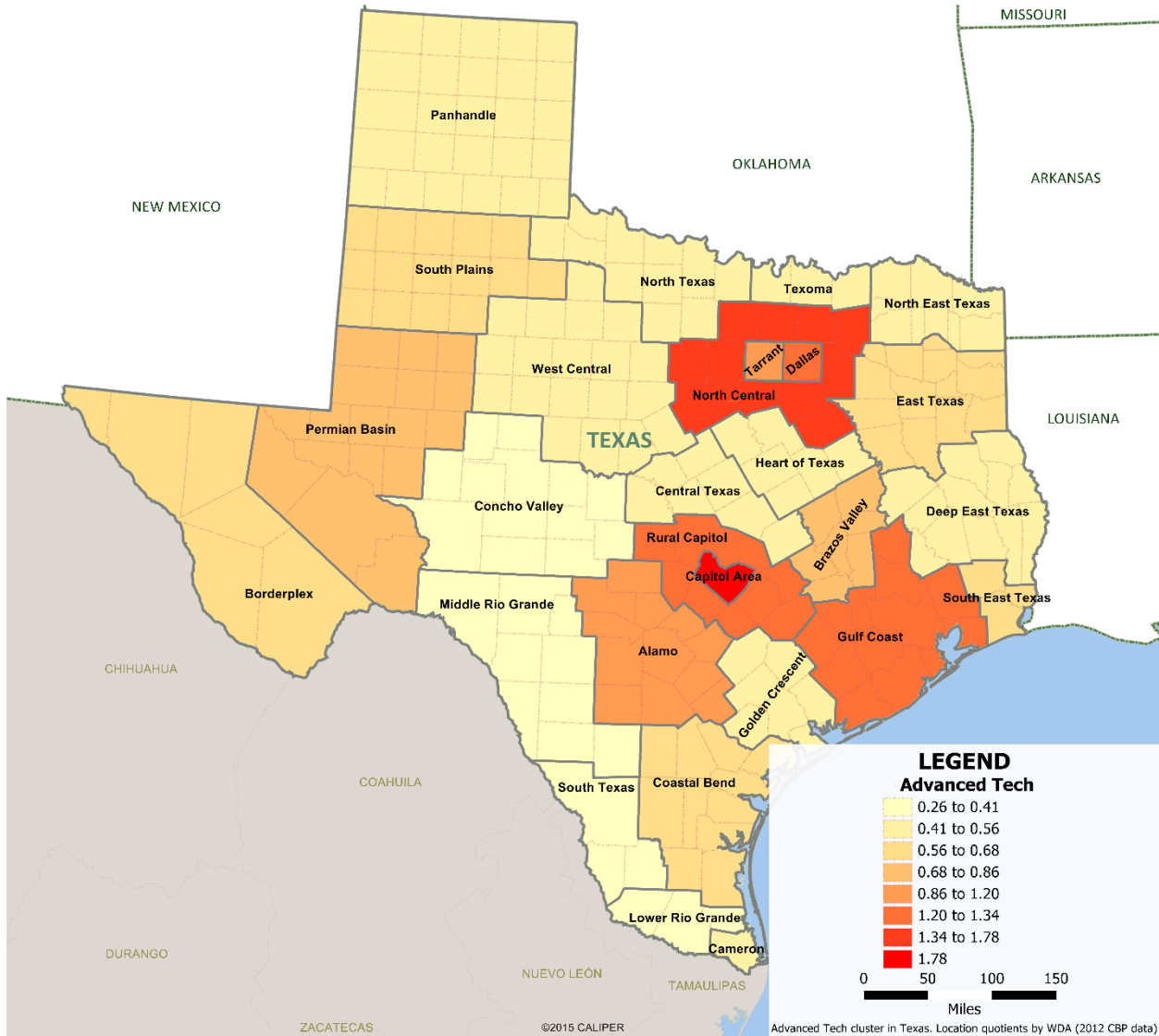
Aerospace and Defense Cluster

Figure 6 maps the relative importance of the aerospace cluster. Based on the location quotients, the map shows three WDAs having the importance of the aerospace cluster above the rest of the State: the Middle Rio Grande, the Capitol Area, and the Brazos Valley WDAs.
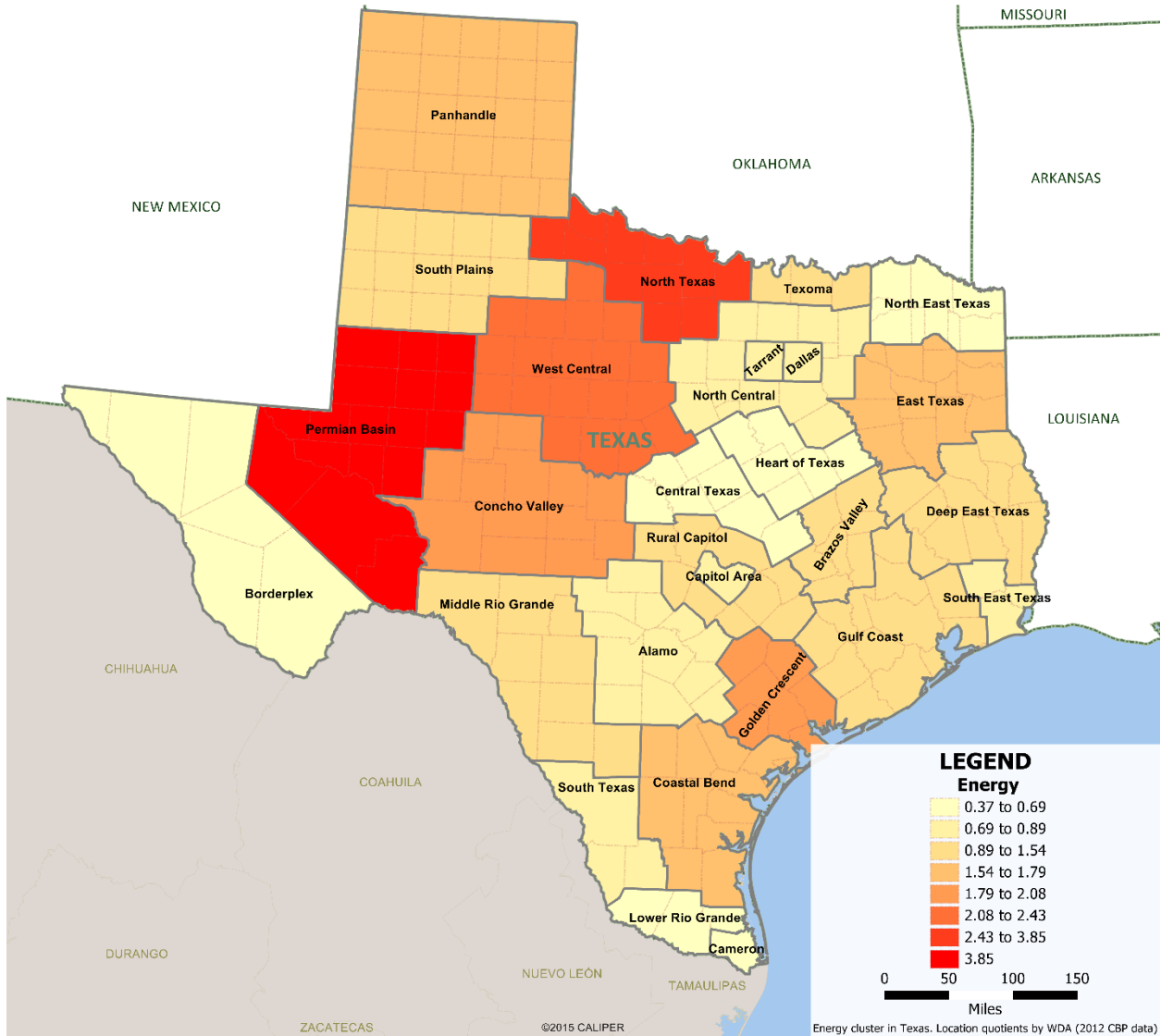
Figure 6

Aerospace cluster in Texas. Location quotients by WDA (2012 CBP data)
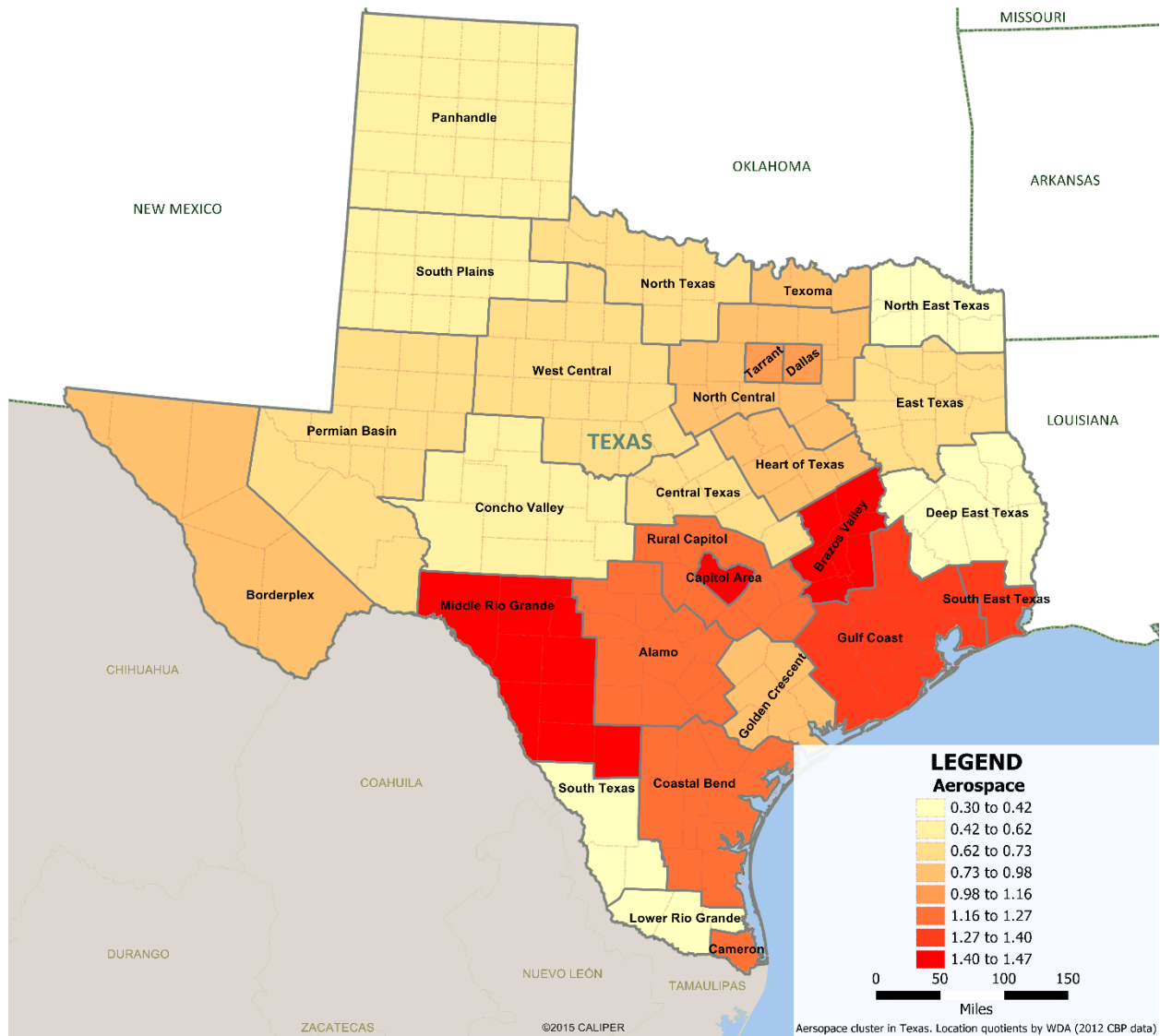
Appendix A: Definitions of Clusters by NAICS industries

All industries listed here correspond to the *core* definition of a cluster in Texas. A cluster has several supporting industries according to the Governor's office. The industries included in one cluster can be included in another cluster; these definitions are not exclusive of each other.

Advanced Technologies and Manufacturing	
NAICS	**NAICS Title**
3251	Basic Organic Chemical Manufacturing
3252	Resin, Rubber, and Synthetic Fibers
3255	Paint, Coating, & Adhesive Manufacturing
3331	Ag., Construction, and Mining Machinery Mfg
3332	Industrial Machinery Manufacturing
3333	Commercial & Service Industry Machinery
3336	Turbine & Power Transmission Equipment Mfg
3339	Other General Purpose Machinery Manufacturing
3341	Computers and Peripheral Equipment Mfg
3342	Communications Equipment Manufacturing
3343	Audio and Video Equipment Manufacturing
3344	Semiconductor & Electronic Components Mfg
3345	Electronic Instrument Manufacturing
3346	Magnetic Media & Reproducing Manufacturing
3353	Power Generators & Electrical Equipment Mfg
3359	Batteries, Fiber Optic Cable & Misc Electrical Mfg
3361	Automobile, Light & Heavy Duty Truck Manufacturing
3362	Motor Vehicle Body and Travel Trailer Manufacturing
3363	Motor Vehicle Parts Manufacturing
3364	Guided Missles, Aerospace Product & Parts Mfg
3365	Railroad Rolling Stock Manufacturing
3366	Ship and Boat Building
3369	Bike, Motorcycle & Misc. Transport Manufacturing
3391	Medical and Dental Equipment Mfg
5413	Architectural, Engineering, Testing Lab Services
5414	Interior, Industrial & Specialized Design Services
5415	Computer Systems Design and Related Services

Aerospace and Defense	
NAICS	**NAICS Title**
3333	Commercial & Service Industry Machinery
3345	Electronic Instrument Manufacturing
3361	Automobile, Light & Heavy Duty Truck Manufacturing
3364	Guided Missles, Aerospace Product & Parts Mfg
3366	Ship and Boat Building
3369	Bike, Motorcycle & Misc. Transport Manufacturing
4881	Airport Operations, Air Traffic Control & Related
4883	Port & Harbor Operations & Navigation Services
5417	Scientific Research and Development Services
9190	Federal Govt

Biotechnology and Life Sciences	
NAICS	**NAICS Title**
1125	Animal Aquaculture
1151	Farm Management Services
1152	Support Activities for Animal Production
1153	Support Activities for Forestry
3251	Basic Organic Chemical Manufacturing
3252	Resin, Rubber, and Synthetic Fibers
3253	Pesticide & Agricultural Chemical Mfg.
3254	Pharmaceutical & Medicine Manufacturing
3345	Electronic Instrument Manufacturing
3391	Medical and Dental Equipment Mfg
5413	Architectural, Engineering, Testing Lab Services
5416	Management & Technical Consulting Services
5417	Scientific Research and Development Services
5419	Market Research & Other Professional Services
6215	Medical, Diagnostic Laboratories & Imaging Centers

Energy	
NAICS	NAICS Title
2111	Oil and Natural Gas Extraction
2121	Anthracite Coal Mining
2131	Oil Well Drilling & Support Activities for Mining
2211	Electric Power Generation and Supply
2212	Natural Gas Distribution
2371	Utility/Communications System Construction
2379	Other Heavy Construction
3336	Turbine & Power Transmission Equipment Mfg
3353	Power Generators & Electrical Equipment Mfg
4861	Pipeline Transportation of Crude Oil
4862	Pipeline Transportation of Natural Gas
5413	Architectural, Engineering, Testing Lab Services

Information and Computer Technology	
NAICS	NAICS Title
3332	Industrial Machinery Manufacturing
3333	Commercial & Service Industry Machinery
3341	Computers and Peripheral Equipment Mfg
3342	Communications Equipment Manufacturing
3343	Audio and Video Equipment Manufacturing
3344	Semiconductor & Electronic Components Mfg
3345	Electronic Instrument Manufacturing
3346	Magnetic Media & Reproducing Manufacturing
3359	Batteries, Fiber Optic Cable & Misc Electrical Mfg
4234	Computer, Office & Other Commercial Equip Merchants
4431	Electronics, Camera and Appliance Stores
5112	Software Publishers
5152	Cable and Other Subscription Programming
5161	Internet Publishing and Broadcasting
5172	Wireless Telecommunications Carriers
5181	ISPs and Web Search Portals
5182	Data Processing and Related Services
5414	Interior, Industrial & Specialized Design Services
5415	Computer Systems Design and Related Services
6113	Colleges and Universities
6114	Business, Computer & Management Training
6115	Technical and Trade Schools

Petroleum Refining and Chemical Products	
NAICS	NAICS Title
3241	Petroleum & Coal Products Manufacturing
3251	Basic Organic Chemical Manufacturing
3252	Resin, Rubber, and Synthetic Fibers
3253	Pesticide & Agricultural Chemical Mfg.
3256	Cleaning Compound and Toiletry Manufacturing
3259	Other Chemical Preparation Manufacturing
3261	Misc. Plastics Product Manufacturing
3262	Tires, Tubes & Misc. Rubber Manufacturing
3331	Ag., Construction, and Mining Machinery Mfg
3332	Industrial Machinery Manufacturing
3345	Electronic Instrument Manufacturing
4246	Chemical Merchant Wholesalers
4247	Petroleum Merchant Wholesalers
4861	Pipeline Transportation of Crude Oil
4862	Pipeline Transportation of Natural Gas
4869	Other Pipeline Transportation
5239	Investment, Portfolio and Misc. Financial Services
9190	Federal Govt
9290	State Government

Appendix B: Workforce Development Areas

WDA		
Armstrong, Briscoe, Carson, Castro, Childress, Collingsworth, Dallam, Deaf Smith, Donley, Gray, Hall, Hansford, Hartley, Hemphill, Hutchinson, Lipscomb, Moore, Ochiltree, Oldham, Parmer, Potter, Randall, Roberts, Sherman, Swisher, Wheeler	Workforce Solutions Panhandle	1
Bailey, Cochran, Crosby, Dickens, Floyd, Garza, Hale, Hockley, King, Lamb, Lubbock, Lynn, Motley, Terry, Yoakum	Workforce Solutions South Plains	2
Archer, Baylor, Clay, Cottle, Foard, Hardeman, Jack, Montague, Wichita, Wilbarger, Young	Workforce Solutions North Texas	3
Collin, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Wise	Workforce Solutions for North Central Texas	4
Tarrant	Workforce Solutions for Tarrant County	5
Dallas	Workforce Solutions Greater Dallas	6
Bowie, Cass, Delta, Franklin, Hopkins, Lamar, Morris, Red River, Titus	Workforce Solutions Northeast Texas	7
Anderson, Camp, Cherokee, Gregg, Harrison, Henderson, Marion, Panola, Rains, Rusk, Smith, Upshur, Van Zandt, Wood	Workforce Solutions East Texas	8
Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Kent, Knox, Mitchell, Nolan, Runnels, Scurry, Shackleford, Stephens, Stonewall, Taylor, Throckmorton	Workforce Solutions of West Central Texas	9
Brewster, Culberson, El Paso, Hudspeth, Jeff Davis, Presidio	Workforce Solutions Borderplex	10
Andrews, Borden, Crane, Dawson, Ector, Gaines, Glasscock, Howard, Loving, Martin, Midland, Pecos, Reeves, Terrell, Upton, Ward, Winkler	Workforce Solutions Permian Basin	11
Coke, Concho, Crockett, Irion, Kimble, Mason, McCulloch, Menard, Reagan, Schleicher, Sterling, Sutton, Tom Green	Workforce Solutions Concho Valley	12
Bosque, Falls, Freestone, Hill, Limestone, McLennan	Workforce Solutions for the Heart of Texas	13
Travis	Workforce Solutions Capital Area	14
Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Williamson	Workforce Solutions Rural Capital Area	15
Brazos, Burleson, Grimes, Leon, Madison, Robertson, Washington	Workforce Solutions Brazos Valley	16
Angelina, Houston, Jasper, Nacogdoches, Newton, Polk, Sabine, San Augustine, San Jacinto, Shelby, Trinity, Tyler	Workforce Solutions Deep East Texas	17
Hardin, Jefferson, Orange	Workforce Solutions Southeast Texas	18
Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Walker, Waller, Wharton	Workforce Solutions Gulf Coast	28
Calhoun, DeWitt, Goliad, Gonzales, Jackson, Lavaca, Victoria	Workforce Solutions Golden Crescent	19
Atascosa, Bandera, Bexar, Comal, Frio, Gillespie, Guadalupe, Karnes, Kendall, Kerr, Medina, Wilson	Workforce Solutions Alamo	20
Jim Hogg, Webb, Zapata	Workforce Solutions for South Texas	21
Aransas, Bee, Brooks, Duval, Jim Wells, Kenedy, Kleberg, Live Oak, McMullen, Nueces, Refugio, San Patricio	Workforce Solutions of the Coastal Bend	22
Hidalgo, Starr, Willacy	Workforce Solutions Lower Rio Grande Valley	23
Cameron	Workforce Solutions Cameron	24
Cooke, Fannin, Grayson	Workforce Solutions Texoma	25
Bell, Coryell, Hamilton, Lampasas, Milam, Mills, San Saba	Workforce Solutions of Central Texas	26
Dimmit, Edwards, Kinney, LaSalle, Maverick, Real, Uvalde, Val Verde, Zavala	Workforce Solutions Middle Rio Grande	27

The Impact of Small Businesses:
A Cross-Section Study of Establishment Sizes by Sector and
County-Level Income in Texas for 2012

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Summary

The study depicts several pictures of the relationships between the relative importance of small establishments in their respective industrial sectors and households' median income across counties in the State of Texas. These results contribute to the research on the relationship between small businesses and income per capita by adding a disaggregated analysis by industrial sectors and by establishment size.

The results indicate that in some industries the higher percentage of very small establishments is positively related to higher incomes. However, in other industries this relationship is reversed: the higher percentage of small businesses are related to lower county incomes.

These results are consistent with previous studies showing that over time young and small businesses grow faster and pay higher wages; and they are also consistent with studies showing smaller firms provide experience and on-the-job training to a broader segment of the population rather than pay higher wages.

The healthcare and social assistance sector results show a positive relationship between counties' median household income and the percentage of small businesses. Results for the professional, scientific, and technical consultation services sector indicate a negative relationship for businesses with more than 20 and fewer than 50 employees.

The manufacturing sector is different from the previous industries because there are both negative and positive relationships between the establishment sizes and the counties' incomes. Other sectors show negative relationships between business size and incomes.

Introduction

Small businesses are usually associated with job creation but also job destruction, as several of them are unsuccessful in the medium and long run. Nevertheless, other studies have indicated that even though small businesses have low productivity and compensations, over time young and small businesses have a tendency to grow faster and pay higher wages in the future (Audretsch, 2002; Davis, Haltiwanger, and Schuh, 1996; Birch, 1987).

Some studies (Shaffer, 2006a) have found a negative relationship between establishment size and employment growth, this means that smaller businesses are associated with higher growth; while others (Baptista, Escaria & Madruga, 2008) have argued that the level of business formation and employment growth is more a function of the types and quality of the small businesses.

Several small businesses have positive impacts on wages but the majority do not pay higher wages than their larger competitors. This study finds that in some industries the higher percentage of very small firms is positively related to higher incomes. However, in other industries this relationship is reversed: high percentages of small businesses are related to lower than average county incomes.

These results are consistent with previous research showing that smaller firms do not hire the best educated and skilled workers, however, they provide experience and on-the-job training to a broader segment of the population than larger firms on average. In particular, a worker may gain more prompt exposure to a broader segment of the company's business in a smaller firm, due to a higher degree of integration across functions within the firm (Shaffer, 2006). Other studies show that over time young and small businesses grow faster and pay higher wages.

This study partially follows Shaffer's paper (2006b) on the relationship of counties' median household income growth and the size of establishments in the U.S. Similar to Shaffer's paper, the present study uses a cross-section sample of counties and analyzes how a set of variables, including the relative size of businesses by sector, affects counties' incomes. Also, similar to Shaffer's study, we used percentages of units of small businesses by sector rather than the employment percent. Diverging from Shaffer (2006b), this present study's dependent variable is counties' median household income instead of income growth. What's more, instead of four industrial sectors in Shaffer's research, here six sectors are studied: professional, scientific, and technical services; health care and social assistance; manufacturing; transportation and warehousing; construction; and other services.

The healthcare and social assistance sector results show a statistically significant positive relationship between counties' median household income and the percentage of small businesses. Results for the professional, scientific, and technical consultation services sector demonstrate a statistically significant negative relationship for firms with more than 20 and fewer than 50 employees.

The manufacturing sector is differs from the previous sectors as there are significant relationships between the size of the businesses and the counties' income, with a negative sign in one case, and a positive sign in another case.

Methodology

Information on establishment size for counties in Texas came from the County Business Patterns data set for the year 2007. The dependent variable is the counties' median household income for 2007, as reported by the Census Bureau. The control variables were taken from different official data sources: the percentage of population with at least a bachelor's degree came from the 2000 Census data, the value of local government revenues per capita was taken from the 2002 Statistical Abstract, and county populations came from the 2007 Bureau of Economic Analysis Regional Economic Information System (REIS) data.

The size of firms enter the regressions in the form of percentages of firms with 1 to 4 employees (model 1), with 5 to 9 employees (model 2), with 10 to 19 employees (model 3), with 20 to 49 employees (model 4), and with 50 to 99 employees (model 5), with respect to the total number of firms in the industries.

In order to keep the comparisons among the regressions consistent, only those counties where all the industrial sectors show at least one small business with fewer than 100 employees were included, reducing the number of Texan counties considered from 254 to close to 221 depending on the industry. For this reason other sectors, like finance, mining or utilities, were not included at this time.

The regressions were estimated initially with ordinary least squares (OLS) with a correction for heteroscedasticity using the HCC option in SAS to estimate heteroscedastic consistent covariance matrices. [25] Even though the OLS estimates are still unbiased in the presence of heterocesdasticity, they produce incorrect covariance matrices that can produce unreliable significance tests. The use of a Harvey-Godfrey test for heteroscedasticity allows the identification of models that need to be estimated using weighted least squares (WLS) methods to solve these problems. The WLS transforms the model to obtain error variances consistent with the assumption of homocedasticity for the classical linear regression model. [26]

Results

One of the results shows a statistically significant positive relationship between counties median household income and the percentage of small businesses, this is the case of the health care and social assistance sector. Table 1 shows the results for this sector. The columns with the WLS labels indicate that those models were estimated using weighted least square methods after the Harvey-Godfrey tests indicated a P-value lower than 0.1.

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[25] From SAS web site at:
https://support.sas.com/documentation/cdl/en/etsug/60372/HTML/default/viewer.htm#etsug_model_sect043.htm

[26] According to the SAS web site at: http://support.sas.com/rnd/app/examples/ets/hetero/

Table 1. Health Care and Social Assistance Sector

	Model 1 WLS		Model 2 WLS		Model 3 WLS		Model 4 WLS		Model 5	
Intercept	10.7214	*	10.7695	*	10.781	*	10.8664	*	10.8937	*
log_pop_25_edu_2012	0.24669	*	0.25416	*	0.28147	*	0.29559	*	0.29828	*
log_gov_exp_per_cap	0.04419	***	0.03681		0.03146		0.01448		0.03005	
log_pop_2012	0.03766	*	0.03296	*	0.03077	*	0.02325	**	0.01891	
log_health_per_less_5	0.06729	***	na		na		na		na	
log_health_per_less_10			0.02481		na		na		na	
log_health_per_less_20					-0.01502		na		na	
log_health_per_less_50							-0.0312		na	
log_health_per_less_100									-0.02512	
Adjusted R-Square	0.3263		0.3112		0.3622		0.3593		0.3919	
Degrees of Freedom	240		228		205		194		195	
P-value of F-statistic for Harvey-Godfrey Test	0.0005		0.005		0.0788		0.0984		0.2046	

* significant at 1%, ** significant at 5%, and *** significant at 10%

P-value for the original OLS estimates

For Model 1, the control variables also show significant results and with the expected signs, with the exception of government expenditures per capita which showed positive signs in all models. It was expected that the percentage of the population with at least a bachelor's degree and the size of the county population have positive coefficients. On the other hand, larger sizes of small businesses, at least for these samples, do not show statistically significant coefficients although with negative signs for most of them. This might be highlighting the importance of the relative distribution of small businesses *within each sector* as there are important differences in wages among industrial sub-sectors and industries.

Table 2 shows the results for the professional, scientific, and technical consultation services sector. Here, different from the health sector, there is a statistically significant negative coefficient for firms with more than 20 and fewer than 50 employees (Model 4). For the other models there are no significant relationships.

Table 2. Professional, Scientific, and Technical Consultations Services Sector

	Model 1 WLS		Model 2		Model 3		Model 4		Model 5	
Intercept	10.7095	*	10.8492	*	11.061	*	11.1935	*	11.936	*
log_pop_25_edu_2012	0.25394	*	0.28262	*	0.32473	*	0.35493	*	0.43121	*
log_gov_exp_per_cap	0.07365	*	0.05877	***	-0.02408		-0.0475		-0.11459	***
log_pop_2012	0.03175	*	0.28262	*	0.32473	*	0.35493	*	0.43121	*
log_prof_per_prof_less_5	0.04777		na		na		na		na	
log_prof_per_prof_less_10			-0.03471		na		na		na	
log_prof_per_prof_less_20					-0.03433		na		na	
log_prof_per_prof_less_50							-0.06924	*	na	
log_prof_per_prof_less_100									0.03231	
Adjusted R-Square	0.2879		0.3398		0.3952		0.4551		0.3727	
Degrees of Freedom	245		206		162		108		66	
P-value of F-statistic for Harvey-Godfrey Test	0.0278		0.1117		0.2898		0.3465		0.2049	

* significant at 1%, ** significant at 5%, and *** significant at 10%

P-value for the original OLS estimates

Table 3 shows the results for the manufacturing sector and there are significant relationships between the size of the establishments and the counties' incomes, but with a negative sign in one case (Model 3), and a positive sign in another case (Model 4).

Table 3. Manufacturing Sector

	Model 1 WLS		Model 2 WLS		Model 3		Model 4		Model 5	
Intercept	10.9325	*	10.7919	*	11.0295	*	11.054	*	11.2109	*
log_pop_25_edu_2012	0.29237	*	0.2724	*	0.32743	*	0.3151	*	0.34197	*
log_gov_exp_per_cap	0.02431		0.02503		0.00126		0.02369		-0.03708	
log_pop_2012	0.02285	**	0.02975	*	0.01643		0.02249	***	0.01174	
log_manu_per_less_5	0.00499		na		na		na		na	
log_manu_per_less_10			-0.01435		na		na		na	
log_manu_per_less_20					-0.03533	***	na		na	
log_manu_per_less_50							0.03876	***	na	
log_manu_per_less_100									-0.0063	
Adjusted R-Square	0.2987		0.3109		0.4047		0.3729		0.4273	
Degrees of Freedom	215		188		178		168		129	
P-value of F-statistic for Harvey-Godfrey Test	0.0537		0.0753		0.543		0.1045		0.2873	
* significant at 1%, ** significant at 5%, and *** significant at 10%										
P-value for the original OLS estimates										

Table 4 shows the results for the construction sector, where there is a significant coefficients for Model 1, with a negative sign.

Table 4. Construction Sector

	Model 1 WLS		Model 2		Model 3 WLS		Model 4		Model 5	
Intercept	10.7508	*	10.8809	*	11.0517	*	11.3914	*	11.6632	*
log_pop_25_edu_2012	0.27072	*	0.28797	*	0.30474	*	0.34167	*	0.38332	*
log_gov_exp_per_cap	0.03048		0.05588	**	0.01572		0.05671	***	0.03571	
log_pop_2012	0.02792	*	0.01839	***	0.00935		-0.0092		-0.02712	**
log_cons_per_less_5	-0.1531	*	na		na		na		na	
log_cons_per_less_10			-0.0277		na		na		na	
log_cons_per_less_20					-0.02842		na		na	
log_cons_per_less_50							0.0188		na	
log_cons_per_less_100									-0.00019	
Adjusted R-Square	0.3322		0.3132		0.3055		0.3415		0.3411	
Degrees of Freedom	241		223		191		173		117	
P-value of F-statistic for Harvey-Godfrey Test	0.0564		0.7315		0.0211		0.4249		0.6252	
* significant at 1%, ** significant at 5%, and *** significant at 10%										
P-value for the original OLS estimates										

Table 5 shows the results for the other services sector. Similar to construction, there is a firm class size with statistically significant *negative* coefficients; the fewer than 5 employees (Model 1). The results are similar to previous sectors as they are significant in Model 1 as they were for the health care sector.

Table 5. Other Services Sector

	Model 1 WLS		Model 2 WLS		Model 3 WLS		Model 4 WLS		Model 5	
Intercept	10.7456	*	10.8183	*	11.1213	*	11.3153	*	11.6632	*
log_pop_25_edu_2012	0.24888	*	0.25598	*	0.26188	*	0.33023	*	0.3985	*
log_gov_exp_per_cap	0.07038	*	0.03901		-0.00102		0.00568		-0.07217	
log_pop_2012	0.01866	**	0.03038	*	0.01824		0.00376		-0.01484	
log_cons_per_less_5	-0.18716	*	na		na		na		na	
log_cons_per_less_10			0.03534		na		na		na	
log_cons_per_less_20					0.065		na		na	
log_cons_per_less_50							0.02392		na	
log_cons_per_less_100									-0.00019	
Adjusted R-Square	0.3081		0.3135		0.3427		0.3394		0.3411	
Degrees of Freedom	249		228		195		140		117	
P-value of F-statistic for Harvey-Godfrey Test	0.0534		0.0091		0.0384		0.0356		0.1547	
* significant at 1%, ** significant at 5%, and *** significant at 10%										
P-value for the original OLS estimates										

Finally, table 6 shows the results for the transportation sector. Here, also, there are negative relationships between the fewer than 10 employees firms (models 1 and 2) and the income level. The other coefficients show non-significant coefficient with the exception of the college education variable. Similar to the construction sector, these results can be better understood when analyzing the relative wages paid by sectors and sub-sectors.

Table 6. Transportation and Warehousing Sector

	Model 1		Model 2		Model 3 WLS		Model 4		Model 5 WLS	
Intercept	10.9512	*	10.9851	*	11.3276	*	11.4156	*	11.6815	*
log_pop_25_edu_2012	0.2991	*	0.32252	*	0.34503	*	0.34737	*	0.39528	*
log_gov_exp_per_cap	0.03413		0.02648		0.02976		0.04725		0.04933	
log_pop_2012	0.0143		0.00914		-0.01025		-0.01126		-0.0305	***
log_trans_per_less_5	-0.12281	*	na		na		na		na	
log_trans_per_less_10			-0.08289	*	na		na		na	
log_trans_per_less_20					-0.03081		na		na	
log_trans_per_less_50							0.01499		na	
log_trans_per_less_100									-0.00717	
Adjusted R-Square	0.3551		0.3809		0.3351		0.3229		0.3634	
Degrees of Freedom	235		197		170		151		95	
P-value of F-statistic for Harvey-Godfrey Test	0.1128		0.4591		0.0567		0.8796		0.0613	
* significant at 1%, ** significant at 5%, and *** significant at 10%										
P-value for the original OLS estimates										

Sectors and relative wages

As was mentioned before, relative wages paid by different sectors and sub-sectors can explain the different results obtained in the regression analyses. Table 7 shows the average payroll by sectors for Texas, using a 2-digit NAICS classification.

Table 7. Texas

NAICS code	Industry description	Average payroll 2012
	Total for all sectors	$47,769
55	Management of Companies and Enterprises	$127,553
21	Mining, Quarrying, and Oil and Gas Extraction	$97,298
22	Utilities	$89,620
54	Professional, Scientific, and Technical Services	$77,855
51	Information	$73,162
52	Finance and Insurance	$70,261
42	Wholesale Trade	$66,078
31	Manufacturing	$57,264
48	Transportation and Warehousing	$51,031
23	Construction	$50,988
53	Real Estate and Rental and Leasing	$47,778
62	Health Care and Social Assistance	$41,702
56	Administrative and Support and Waste Management and Remediation Services	$35,382
61	Educational Services	$34,108
11	Agriculture, Forestry, Fishing and Hunting	$33,562
81	Other Services (except Public Administration)	$28,240
71	Arts, Entertainment, and Recreation	$28,210
44	Retail Trade	$25,445
72	Accommodation and Food Services	$15,820

Source: County Business Patterns, 2012

According to the table, the average payroll per worker for Texas in 2012 was $41,769, considering the annual payroll paid by the industries and their employment as of March of that year. From the six sectors studied, four show higher than average payrolls: professional, scientific, and technical services; manufacturing; transportation and warehousing; and construction. On the other hand, two sectors show payrolls below the state average: health care and social assistance; and other services. It seems counterintuitive that the regression results showed that transportation and warehousing, and construction activities showed negative relationships with the counties' median household incomes when these sectors have above state average payrolls per worker. Also, it seems counterintuitive that the health care and social assistance sector showed a positive relationship with respect to counties incomes when it has a below state average payroll per worker.

In Table 8, the health care and social assistance services sector has an average payroll per worker ($41,702) below the state average. However, when analyzing the percentage of small businesses in the 1-4 employees' class size, it appears that more than 83 percent of these firms operate in the

sub-sector ambulatory health care services with an average payroll of $48,142, which is above the state average. This sub-sector includes offices of dentists and physicians among others. Therefore, the positive contribution of small businesses, for that class size, to income levels in this industry is not surprising.

Table 8. Health Care Sector

Industry code	Industry code description	'1-4'	Average payroll	Percentage of establishments in the 1-4 employees class (2012)
62	Health Care and Social Assistance	27,372	$41,702	100.00%
621	Ambulatory Health Care Services	22,871	$48,142	83.56%
624	Social Assistance	3,762	$17,344	13.74%
623	Nursing and Residential Care Facilities	722	$24,213	2.64%
622	Hospitals	17	$53,558	0.06%

Table 9 shows the average payroll for the professional, scientific, and technical services for different establishment sizes divided into nine sub-sectors. Out of the total number of the establishments in this sector, for class sizes 5-9, 10-19, and 20-49 workers (models 2, 3, and 4, respectively) the lowest wage payment industry (NAICS 5419) represents a larger percentage of the total number of businesses than the other two class sizes, 1-4 and 50-99 workers. Therefore, those class sizes are associated with relatively lower wages than the other two industries, and the negative relationship with income associated with them.

Table 9. Professional, Scientific, and Technical Consultation Services Industries, Average Wages by Establishment Sizes (Percentages)

Industry code	Industry code description	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	Average Wage
	Weighted average wage for 6 digits NAICS codes	$74,583	$69,294	$66,178	$73,164	$78,715	$77,855

Table 10 shows the results for the transportation and warehousing sector. Similar to the construction sector, there are several sub-sectors with less than the state average payroll per worker. For model 1, these lower wage sub-sectors account for close to 91 percent of the establishments: truck transportation, transit and ground passenger transportation, couriers and messengers, among others all have below average payrolls.

Table 10. Transportation and Warehousing Sector

Industry code	Industry code description	'1-4'	Average Wage	Percentage of establishments in the 1-4 employees class (2012)
48	Transportation and Warehousing	8,801	$51,031	100.00%
484	Truck Transportation	4,765	$47,256	54.14%
488	Support Activities for Transportation	2,130	$44,084	24.20%
492	Couriers and Messengers	565	$37,193	6.42%
493	Warehousing and Storage	407	$41,566	4.62%
485	Transit and Ground Passenger Transportation	327	$26,346	3.72%
486	Pipeline Transportation	293	$142,994	3.33%
481	Air Transportation	220	NA	2.50%
483	Water Transportation	59	$87,161	0.67%
487	Scenic and Sightseeing Transportation	35	$24,903	0.40%

Something similar occurs for the class size 5-9 workers, in Table 11, where the lower wage sub-sectors account for close to 87 percent of the establishments in that category.

Table 11. Transportation and Warehousing Sector

Industry code	Industry code description	'5-9'	Average Wage	Percentage of establishments in the 5-9 employees class (2012)
48	Transportation and Warehousing	2,955	$51,031	100.00%
484	Truck Transportation	1,294	$47,256	43.79%
488	Support Activities for Transportation	925	$44,084	31.30%
493	Warehousing and Storage	209	$41,566	7.07%
492	Couriers and Messengers	159	$37,193	5.38%
486	Pipeline Transportation	145	$142,994	4.91%
485	Transit and Ground Passenger Transportation	121	$26,346	4.09%
481	Air Transportation	66	NA	2.23%
483	Water Transportation	21	$87,161	0.71%
487	Scenic and Sightseeing Transportation	15	$24,903	0.51%

Table 12 shows the payrolls for the other services sector. Here, for model 1, the relationship is clear when paying attention to the low average payrolls of each sub-sector. With an average payroll below the county average, small businesses operating in these industries will, in effect, lower the counties' household median incomes.

Table 12. Other Services Sector

Industry code	Industry code description	'1-4'	Average Wage	Percentage of establishments in the 1-4 employees class (2012)
81	Other Services (except Public Administration)	28,492	$28,240	100.00%
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	11,823	$22,852	41.50%
811	Repair and Maintenance	9,177	$41,506	32.21%
812	Personal and Laundry Services	7,492	$22,774	26.30%

Tables 13 and 14 show some comparisons for the manufacturing sector.

Table 13. Manufacturing

Industry code	Class size '10-19'	Percentage of establishments in the 10-19 employees class (2012)	Weighted average wage
31-33	3,034	100.00%	$50,259.00
31	370	12.20%	$4,308
32	935	30.82%	$15,299
33	1,729	56.99%	$30,652

Table 14. Manufacturing

Industry code	Class size '20-49'	Percentage of establishments in the 20-49 employees class (2012)	Weighted average wage
31-33	2,940	100.00%	$51,718
31	347	11.80%	$4,256
32	945	32.14%	$16,589
33	1,648	56.05%	$30,872

Conclusion

Despite the different relationships with respect to income levels, small businesses play a very important role in providing on-the-job training and experience to a broad segment of the labor force. In some sectors, like health care and manufacturing, these small establishments pay higher wages than the larger businesses.

As some studies at the international level have shown (Gollin, 2008) rich regions may enjoy the benefits of the "innovative" small business entrepreneur and high wages, whereas poor regions

may benefit with on-the-job training from small business opportunities for the lower wage segments of the labor force.

Our study has shown that these relationships are not uniform across sectors and counties because different business sizes in the same sector can have positive or negative impacts on counties' incomes. These results are important for policy purposes as they highlight the need for understanding the specific roles these small businesses play in each particular region and in each particular segment of the industries.

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Business Ownership, Self-Employment Demographics, Intergenerational Ownership Transmission, Job Creation, and "Giganomics"

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Summary

The Office of the Governor contracted with CCBR to investigate the economic impacts of Texas businesses with fewer than 100 employees and to identify factors that contribute to their success or failure. This report explores and analyzes issues of small business ownership, which includes a breakdown of self-employment by race and gender within 17 different sectors, and literature reviews on intergenerational transmission, giganomics, and job creation and destruction.

In the first chapter, the study estimates rates of self-employment using the 2000 Decennial Census and the American Community Survey (ACS) 5-year averages from 2009 to 2013. For these two sources, the self-employment rates in 17 economic sectors were calculated based on race and gender for Texas and the United States.

Following the race and gender demographic sector analyses section, self-employment demographics were further separated according to 17 economic sectors. Findings demonstrate the largest change in percentage points, from 2009-2013 when compared to 2000 averages, in the agriculture, forestry, fishing, and hunting sector.[27] The nearly ten percent point drop shows that, at the national level, individuals are less likely to own a business in this sector. The health care sector shows the second largest drop in self-employment with a two percent point decline.

Additionally, three sections discuss important topics related to small businesses. The first topic, intergenerational transmission of ownership, explores factors as to why children of self-employed parents are more likely to become self-employed themselves.

The next chapter provides an overview of "Giganomics". The gig economy is not new, rather its demographic reach and mode of access has changed. This section examines the opportunities and challenges that arise from this non-traditional work arrangement.

The last section reviews several studies that investigate the claim that small businesses are the primary job creators. Most studies reviewed tend to find that while smaller firms do create a majority of new jobs, they also have higher exit rates than larger firms. More recent studies indicate that it is not a matter of firm size that is driving job creation but firm age.

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[27] Rates of self-employment were estimated using the 2000 Decennial Census and 2009-2013 5-year average from the American Community Survey (ACS).

Introduction

Self-employment is an important source of jobs in the United States today. The Census Bureau identifies two distinct self-employed workers: those who self-employed in their own unincorporated business and those who are self-employed in their own incorporated business.[28]

Data pulled from the Census of Population and Housing reported that 15.9 million Americans were self-employed in 2000. Thirteen years later, the American Community Survey estimates for 2009-2013 were around 17.4 million. In other words, 9.55 percent of Americans were self-employed in 2000 and this number increased by .05 to 9.60 percent in 2013.

For this self-employment analysis, self-employed workers were tabulated including both the unincorporated and incorporated from the 2000 United States Census Bureau and the 5 year American Community Survey estimates.

Percentage of self-employed workers in all industries									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	4.97%	**	4.98%	**		4.65%	**	5.03%	**
Asian American	10.73%	*	10.35%	**	##	9.38%	**	9.64%	**
Native Hawaiian and Other Pacific Islander	5.92%	**	5.62%	**		6.60%	**	6.36%	**
Hispanic American	7.19%	**	8.79%	**	##	7.00%	**	8.16%	**
American Indian and Alaska Native	9.67%	**	10.10%	*	##	7.92%	**	8.23%	**
Other minority	6.85%	**	9.52%	**	##	6.52%	**	7.98%	**
Non-Hispanic White	10.64%		10.23%		##	10.51%		10.42%	
Gender									
Female	6.96%	**	7.27%	**	##	6.93%	**	7.27%	**
Male	11.87%		11.62%		##	11.98%		11.78%	
All Individuals	9.56%		9.58%			9.55%		9.60%	

The table above shows all industries' self-employment rate aggregated for the United States, including Texas.[29] Between 2000 and 2013 the total self-employment rate in the United States for all sectors as a whole has been steady. Various studies have explored differences in rates of business ownership among different ethnic groups in the United States. Results show statistically significant disparities in the rates of business ownership in 2013, particularly for African Americans, Asian Americans, Native Hawaiians, Hispanic Americans, American Indians, and Non-Hispanic Whites. For some ethnic groups, results indicate a negative change in self-

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[28] For tabulating purposes, self-employed workers in their own unincorporated business include those who worked for profit, professional practice, or who operated a farm. Self-employed workers in their own incorporated business include private wage and salary workers as they are paid employees of their own companies. Please see https://ask.census.gov/faq.php?id=5000&faqId=785 for more information.

[29] *, ** Denote the difference in proportions between the minority and non-Hispanic White groups (or female and male gender group) is statistically significant at the 90% and 95% confidence levels, respectively. #,## Denote the difference in proportions of each race group or each gender (except all individuals) between 2000 and 2009-2013 is statistically significant at 90% and 95% confidence levels, respectively. Data Source: The raw data extract in 2000 was obtained through the 5% PUMS program http://dataferrett.census.gov/. And the raw data in 2009-2013 was obtained through 5-year estimates PUMS in American Community Survey.

employment between 2000 and 2013. Overall, most sectors show an increase in business ownership throughout the United States.

Female self-employment rates increased 7.27 percent on average during 2009-2013. Almost a third percent of an increase from the 2000 baseline. Although female self-employment rates increased they have not outpaced the male self-employment rate as a whole.

Self-Employment Demographics: Race and Gender in Texas and the US

Self-employed individuals working in the agriculture, forestry, fishing, and hunting sector showed the largest change in percentage points between the 2000 baseline and 2009-2013 averages. The nearly ten percent point drop shows that, at the national level, individuals are less likely to own a business in this sector. Although self-employed and unpaid family workers accounted for slightly less than 50 percent of all jobs in this sector in 2000, these workers are projected to represent only about one-third of all jobs in the sector in 2022 (Industry Employment and Output Projections 2013).
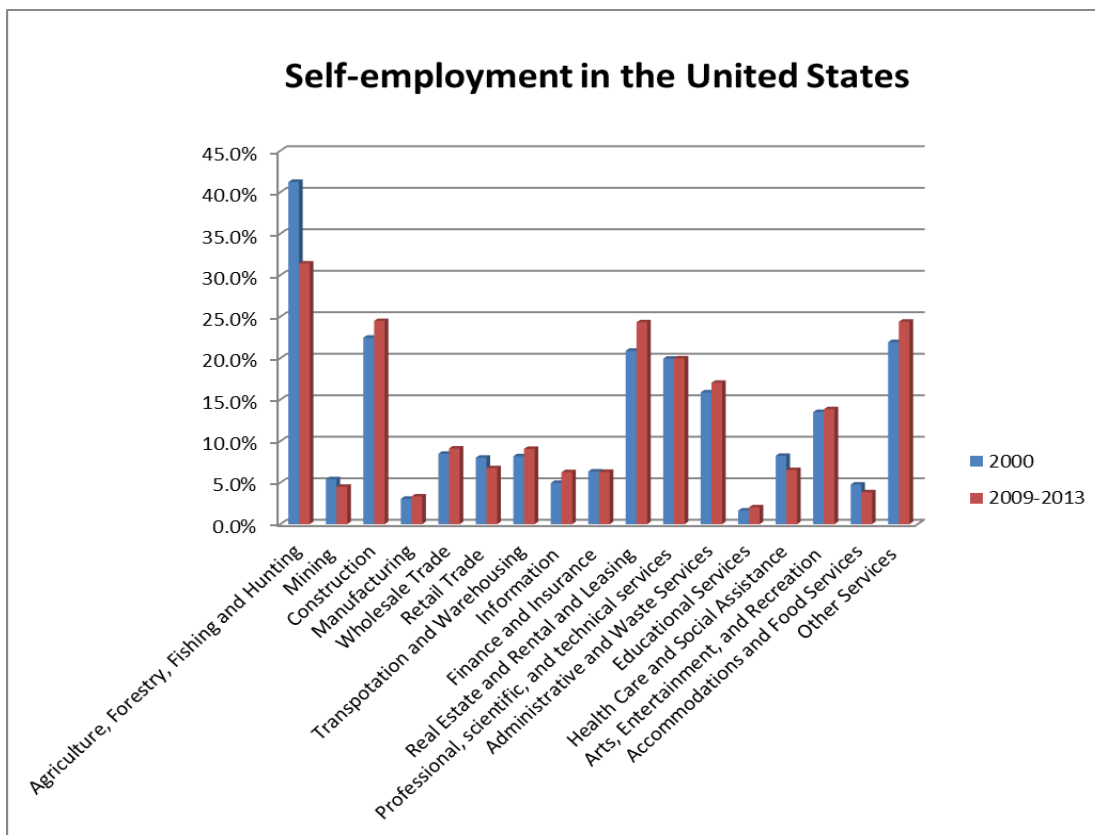
Figure 1

The health care and social assistance sector shows the second most decrease in self-employment between 2000 and the 2009-2013 period with a two percent point decline but it does not indicate a continual decrease. Retail trade decreased by 1.26 percent points. Real estate's self-

employment rate demonstrates the highest increase from 2000 to the 2009-2013 period. The construction sector maintains a strong self-employed presence despite previous financial burdens.

Demographics of Self-Employed Workers

Statistics for the largest ethnic groups (African Americans, Hispanic Americans, Asian Americans and Non-Hispanic Whites) are presented in this section.

1) African American

On average, there were approximately 1.12 million African American business owners in the United States during the 2009-2013 period. African Americans accounted close to 5.0 percent of self-employed workers. In 2000, fewer than 900,000, roughly 4.7 percent, African Americans were self-employed. Texas' self-employment percentage rate stayed around 4.97 to 4.98 percent. The total number of African American business owners in Texas for 2000 was about 67,000 and approximately 87,000 during 2009-2013. Figures 2 and 3 show the proportion of self-employed African Americans in all industries in the country for 2000 and the 2009-2013 period.
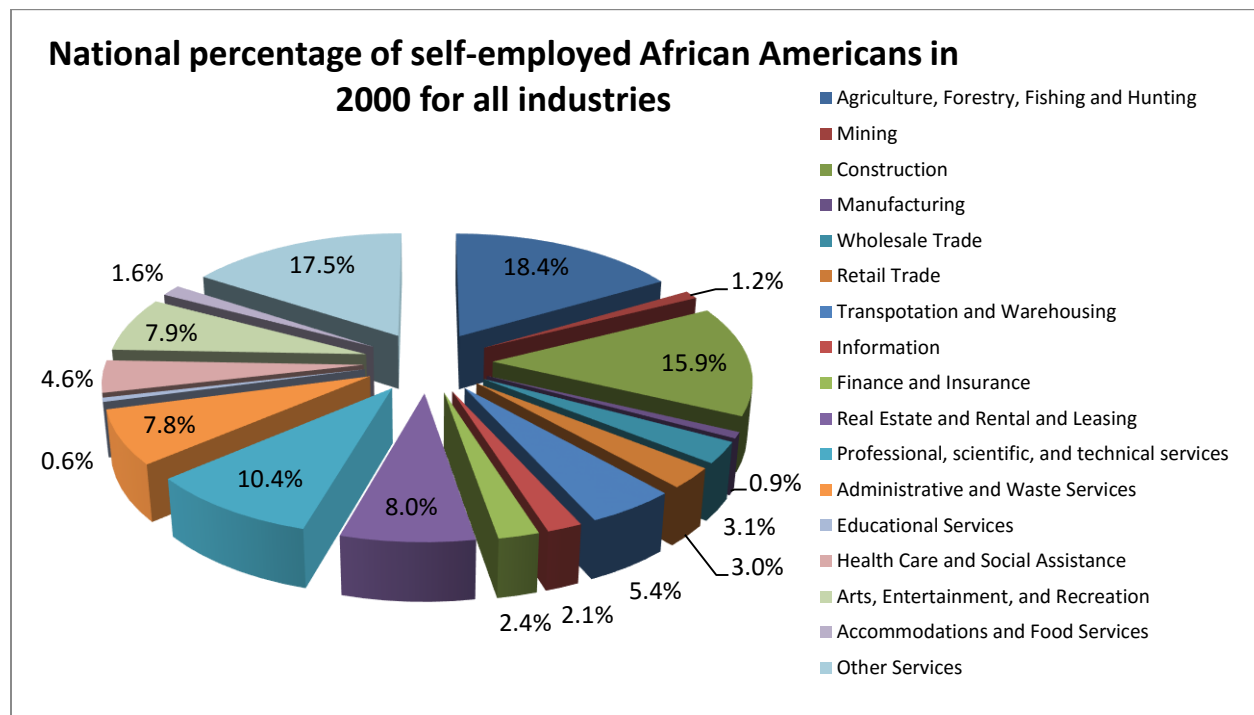
Figure 2

In 2000, the top three sectors were the agriculture, forestry, fishing, and hunting sector (18.4 percent), the other services sector (17.5 percent), and the construction sector (15.9 percent).

The top three sectors for African Americans self-employment for 2009-2013 were:

- Other services sector (20.6 percent)
- Construction sector (18.5 percent)

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▪ Professional, scientific, and technical services sector (12.9 percent)

National percentage of self-employed African Americans in 2009-2013 for all industries

- Agriculture, Forestry, Fishing and Hunting
- Mining
- Construction
- Manufacturing
- Wholesale Trade
- Retail Trade
- Transpotation and Warehousing
- Information
- Finance and Insurance
- Real Estate and Rental and Leasing
- Professional, scientific, and technical services
- Administrative and Waste Services
- Educational Services
- Health Care and Social Assistance
- Arts, Entertainment, and Recreation
- Accommodations and Food Services
- Other Services

0.7% 10.5% 20.6% 1.4% 9.9% 4.1% 8.6% 0.9% 12.9% 11.0% 18.5% 1.0% 3.8% 2.7% 6.9% 3.7% 3.0%

Figure 3

In 2000, the bottom three sectors for African Americans self-employment were educational services (0.6 percent), manufacturing (0.9 percent), and mining (1.2 percent). The bottom three sectors for African Americans in the United States in 2009-2013 were:

▪ Mining sector (0.7 percent)
▪ Educational services sector (0.9 percent)
  Manufacturing sector (1.0 percent)

2) Hispanic American

On average, there were approximately 2.2 million Hispanic American business owners in the United States during the 2009-2013 period. Hispanic American accounted close to 8.2 percent of self-employed workers. In 2000, 1.4 million roughly 7.0 percent, Hispanic American were self-employed. A similar growth trend occurred in Texas. Texas' self-employment percentage rate increased for Hispanic American business owners from 7.2 to 8.8 percent. The total number of Hispanic American business owners in Texas for 2000 was about 250,000 and approximately 430,000 during 2009-2013. Figures 4 and 5 show the proportion of self-employed Hispanic Americans in all industries in the country for 2000 and the 2009-2013 period.

National percentage of self-employed Hispanic Americans in 2000 for all Industries

- Agriculture, Forestry, Fishing and Hunting
- Mining
- Construction
- Manufacturing
- Wholesale Trade
- Retail Trade
- Transpotation and Warehousing
- Information
- Finance and Insurance
- Real Estate and Rental and Leasing
- Professional, scientific, and technical services
- Administrative and Waste Services
- Educational Services
- Health Care and Social Assistance
- Arts, Entertainment, and Recreation
- Accommodations and Food Services
- Other Services

7.9% 2.1% 13.3% 1.9% 4.8% 6.2% 9.4% 9.2% 3.0% 3.6% 13.1% 11.7% 0.9% 8.1% 7.8% 3.4% 22.0%

Figure 4

As Figure 4 shows, the top three sectors for Hispanic Americans in 2000 were other services (22.0 percent), construction (13.3 percent), and professional, scientific, and technical services (13.1 percent). The top three sectors for Hispanic Americans for the 2009-2013 period were:

- Other Services sector (27.9 percent)
- Construction sector (17.5 percent)
- Administrative and Waste Services sector (15.2 percent)

National percentage of self-employed Hispanic Americans in 2009-2013 for all Industries

- Agriculture, Forestry, Fishing and Hunting
- Mining
- Construction
- Manufacturing
- Wholesale Trade
- Retail Trade
- Transpotation and Warehousing
- Information
- Finance and Insurance
- Real Estate and Rental and Leasing
- Professional, scientific, and technical services
- Administrative and Waste Services
- Educational Services
- Health Care and Social Assistance
- Arts, Entertainment, and Recreation
- Accommodations and Food Services
- Other Services

3.7% 1.8% 17.5% 1.8% 5.4% 5.2% 9.5% 12.0% 4.3% 4.0% 15.1% 15.2% 1.3% 7.1% 9.0% 2.3% 27.9%

Figure 5

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In 2000, the bottom three sectors for self-employed Hispanic Americans were educational services (0.9 percent), manufacturing (1.9 percent), and mining (2.1 percent), similar to the self-employment rate of African Americans in 2000. The bottom three sectors for Hispanic Americans in the United States in the period 2009-2013 were:

- Educational services sector (1.3 percent)
- Manufacturing sector (1.8 percent)
- Mining sector (1.8 percent)

3) Asian American

On average, there were close to 990,000 Asian American business owners in the United States during the 2009-2013 period. Asian American accounted close to 9.6 percent of self-employed workers. In 2000, approximately 650,000, around 9.4 percent, Asian American were self-employed. This growth in Asian American business owners was not consistent for Texas. Although the total number of Asian American business owners increased from around 40,000 to 69,000, the total Asian American self-employment percentage decreased from 10.7 in 2000 to 10.4 percent from 2009-2013. Figures 6 and 7 show the proportion of self-employed Asian Americans in all industries for 2000 and during the period 2009-2013.
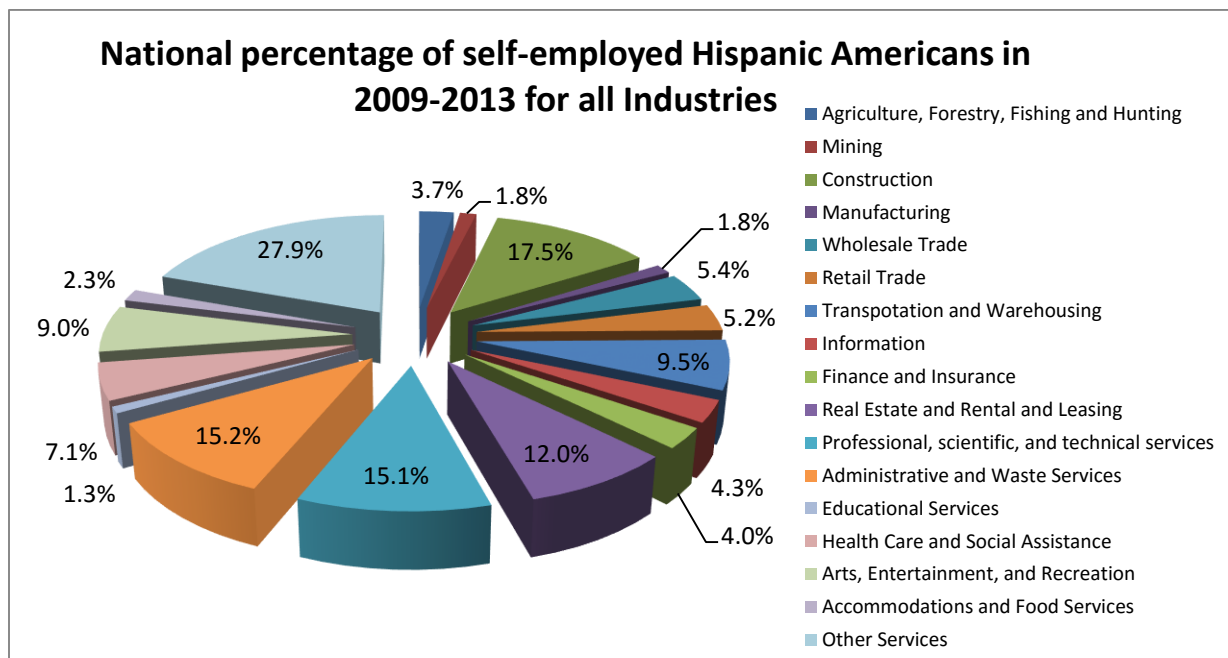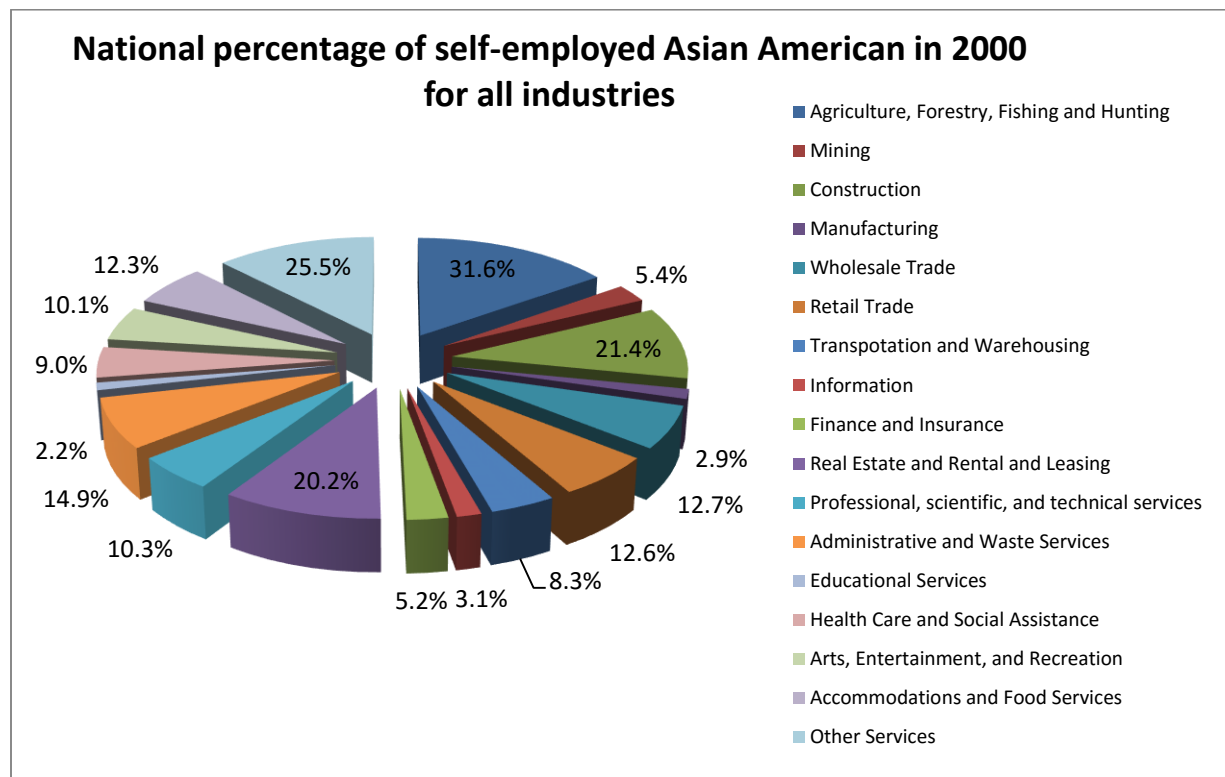

Figure 6

In 2000, the bottom three sectors for Asian Americans self-employment were educational services (2.2 percent), manufacturing (2.9 percent), and information (3.1 percent), similar to the bottom three sectors in 2009-2013; except for mining which decreased from 5.4 percent to 2.1 percent in 2000.
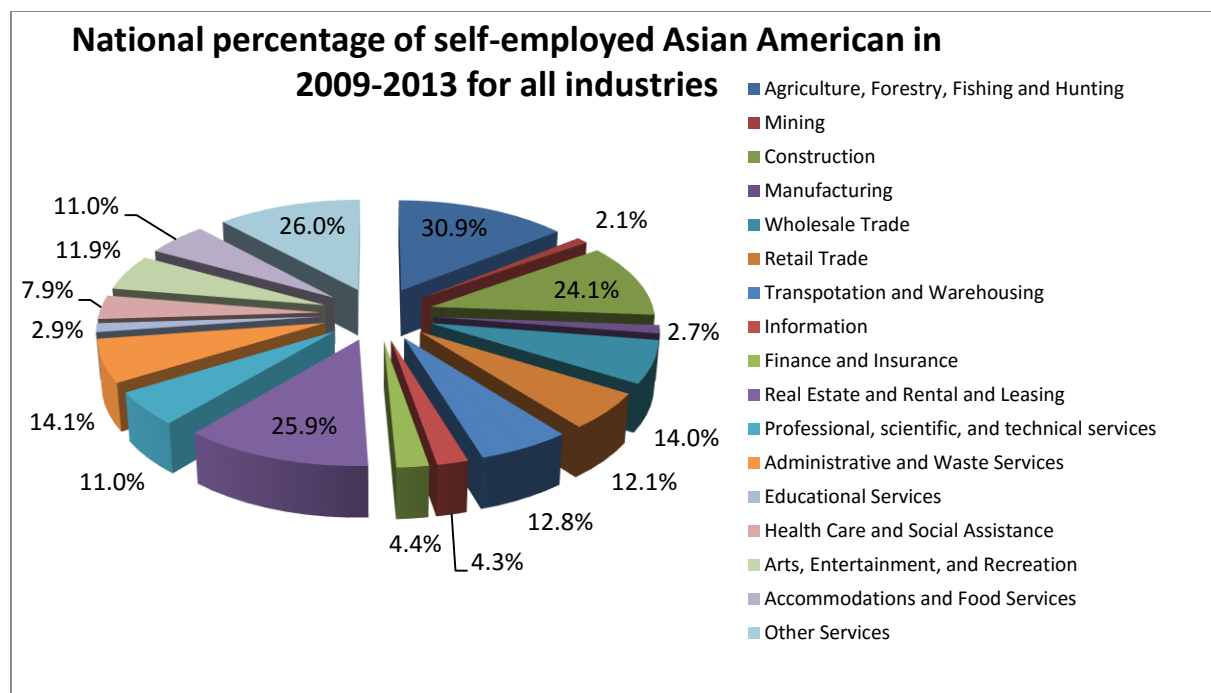
National percentage of self-employed Asian American in 2009-2013 for all industries

- Agriculture, Forestry, Fishing and Hunting
- Mining
- Construction
- Manufacturing
- Wholesale Trade
- Retail Trade
- Transpotation and Warehousing
- Information
- Finance and Insurance
- Real Estate and Rental and Leasing
- Professional, scientific, and technical services
- Administrative and Waste Services
- Educational Services
- Health Care and Social Assistance
- Arts, Entertainment, and Recreation
- Accommodations and Food Services
- Other Services

Figure 7

Figure 7 shows the top three sectors for Asian Americans in the period 2009-2013:

- Agriculture, forestry, fishing and hunting sector (30.9 percent)
- Other services sector (26.0 percent)
- Real estate and rental and leasing sector (25.9 percent)

Compared with the rates in 2000, the top three sectors for Asian Americans were similar to 2009-2013: agriculture, forestry, fishing, and hunting (31.6 percent), other services (25.5 percent), and construction (21.4 percent). The first two sectors changed slightly over this time frame, while the rate for real estate and rental and leasing increased (over 5 percent), to become the third top sector in 2009-2013. The bottom three sectors for Asian Americans in the country for the period 2009-2013 were:

- Mining sector (2.1 percent)
- Manufacturing sector (2.7 percent)
- Education services sector (2.9 percent)

4) Non-Hispanic White Americans

There were nearly 15 million non-Hispanic White business owners in the United States during the 2009-2013 period. Non-Hispanic White business owners accounted close to 10.4 percent of total self-employed workers. In 2000, approximately 14 million, roughly 10.5 percent, non-Hispanic Whites were self-employed. Contrary to the overall national upward trend, non-Hispanic Whites' self-employment rate was the only group to experience a decrease. This was also seen in Texas where self-employed non-Hispanic Whites' percentage rate went from 10.6 in 2000 to 10.2 for the 2009-2013 period. Interestingly, the total number of non-Hispanic White owned business increased from around 950,000 in 2000 to 1.14 million during the 2009-2013

period in Texas. Figures 8 and 9 show the proportion of self-employed non-Hispanic White Americans in all industries nationally for 2000 and for the 2009-2013 period.
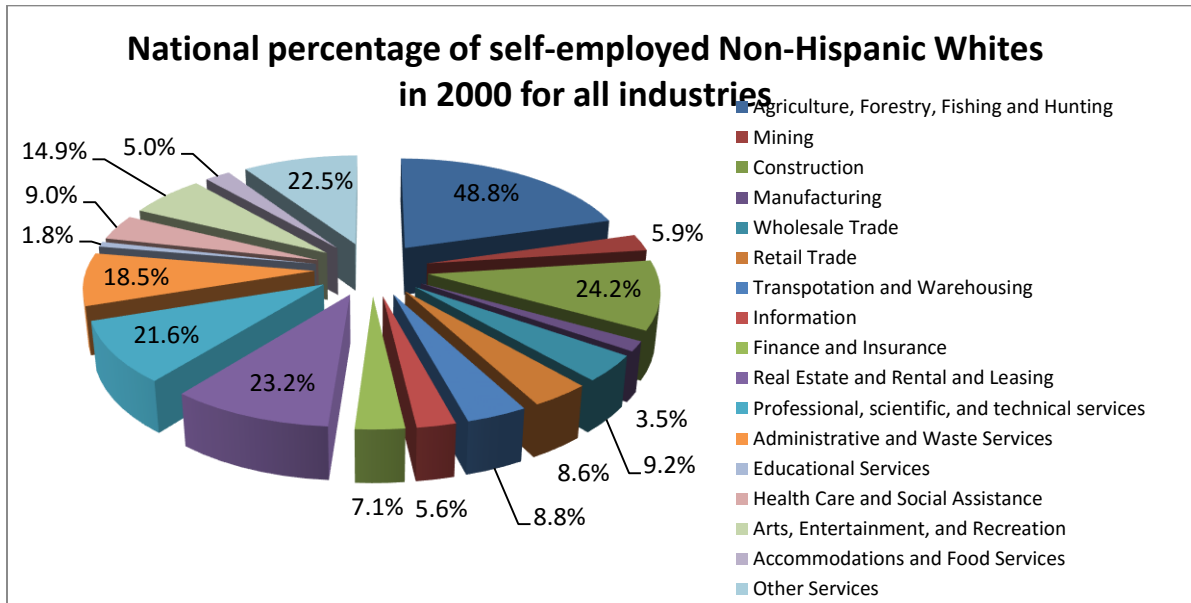
Figure 8

The top three sectors for non-Hispanic Whites for 2000 were: agriculture, forestry, fishing, and hunting (48.8 percent), construction (24.2 percent), and real estate and rental and leasing (23.2 percent). In 2000, the bottom three sectors for non-Hispanic Whites self-employment were also educational services (1.8 percent), manufacturing (3.5 percent), and accommodations and food services (5.0 percent), similar to the bottom three industries in 2009-2013.

Figure 9 shows the top three sectors for non-Hispanic Whites in the period 2009-2013:

- Agriculture, forestry, fishing and hunting sector (35.8 percent)
- Real estate and rental and leasing sector (26.7 percent)
- Construction sector (25.8 percent)

Although agriculture, forestry, fishing, and hunting has experienced a big drop (about 13 percent), it still remained a top sector.

The bottom three sectors for non-Hispanic Whites in the United States in the period 2009-2013 were:

- Education services sector (2.2 percent)
- Manufacturing sector (3.8 percent)
- Accommodations and food services sector (3.8 percent)

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National percentage of self-employed Non-Hispanic Whites in 2009-2013 for all industries

Legend:
- Agriculture, Forestry, Fishing and Hunting
- Mining
- Construction
- Manufacturing
- Wholesale Trade
- Retail Trade
- Transpotation and Warehousing
- Information
- Finance and Insurance
- Real Estate and Rental and Leasing
- Professional, scientific, and technical services
- Administrative and Waste Services
- Educational Services
- Health Care and Social Assistance
- Arts, Entertainment, and Recreation
- Accommodations and Food Services
- Other Services

Values shown: 48.8%, 5.9%, 24.2%, 3.5%, 9.2%, 8.6%, 8.8%, 5.6%, 7.1%, 23.2%, 21.6%, 18.5%, 1.8%, 9.0%, 14.9%, 5.0%, 22.5%
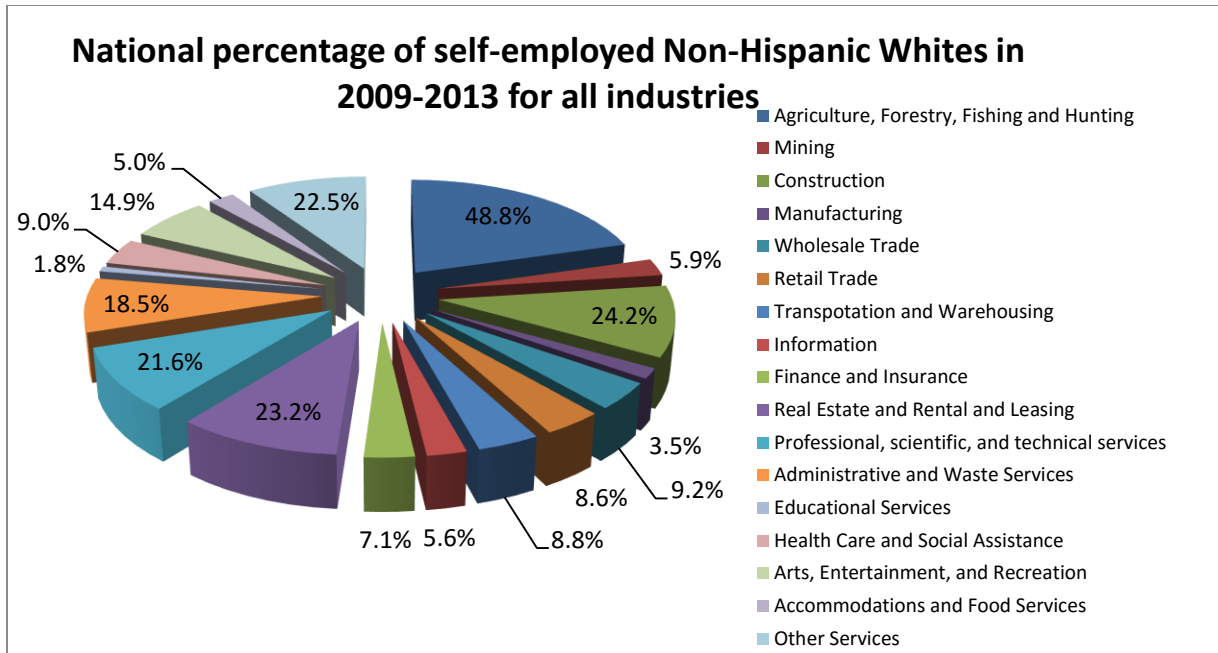
Figure 9

Overall, the four different ethnic groups' largest proportions of self-employment were in the following sectors: 1) agriculture, forestry, fishing, and hunting, 2) construction, real estate and rental and leasing, and 3) the other services. The lowest proportion of self-employment for all four ethnic groups were in: 1) education services, 2) manufacturing, and 3) mining.

Sector Analyses

> ## *Accommodations and Food Services*

Table 1: Percentage of self-employed workers in accommodations and food services in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the Accommodations and Food Services Industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	2.05%	**	1.49%	**	##	1.65%	**	1.36%	**
Asian American	16.69%	**	13.96%	**	##	12.25%	**	10.98%	**
Native Hawaiian and Other Pacific Islander	2.81%	**	2.87%			4.09%	**	2.47%	**
Hispanic American	3.25%	**	2.83%	**	##	3.37%	**	2.29%	**
American Indian and Alaska Native	2.51%	**	3.69%	**	##	2.98%	**	2.21%	**
Other minority	3.08%	**	3.24%	*		3.17%	**	2.22%	**
Non-Hispanic White	4.46%		3.35%		##	4.98%		3.79%	
Gender									
Female	3.81%	**	3.18%	**	##	3.64%	**	3.02%	**
Male	5.16%		4.17%		##	6.19%		4.83%	
All Individuals	4.40%		3.62%			4.77%		3.84%	

* The 5-percent Public Use Micro-sample Data from the U.S. Census of Population and ACS 5-year estimates were used to study the rates of self-employment in Texas. Self-employment here is counted as both incorporated and unincorporated business. [30]

Business ownership rates in 2009-2013

Table 1 shows the percentage of different groups working in the accommodations and food services sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, only three percent of non-Hispanic Whites were self-employed within this sector in Texas. Nationally the rate was about the same.

Business ownership rates differed among other ethnic groups working in the accommodations and food services sector from the non-Hispanic Whites during 2009-2013:

- African Americans working within this sector owned businesses at one-half the rate of non-Hispanic Whites in Texas. This difference is statistically significant.
- Hispanic Americans accounted for 2.8 percent of those self-employed in accommodations and food services in Texas from 2009-2013. This difference is statistically significant.

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[30] *, ** Denote the difference in proportions between the minority and non-Hispanic White groups (or female and male gender group) is statistically significant at the 90% and 95% confidence levels, respectively. #,## Denote the difference in proportions of each race group or each gender (except all individuals) between 2000 and 2009-2013 is statistically significant at 90% and 95% confidence levels, respectively. Data Source: The raw data extract in 2000 was obtained through the 5% PUMS program http://dataferrett.census.gov/. And the raw data in 2009-2013 was obtained through 5-year estimates PUMS in American Community Survey.

During the 2009-2013 period, the percentage of self-employed females working within this sector decreased by less than one percent in Texas. The male self-employment percentage rate also experienced a similar decrease as shown in Table 1.

There were statistically significant disparities between business ownership rates in this sector for 2009-2013 among the other ethnic groups compared to non-Hispanic Whites in Texas except for Native Hawaiian and Other Pacific Islanders.

Females working in accommodations and food service sectors during 2009-2013 had lower rates of business ownership than males, and the difference is statistically significant.

The patterns found for business ownership among African American, Hispanic American, non-Hispanic Whites, and females in Texas' accommodations and food services sector during the 2009-2013 period are similar to those in the same sector nationally.

Changes in business ownership rates in Texas since 2000

In 2000, close to four percent of non-Hispanic Whites working within the accommodations and food services sector in Texas were self-employed. Self-employment rates for non-Hispanic Whites decreased from four to three percent in 2009-2013, decreases were also found among other ethnic groups:

- Asian Americans went from 17 percent in 2000 to 14 percent during 2009-2013.
- African Americans and Hispanic Americans working during the 2009-2013 period showed a slight decrease, but it is still statistically significant.

There was a noticeable growth in business ownership rates for American Indian and Alaska Natives. American Indian and Alaska Natives within this sector increased by one percentage point. Nationally this group experienced a decrease by almost one percentage point from 2000 to 2009-2013.

Both the male and female business ownership rates decreased slightly in Texas. However, nationally and in Texas the male self-employment rate remained above the female's for the 2009-2013 period.

> *Administrative and Waste Services*

Table 2: Percentage of self-employed workers in administrative and waste services in Texas and the U.S., 2000 and 2009-2013[31]

Percentage of self-employed workers in the Administrative and Waste Services Industry									
	TX					**U.S**			
	2000	**test**	**2009-2013**	**test**	**p-value(change)**	**2000**	**test**	**2009-2013**	**test**
Race									
African American	10.57%	**	9.31%	**	##	7.83%	**	8.55%	**
Asian American	14.37%	**	14.77%	**		14.91%	**	14.09%	**
Native Hawaiian and Other Pacific Islander	9.20%	**	20.99%		##	12.94%	**	11.08%	**
Hispanic American	12.73%	**	18.82%	**	##	11.71%	**	15.17%	**
American Indian and Alaska Native	13.99%	**	17.01%	**	##	13.01%	**	14.58%	**
Other minority	13.30%	**	18.88%	**	##	11.27%	**	14.25%	**
Non-Hispanic White	17.62%		19.85%		##	18.52%		19.57%	
Gender									
Female	12.40%	**	14.03%	**	##	13.94%	**	15.15%	**
Male	18.36%		20.70%		##	17.39%		18.25%	
All Individuals	15.67%		17.97%			15.88%		17.03%	

Business ownership rates in 2009-2013

Table 2 shows the percentage of different groups working within the administrative and waste services sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to 20 percent of non-Hispanic Whites working within the administrative and waste services sector in Texas were self-employed. Nationally, the rate stayed about the same.

Business ownership rates differed among other ethnic groups working within this sector from the non-Hispanic Whites during 2009-2013 in Texas:

- African Americans owned businesses at one-half the rate of non-Hispanic Whites. This difference is statistically significant.
- About 15 percent of Asian Americans, working within this sector owned their businesses during the 2009-2013 period. This difference is statistically significant.
- Hispanic Americans working within this sector, around 19 percent, is relatively close to the rate of self-employment for non-Hispanic Whites.

During the 2009-2013 period, the percentage of self-employed females working within this sector in Texas was nearly 14 percent. This was lower than the male's rate (21 percent). This difference is statistically significant.

There were statistically significant disparities in business ownership rates during 2009-2013 among African Americans, Asian Americans, Native Hawaiians, Hispanic Americans, and American Indians compared to non-Hispanic Whites working within administrative and waste

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[31] From here on, please see footnote 5 and reference Data Collection and Methods for table tabulations.

services sector in Texas. Females working in administrative and waste services during 2009-2013 had lower rates of business ownership than males, and the difference is statistically significant.

Business ownership patterns for African American, Hispanic American, and non-Hispanic American and both genders within the Texas administrative and waste services sector in 2009-2013 are similar to the national percentages. However, the patterns for Asian Americans and Native Hawaiians increased in Texas between 2000 and 2009-2013, while nationally those rates decreased. Percentage rates for gender in Texas were similar nationally.

Changes in business ownership rates in Texas since 2000

In 2000, approximately 18 percent of non-Hispanic Whites working in the administrative and waste services sector in Texas were self-employed. Self-employment rates for this group increased from 18 to 20 percent in 2009-2013. Increases were also found for:

- Native Hawaiian and Other Pacific Islanders showed a sharper increase in self-employment within this sector from 9 percent in 2000 to 21 percent during 2009-2013.
- Hispanic Americans self-employment rates increased from 13 percent in 2000 to 19 percent during 2009-2013.
- American Indian and Alaska Native increased from 14 percent in 2000 to 17 percent in 2009-2013.

Business ownership growth rates are not as evident for African Americans and Asian Americans:

- Although business ownership rates in this sector increased from 2000 for Asian American in Texas, it was not the same nationwide.
- African Americans ownership rates decreased about 1.5 percentage points in Texas while it increased by one percentage point nationally.

The business ownership rates for males and female working in administrative and waste services in Texas increased by two percentage points between 2000 and 2009-2013. Nationwide the female rate went from 14 percent to 15 percent, and the male rate went from 16 percent to 17 percent.

Table 3: Percentage of self-employed workers in agriculture, forestry, fishing and hunting

In Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the Agriculture, Forestry, Fishing and Hunting industry								
	TX					**U.S**		
	2000	**test**	**2009-2013**	**test**	**p-value(change)**	**2000**	**test**	**2009-2013**	**test**
Race								
African American	33.16%	**	11.77%	**	##	18.41%	**	10.49%	**
Asian American	33.63%	**	53.06%	**	##	31.59%	**	30.91%	**
Native Hawaiian and Other Pacific Islander	7.77%	**	0.00%	**	##	21.38%	**	20.73%	**
Hispanic American	12.10%	**	9.27%	**	##	7.89%	**	3.71%	**
American Indian and Alaska Native	26.75%	**	37.52%	**	##	26.58%	**	22.73%	**
Other minority	12.22%	**	10.39%	**	##	6.62%	**	3.64%	**
Non-Hispanic White	44.91%		33.57%		##	48.76%		35.77%	
Gender								
Female	30.13%	**	26.42%	**	##	32.15%	**	23.81%	**
Male	41.30%		32.36%		##	43.69%		33.66%	
All Individuals	39.13%		31.29%			41.24%		31.41%	

Business ownership rates in 2009-2013

Table 3 shows the percentage of different groups working in the agriculture, forestry, fishing and hunting sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, nearly 34 percent of non-Hispanic Whites working within the agriculture, forestry, fishing and hunting sector in Texas were self-employed. Nationally, about 36 percent of non-Hispanic Whites were self-employed during the 2009-2013 period.

Business ownership rates differed among other ethnic groups working in the agriculture, forestry, fishing and hunting sector from the non-Hispanic Whites during 2009-2013:

▪ African Americans, other minority group and Hispanic Americans working in the Texas agriculture, forestry, fishing and hunting sector owned their businesses at one-third the rates of non-Hispanic Whites. These differences are statistically significant.
▪ Nearly none of the Native Hawaiians and Pacific Islanders working in agriculture, forestry, fishing and hunting in Texas owned their businesses in 2009-2013. This difference is statistically significant.
▪ Both groups of Asian American and Indian and Alaska Native American had greater rates than non-Hispanic Whites in 2009-2013 in Texas agriculture, forestry, fishing and hunting sector, with statistically significant differences.

In 2009-2013, around 27 percent of females working in the Texas agriculture, forestry, fishing and hunting sector were self-employed. This was lower than the 33 percent male rates. This difference is statistically significant.

There were statistically significant disparities in business ownership rates during 2009-2013 among other ethnic groups working in agriculture, forestry, fishing and hunting in Texas when

compared to non-Hispanic Whites. Females working in agriculture, forestry, fishing and hunting during 2009-2013 had lower business ownership rates than males. The difference is statistically significant.

The patterns found for business ownership for all ethnic groups in the Texas agriculture, forestry, fishing and hunting sector in 2009-2013 were not similar nationally. All ethnic groups displayed a decreased percentage in self-employment except Native Hawaiian and Other Pacific Islander and non-Hispanic White. Gender group percentage rates were similar when comparing Texas and the U.S.

Changes in business ownership rates in Texas since 2000

In 2000, 45 percent of non-Hispanic Whites working within the agriculture, forestry, fishing and hunting sector in Texas were self-employed. Self-employment rates for this group decreased from 45 percent to 34 percent in 2009-2013. Statistically significant decreases were also found for:

- African Americans showed a sharp decrease in self-employment in this sector from 33 percent in 2000 to 12 percent during 2009-2013.
- Native Hawaiians and Other Pacific Islanders exhibited a decrease from an eight percent self-employment rate in 2000 to zero percent from 2009-2013.
- Other minority and Hispanic Americans self-employment rates decreased from 12 percent in 2000 to about ten percent in 2009-2013.

Some significant increases were found:

- Asian Americans showed a sharp increase in self-employment in agriculture, forestry, fishing and hunting sector from 34 percent in 2000 to 53 percent from 2009-2013.
- American Indians and Alaska Natives increased from 27 percent in 2000 to 38 percent in 2009-2013.

Business ownership rates between males and female working in agriculture, forestry, fishing and hunting in Texas narrowed between 2000 and 2009-2013. The female's self-employment rate decreased by three percentage points during this period while the male's rate experienced a nine percent decrease. However, the overall male self-employment rate remained above the female rate.

> ## *Arts, Entertainment, and Recreation*

Table 4: Percentage of self-employed workers in arts, entertainment, and recreation in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the Arts, Entertainment, and Recreation Industry									
	TX					**U.S**			
	2000	**test**	**2009-2013**	**test**	**p-value(change)**	**2000**	**test**	**2009-2013**	**test**
Race									
African American	9.39%	**	10.39%	**	##	7.91%	**	9.92%	**
Asian American	15.62%	**	19.60%	**	##	10.06%	**	11.87%	**
Native Hawaiian and Other Pacific Islander	25.80%	**	4.97%	**	##	8.29%	**	10.84%	**
Hispanic American	8.48%	**	10.82%	**	##	7.78%	**	8.98%	**
American Indian and Alaska Native	19.02%	**	16.04%		##	8.02%	**	9.12%	**
Other minority	6.59%	**	12.74%	**	##	7.29%	**	8.21%	**
Non-Hispanic White	16.89%		15.54%		##	14.86%		14.87%	
Gender									
Female	15.01%	**	14.04%	**	##	12.68%	**	13.09%	**
Male	15.48%		15.65%			14.21%		14.51%	
All Individuals	15.27%		14.92%			13.51%		13.85%	

Business ownership rates in 2009-2013

Table 4 shows the percentage of different groups working in the arts, entertainment, and recreation sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to 15 percent of non-Hispanic Whites working in the arts, entertainment, and recreation sector in Texas were self-employed. National percentage rates were similar for 2009-2013.

Business ownership rates differed among other ethnic groups working in the arts, entertainment, and recreation sector from the non-Hispanic Whites during 2009-2013:

- Native Hawaiian and other Pacific Islanders working in the arts, entertainment, and recreation sector owned businesses at one-third the rate of non-Hispanic Whites. These difference is statistically significant.
- About 10 percent of African Americans, working in arts, entertainment, and recreation in Texas owned their businesses in 2009-2013. This difference is statistically significant.
- American Indian and Alaska Native self-employment rates (16 percent) within this sector in Texas is relatively close to the rate of self-employment for non-Hispanic Whites (15.54 percent).

In 2009-2013, nearly 14 percent of female working in the Texas arts, entertainment, and recreation sector were self-employed, lower than the rate for males (16 percent). This difference is statistically significant.

There were statistically significant disparities in business ownership rates for 2009-2013 among people working within this sector in Texas for African Americans, Asian Americans, Native Hawaiians, Hispanic Americans, and American Indians compared to non-Hispanic Whites.

Females working in arts, entertainment, and recreation from 2009-2013 had lower rates of business ownership than males, and the difference is statistically significant.

The patterns found for business ownership for these among the different ethnic and gender groups in the Texas for this sector in 2009-2013 are not very similar nationally. Native Hawaiian and other Pacific Islanders rate was the largest difference. For Texas from 2000 to 2009-2013 it went dramatically down as mentioned above, while the U.S. rate increased by two percent. The patterns for gender decreased by about the same.

Changes in business ownership rates in Texas since 2000

In 2000, around 17 percent of non-Hispanic Whites working in the arts, entertainment, and recreation sector in Texas were self-employed. Self-employment rates for this group decreased from 17 to 15 percent in 2009-2013. Decreases were also found for:

- Native Hawaiian and Other Pacific Islanders went from 26 percent in 2000 to 5 percent during 2009-2013.
- American Indian and Alaska Native rates decreased from 19 percent in 2000 to 16 percent during 2009-2013.

Business ownership growth rates were evident for African Americans, Hispanic Americans, and Asian Americans:

- Rates increased by one percentage point among African Americans in Texas for the arts, entertainment, and recreation from 2000 to 2009-2013.
- Hispanic Americans had a more significant increase in Texas than the national average for this sector.
- Asian Americans rates increased by four percentage points in Texas while the United States increased by one percentage point.

Female business ownership rates for arts, entertainment, and recreation in Texas decreased by one percentage point between 2000 and 2009-2013. The male rate increased only by a little, however still above the female rate. Nationally, both gender rates increased if only by less than one percentage point between 2000 and 2009-2013.

➢ *Construction*

Table 5: Percentage of self-employed workers in construction in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the construction industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	16.37%	**	15.86%	**	##	15.90%	**	18.47%	**
Asian American	18.83%	**	21.58%	**	##	21.36%	**	24.12%	**
Native Hawaiian and Other Pacific Islander	12.92%	**	17.91%	**	##	15.67%	**	15.68%	**
Hispanic American	14.72%	**	19.33%	**	##	13.32%	**	17.54%	**
American Indian and Alaska Native	22.88%	**	24.89%	**	##	18.57%	**	20.11%	**
Other minority	14.14%	**	20.17%	**	##	11.92%	**	16.70%	**
Non-Hispanic White	22.61%		23.20%		##	24.22%		25.78%	
Gender									
Female	17.72%	**	15.71%	**	##	17.42%	**	17.37%	**
Male	20.81%		23.07%		##	23.03%		25.20%	
All Individuals	20.53%		22.41%			22.47%		24.48%	

Business ownership rates in 2009-2013

Table 5 shows the percentage of different groups working in the construction sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, about 23 percent of non-Hispanic Whites working within the construction sector in Texas were self-employed, and about 26 percent of non-Hispanic Whites nationally for that period.

Business ownership rates among other ethnic groups working in the construction sector were different from the non-Hispanic Whites in 2009-2013:

- African Americans working in the Texas within this sector owned businesses at two-thirds the rate of non-Hispanic Whites. The difference is statistically significant.
- About 18 percent of Native Hawaiian and Other Pacific Islander working within this sector in Texas owned businesses during 2009-2013. This difference is statistically significant.
- Self-employment rates for Asian Americans, Hispanic Americans and other minority working in construction sector in Texas, all around 20 percent, were also significantly different from Non-Hispanic Whites.
- American Indians and Alaska Natives was the only group that had greater self-employment rates within this sector than non-Hispanic Whites did at approximately 25 percent. This difference is statistically significant.

In 2009-2013, approximately 16 percent of female working in the Texas construction sector were self-employed, lower than the rate for males (23 percent). This difference is statistically significant.

There were statistically significant disparities in the rates of business ownership in 2009-2013 among people working in construction in Texas for all other minority groups when compared to non-Hispanic Whites. For each of these groups, the differences in self-employment rates compared with non-Hispanic Whites were substantial. Female working in construction in 2009-2013 had lower rates of business ownership than males, and the difference is statistically significant.

The patterns found for business ownership for African American, Asian American, and non-Hispanic Whites in the Texas construction sector in 2009-2013 were similar nationally. The only notable exception was for American Indians and Alaska Natives which were which were considerably higher in Texas sector than in the United States.

Changes in business ownership rates in Texas since 2000

In 2000, around 22.6 percent of non-Hispanic Whites working within this sector in Texas were self-employed. Self-employment rates for this group increased significantly to about 23.2 percent in 2009-2013. Statistically significant increases were also found for:

- Other minority, Native Hawaiian and Other Pacific Islanders and Hispanic Americans showed increased by five percent from 2000.
- Asian Americans self-employment rates increased about three percent from nearly 19 percent in 2000 to 22 percent in 2009-2013.
- American Indians and Alaska Natives rates increased about two percent from 2000 to 2009-2013.

African American was the only group whose rates decreased in this sector from 16.4 percent in 2000 to 15.9 percent during 2009-2013.

Business ownership rates between males and female working within this sector in Texas widened between 2000 and 2009-2013. Female rates decreased by two percentage points over this time frame, while the rate for males increased two percentage points. However, the male rate was still higher than the female rate overall.

**Table 6: Percentage of self-employed workers in educational services in Texas and the U.S.,
2000 and 2009-2013**

Percentage of self-employed workers in the Educational Services Industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	0.66%	**	0.71%	**		0.60%	**	0.88%	**
Asian American	1.37%	**	2.55%	**	##	2.21%	**	2.89%	**
Native Hawaiian and Other Pacific Islander	0.00%	**	2.13%		##	1.23%	**	1.99%	**
Hispanic American	0.62%	**	0.80%	**	##	0.88%	**	1.25%	**
American Indian and Alaska Native	1.34%	*	2.33%	**	##	1.35%	**	1.65%	**
Other minority	0.62%	**	0.64%	**		0.82%	**	1.23%	**
Non-Hispanic White	1.57%		1.88%		##	1.80%		2.17%	
Gender									
Female	1.39%	**	1.59%	**	##	1.63%	**	1.92%	**
Male	1.41%		2.03%		##	1.69%		2.26%	
All Individuals	1.39%		1.72%			1.64%		2.03%	

Business ownership rates in 2009-2013

Table 6 shows the percentage of different groups working in the educational services sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to two percent of non-Hispanic Whites working within the educational services sector in Texas were self-employed. The percentage rate nationally was about the same.

Business ownership rates were lower among other ethnic groups compared to non-Hispanic working in the educational services sector in 2009-2013:

- African Americans working in the Texas educational services sector owned businesses at one-half the rate of non-Hispanic Whites. This difference is statistically significant.
- About one percent of Hispanic Americans, working within this sector in Texas owned businesses in 2009-2013. This difference is statistically significant.
- Native Hawaiian and Other Pacific Islanders working within this sector in Texas accounted for about two percent which is relatively close to non-Hispanic Whites rates.

In 2009-2013, approximately 1.5 percent of female working in the Texas educational services sector were self-employed. This was slightly lower than the rate for males (two percent). This difference is statistically significant.

There were statistically significant disparities between business ownership rates for 2009-2013 among African Americans, Asian Americans, Native Hawaiians, Hispanic Americans, and American Indians compared to non-Hispanic Whites working within this sector in Texas. Females working in educational services during 2009-2013 had lower ownership rates than males. The difference is statistically significant.

The patterns found for business ownership for these all ethnic and gender groups in the Texas educational services sector in 2009-2013 are similar nationally.

Changes in business ownership rates in Texas since 2000

In 2000, around 1.5 percent of non-Hispanic Whites working in the educational services sector in Texas were self-employed. Self-employment rates for this group increased from 1.5 to almost two percent in 2009-2013. Other ethnic groups experienced increases although ever so slightly:

- Asian American self-employment rates increased from 1.3 percent in 2000 to 2.5 percent during 2009-2013.
- Native Hawaiian and Other Pacific Islanders showed the largest increase from zero in 2000 to 2.5 percent during 2009-2013.
- American Indian and Alaska Natives self-employment rates increased from 1.3 percent in 2000 to 2.3 percent during 2009-2013.

Business ownership growth rates were not as evident for African Americans.

Business ownership rates for males and females working in educational services in Texas increased by less than one percentage point from 2000 to 2009-2013.

➢ *Finance and Insurance*

Table 7: Percentage of self-employed workers in finance in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the finance and insurance industry									
	TX					**U.S**			
	2000	**test**	**2009-2013**	**test**	**p-value(change)**	**2000**	**test**	**2009-2013**	**test**
Race									
African American	2.51%	**	2.79%	**	##	2.45%	**	3.05%	**
Asian American	6.38%	**	5.72%	**	##	5.21%	**	4.44%	**
Native Hawaiian and Other Pacific Islander	6.70%	**	7.04%			2.69%	**	4.14%	**
Hispanic American	3.43%	**	3.73%	**	##	3.55%	**	4.02%	**
American Indian and Alaska Native	7.95%	*	7.68%			6.56%	**	5.63%	**
Other minority	2.80%	**	3.48%	**	##	2.85%	**	2.90%	**
Non-Hispanic White	8.71%		7.76%		##	7.05%		6.98%	
Gender									
Female	3.18%	**	2.99%	**	##	2.47%	**	2.71%	**
Male	15.56%		12.78%		##	12.99%		11.59%	
All Individuals	7.55%		6.82%			6.35%		6.29%	

Business ownership rates in 2009-2013

Table 7 shows the percentage of different groups working in the finance and insurance sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to eight percent of non-Hispanic Whites working within the finance and insurance sector in Texas were self-employed. Nationally the percentage rate for non-Hispanics Whites was about seven percent.

Business ownership rates among other ethnic groups working in the finance and insurance sector were lower than the non-Hispanic Whites during 2009-2013 in Texas:

▪ Only three percent of African Americans working in the finance and insurance sector owned business. The difference is statistically significant.
▪ Other minority and Hispanic Americans working in this sector owned businesses at a half of the rate of non-Hispanic Whites. These differences are statistically significant.
▪ Asian Americans self-employment rates accounted for around six percent. This was relatively close to non-Hispanic self-employment rates within this sector. This difference is statistically significant.

Native Hawaiians and Other Pacific Islanders and American Indians and Alaska Natives had similar self-employment rates within this sector than non-Hispanic Whites. These differences are not statistically significant.

During 2009-2013, approximately six percent of females working in the Texas finance and insurance sector were self-employed. This rate was lower than the males 13 percent rate. This difference is statistically significant.

There were statistically significant disparities in business ownership rates among all other ethnic groups during 2009-2013 in Texas when compared to non-Hispanic Whites with the exception of Native Hawaiians and Other Pacific Islanders and American Indians and Alaska Natives. Female ownership rates were lower during 2009-2013 than males. The difference is statistically significant.

Business ownership rates for African American and non-Hispanic Whites in the Texas finance and insurance sector in 2009-2013 were similar to those nationally. The only notable exception was business ownership rates for American Indians and Alaska Natives, which was considerably higher in the Texas sector than in the United States.

Changes in business ownership rates in Texas since 2000

In 2000, around nine percent of non-Hispanic Whites working in the finance and insurance sector in Texas were self-employed. Self-employment rates for this group decreased significantly to about eight percent during 2009-2013. A statistically significant decrease was also found for:

- Asian American self-employment rates which decrease by 0.5 percent within this sector since 2000.

American Indians and Alaska Natives were also found decrease since 2000 from 8.0 percent to 7.7 percent, but this was not statistically significant.

Statistically significant increases were found for:

- Other minority, Hispanic Americans and African Americans, which all showed a slight increase (less than one percent) in self-employment rates in finance and insurance since 2000.

Native Hawaiians and Other Pacific Islanders also experienced an increase in self-employment in finance and insurance, but not a statistically significant increase.

Business ownership rates widened between males and female working in finance and insurance in Texas from 2000 to the 2009-2013 period. Female self-employment rates decreased only 0.3 percent over this time frame, while the rate for males decreased by three percent points. However, the male self-employment rate remained above the female self-employment rate overall.

Health Care

Table 8: Percentage of self-employed workers in health care in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the Health Care Industry									
	TX					**U.S**			
	2000	**test**	**2009-2013**	**test**	**p-value(change)**	**2000**	**test**	**2009-2013**	**test**
Race									
African American	3.99%	**	3.32%	**	##	4.63%	**	4.07%	**
Asian American	8.98%	**	7.69%	**	##	9.04%	**	7.85%	**
Native Hawaiian and Other Pacific Islander	10.93%	**	4.50%	**	##	7.46%	**	5.59%	**
Hispanic American	6.40%	**	5.40%	**	##	8.07%	**	7.12%	**
American Indian and Alaska Native	8.00%	**	6.03%	**	##	7.29%	**	5.69%	**
Other minority	5.74%	**	5.78%	**		7.84%	**	7.70%	**
Non-Hispanic White	8.86%		6.89%		##	8.99%		6.94%	
Gender									
Female	6.31%	**	5.17%	**	##	6.90%	**	5.59%	**
Male	13.64%		10.51%		##	13.52%		10.07%	
All Individuals	7.74%		6.24%			8.23%		6.52%	

Business ownership rates in 2009-2013

Table 8 shows the percentage of different groups working in the health care sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to seven percent of non-Hispanic Whites working within the health care sector in Texas were self-employed. Nationally the percentage rate was about the same for that period.

Business ownership rates among other ethnic groups working in health care sector were lower than non-Hispanic Whites in 2009-2013:

- African Americans working in the Texas health care sector owned businesses at one-half the rate of non-Hispanic Whites. This difference is statistically significant.
- About 4.5 percent of Native Hawaiian and other Pacific Islander, working in health care in Texas owned businesses in 2009-2013. This difference is statistically significant.
- Asian American self-employment rates for this sector in Texas was about eight percent. This is relatively close to non-Hispanic White employment rates.

In 2009-2013, only five percent of females working in the Texas health care sector were self-employed, half the rate for males (10 percent). This difference is statistically significant.

There were statistically significant disparities in the rates of business ownership in 2009-2013 among African Americans, Asian Americans, Native Hawaiians, Hispanic Americans, and American Indians compared to non-Hispanic Whites working in health care in Texas. Female self-employment rates were lower than males during 2009-2013 for this sector. The difference is statistically significant.

Business ownership rates for African Americans, Asian Americans, American Indian and Alaska Native, and non-Hispanic White, along with both genders in the Texas health care sector in 2009-2013 are similar to those nationally. The only group that decreased nationally during the studied time frame was the Hispanic American. Statewide and nationally female rates decreased by less than one percentage point. The male rates decreased by around three percentage points. These differences were statistically significant.

Changes in business ownership rates in Texas since 2000

In 2000, nearly nine percent of non-Hispanic Whites working in the health care sector in Texas were self-employed. Self-employment rates for this group decreased from nine to seven percent in 2009-2013. Decreases were also found for:

- Native Hawaiian and Other Pacific Islander rates decreased from 11 percent in 2000 to 4 percent during 2009-2013.
- American Indian and Alaska Native rates decreased from eight to six percent
- Asian American rates decreased by one percentage point from nine percent in 2000 to almost eight percent during 2009-2013.

Male business ownership rates for this sector in Texas decreased by three percentage points between 2000 and 2009-2013. The rates for female, both for Texas and the United States, decreased by only one percent during the same time frame.

Table 9: Percentage of self-employed workers in information in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the information industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	2.02%	**	3.40%	**	##	2.11%	**	3.73%	**
Asian American	2.26%	**	3.70%	**	##	3.12%	**	4.32%	**
Native Hawaiian and Other Pacific Islander	5.97%		6.32%			4.76%	**	4.74%	**
Hispanic American	2.88%	**	2.84%	**		3.03%	**	4.27%	**
American Indian and Alaska Native	2.82%	**	6.22%		##	4.87%	**	7.16%	*
Other minority	3.23%	**	1.80%	**	##	3.14%	**	3.60%	**
Non-Hispanic White	4.68%		5.71%		##	5.61%		6.94%	
Gender									
Female	3.16%	**	4.05%	**		4.09%	**	4.85%	**
Male	4.90%		5.87%			5.77%		7.38%	
All Individuals	4.08%		5.08%			4.97%		6.26%	

Business ownership rates in 2009-2013

Table 9 shows the percentage of different groups working in the information sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, around six percent of non-Hispanic Whites working within the information sector in Texas were self-employed. Nationally the percentage rate for non-Hispanic Whites was about seven percent for that period.

Business ownership rates among other ethnic groups working in the information sector were lower than the non-Hispanic Whites in 2009-2013:

- Only two percent of the other minority group working in the information sector owned businesses. The difference is statistically significant.
- African Americans and Hispanic Americans working in the Texas information sector owned businesses at a half of the rates of non-Hispanic Whites. These differences are statistically significant.
- Asian Americans accounted for four percent. This was relatively close to the rate of self-employment in this sector for non-Hispanic Whites. This difference is statistically significant.

Native Hawaiians and Other Pacific Islanders and American Indians and Alaska Natives both had greater rates of self-employment in this sector than non-Hispanic Whites. However, these differences are not statistically significant.

In 2009-2013, approximately four percent of female working in the Texas information sector were self-employed. This was lower than the male rate (6 percent). This difference is statistically significant.

There were statistically significant disparities among all ethnic business ownership rates during 2009-2013 working within this sector in Texas compared to non-Hispanic Whites with the exception of Native Hawaiians and Other Pacific Islanders and American Indians and Alaska Natives. Females working within this sector during 2009-2013 had lower ownership rates than males. This difference is statistically significant.

Business ownership rates for African Americans and females in the Texas information sector in 2009-2013 were similar to those nationally. The only notable exception was business ownership rates for male, which was considerably lower in Texas when compared nationally.

Changes in business ownership rates in Texas since 2000

In 2000, about five percent of non-Hispanic Whites working in the information sector in Texas were self-employed. Self-employment rates for this group increased significantly to 6 percent in 2009-2013. Statistically significant increases were also found for:

- American Indians and Alaska Natives increased about three percentage points since 2000.
- Other minority, African American and Asian American increased about one percent from 2000 to 2009-2013.

Hispanic Americans and Native Hawaiians and Other Pacific Islanders increased since 2000. However neither were statistically significant.

The differences in business ownership rates between males and female working for this sector in Texas remained unchanged between 2000 and 2009-2013. Self-employment rates for females increased by one percent point over this time frame, while the rate for males also increased one percent. The male rate remained above the female rate overall.

> *Manufacturing*

Table 10: Percentage of self-employed workers in manufacturing in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the manufacturing industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	0.95%	**	1.18%	**	##	0.89%	**	0.96%	**
Asian American	3.44%	**	2.74%	**	##	2.87%	**	2.74%	**
Native Hawaiian and Other Pacific Islander	1.24%	**	2.14%	**	##	2.20%	**	3.28%	**
Hispanic American	2.22%	**	2.11%	**	##	1.91%	**	1.84%	**
American Indian and Alaska Native	3.39%	**	1.38%	**	##	2.89%	**	3.64%	**
Other minority	1.80%	**	2.26%	**	##	1.72%	**	1.58%	**
Non-Hispanic White	4.05%		3.70%		##	3.50%		3.82%	
Gender									
Female	3.18%	**	3.50%	**	##	2.55%	**	3.07%	**
Male	3.49%		3.16%		##	3.32%		3.47%	
All Individuals	3.40%		3.25%			3.06%		3.35%	

Business ownership rates in 2009-2013

Table 10 shows the percentage of different groups working in the manufacturing sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to 3.7 percent of non-Hispanic Whites working within the manufacturing sector in Texas were self-employed. Nationally, the percentage rate was about 3.8 percent of non-Hispanic Whites for that period.

Business ownership rates among other ethnic groups working in the manufacturing sector were lower than the non-Hispanic Whites in 2009-2013:

- African Americans and American Indians and Alaska Natives working in the Texas manufacturing sector owned businesses at one-third the rate of non-Hispanic Whites. These differences are statistically significant.
- About two percent of Native Hawaiians and Other Pacific Islanders, Hispanic Americans and other minority working within this sector in Texas owned businesses in 2009-2013. These differences are statistically significant.
- Self-employment rates for Asian Americans working within this sector in Texas accounted for three percent. This was relatively close to but also significantly different from non-Hispanic Whites.

In 2009-2013, nearly 3.5 percent of females working in the Texas manufacturing sector were self-employed, this was higher than the rate for males (3.2 percent). This difference is statistically significant.

There were statistically significant disparities in business ownership rates for 2009-2013 among all ethnic groups working in manufacturing in Texas when compared to non-Hispanic Whites.

For each of these groups, the differences in self-employment rates compared with non-Hispanic Whites were substantial. Females working in manufacturing during 2009-2013 had higher ownership rates than males. This difference is statistically significant.

Business ownership rates for all ethnic groups in the Texas manufacturing sector in 2009-2013 were similar nationally with the exception of Native Hawaiian and other Pacific Islanders and American Indian and Alaska Natives. Another notable exception was male business ownership rates being higher than females nationally.

Changes in business ownership rates in Texas since 2000

 In 2000, close to four percent of non-Hispanic Whites working within the manufacturing sector in Texas were self-employed. Self-employment rates for this group decreased significantly to 3.7 percent in 2009-2013. Statistically significant decreases were also found for:

- American Indians and Alaska Natives decreased by about two percentage points since 2000.
- Asian Americans and Hispanic Americans decreased less than one percent from 2000 to 2009-2013.

Statistically significant increases were found for:

- Native Hawaiians and Other Pacific Islanders increased about 1 percent from 2000 to 2009-2013.
- African Americans and other minority increased significantly by about 0.2 percent.

The differences in business ownership rates between males and female working within this sector in Texas remained relatively unchanged between 2000 and 2009-2013. The rate of self-employment for female increased about 0.3 percent over this time frame, while the rate for males decreased about 0.3 percent (falling below the rate for female).

> ## *Mining*

Table 11: Percentage of self-employed workers in mining in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the mining industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	1.54%	**	0.60%	**	##	1.20%	**	0.68%	**
Asian American	5.75%	**	1.90%	**	##	5.35%	**	2.12%	**
Native Hawaiian and Other Pacific Islander	0.00%	**	0.00%	**		0.00%	**	0.00%	**
Hispanic American	2.32%	**	1.81%	**	##	2.12%	**	1.76%	**
American Indian and Alaska Native	5.34%	**	3.97%	**	##	3.25%	**	2.94%	**
Other minority	2.56%	**	1.85%	**	##	1.86%	**	1.22%	**
Non-Hispanic White	8.18%		5.99%		##	5.91%		4.91%	
Gender									
Female	4.65%	**	4.72%	**		4.84%	**	4.72%	**
Male	7.92%		5.47%		##	5.52%		4.47%	
All Individuals	7.25%		5.33%			5.42%		4.51%	

Business ownership rates in 2009-2013

Table 11 shows the percentage of different groups working in the mining sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to six percent of non-Hispanic Whites working within the mining sector in Texas were self-employed. Nationally, the percentage rate was about five percent for non-Hispanic Whites.

Rates of business ownership among other ethnic groups working in the mining sector were different from the non-Hispanic Whites in 2009-2013:

- Asian Americans, other minority group and Hispanic Americans working in the Texas mining sector owned their businesses at one-third the rate of non-Hispanic Whites. These differences are statistically significant.
- Only 0.6 percent of African Americans and none of the Native Hawaiians and Pacific Islanders working in mining in Texas owned businesses in 2009-2013. This difference is statistically significant.
- American Indians and Alaska Natives working within this sector in Texas was about 4 percent. This is relatively close to the rate for non-Hispanic Whites.

In 2009-2013, about 4.7 percent of female working in the Texas mining sector were self-employed, lower than the rate for males (5.5 percent). This difference is statistically significant.

There were statistically significant disparities in business ownership rates during 2009-2013 among ethnic and gender groups working in mining in Texas when compared to non-Hispanic Whites. For each of these groups, the differences in self-employment rates compared with non-

Hispanic Whites were substantial. Females working in mining during 2009-2013 had lower ownership rates than males. This difference is statistically significant.

Business ownership rates for all ethnic groups in the Texas mining sector in 2009-2013 were similar nationally.

Changes in business ownership rates in Texas since 2000

In 2000, eight percent of non-Hispanic Whites working in the mining sector in Texas were self-employed. Self-employment rates for this group decreased from eight percent to six percent in 2009-2013. Statistically significant decreases were also found for:

- Asian Americans, which showed a more dramatic decrease in self-employment in mining since 2000 (six percent in 2000 and two percent in 2009-2013);
- African Americans and American Indians and Alaska Natives, that decreased about one percent from 2000 to 2009-2013;
- Other minority and Hispanic Americans, which may have decreased from about 2.5 percent in 2000 to 1.8 percent in 2009-2013.

This decrease in ownership rates is not as evident for Native Hawaiian and Other Pacific Islander group. Rates for Native Hawaiian and Other Pacific Islander remained unchanged at zero percent.

The differences in ownership rates between males and female working in mining in Texas narrowed between 2000 and 2009-2013. Although the rate of self-employment for female did not change significantly over this time frame, the rate for males decreased for 3 percent points. However, the male rate still exceeded the female rate overall.

Table 12: Percentage of self-employed workers in other services in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the Other Services Industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	18.05%	**	22.90%	**	##	17.52%	**	20.62%	**
Asian American	29.45%	**	27.53%	**	##	25.54%	**	25.96%	**
Native Hawaiian and Other Pacific Islander	12.24%	**	13.14%	**		16.16%	**	20.51%	**
Hispanic American	21.08%	**	29.26%	**	##	21.99%	**	27.89%	**
American Indian and Alaska Native	22.77%	**	31.15%	**	##	19.89%	**	26.56%	**
Other minority	20.37%	**	27.73%	**	##	20.83%	**	27.10%	**
Non-Hispanic White	22.85%		25.68%		##	22.51%		24.57%	
Gender									
Female	23.65%	**	29.77%	**	##	23.73%	**	28.06%	**
Male	20.80%		21.27%		##	20.08%		20.05%	
All Individuals	22.25%		25.78%			21.94%		24.40%	

Business ownership rates in 2009-2013

Table 12 shows the percentage of different groups working in the other services sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, about 26 percent of non-Hispanic Whites working within the other services sector in Texas were self-employed. Percentage rates stayed about the same nationally for that period.

Business ownership rates among other ethnic groups working in the other services sector were higher than non-Hispanic Whites in 2009-2013:

- American Indian and Alaska Native working in the other services sector in Texas owned businesses at a higher rate than non-Hispanic Whites. In thirteen years this group's rate grew by ten percentage points. This difference is statistically significant.
- About 29 percent of Hispanic Americans, working within this sector in Texas owned businesses in 2009-2013. This difference is statistically significant.
- Asian Americans working within this sector in Texas, approximately 27 percent, is relatively close to the rates for non-Hispanic Whites.

In 2009-2013, around 30 percent of females working in the other services sector in Texas were self-employed, higher than the rate for males (21 percent). This difference is statistically significant.

There were statistically significant disparities in the rates of business ownership in 2009-2013 among African Americans, Asian Americans, Native Hawaiians, Hispanic Americans, and American Indians compared to non-Hispanic Whites working within this sector in Texas. Female self-employment rates increased by six percentage points, while males increased by only one percentage point. The difference is statistically significant.

Business ownership rates for all ethnic groups within this sector during 2009-2013 are very similar nationally with the exception of Native Hawaiian and other Pacific Islander, and American Indian and Alaska Native. Similar overall growth rates were found for Hispanic American, American Indian and Alaska Native from 2000 to 2009-2013 with around an 8 percent increase nationally and in Texas.

Changes in business ownership rates in Texas since 2000

In 2000, close to 23 percent of non-Hispanic Whites working in the other services sector in Texas were self-employed. Self-employment rates for this group increased from 23 percent to reach 26 percent in 2009-2013. Increases were also found for:

- Hispanic American and American Indians and Alaska Natives showed a sharp increase in self-employment in other services since 2000. Both groups increased by about eight percentage points from 2000 to 2009-2013.
- African American rates increased from 18 percent in 2000 to 23 percent in 2009-2013.

Business ownership growth rates are not as evident for Asian Americans and Native Hawaiian and Other Pacific Islanders.

- Although business ownership rates in other services increased nationally from 2000 for Native Hawaiian and Other Pacific Islander, there was little change statewide.
- The case for Asian Americans is different. Asian Americans working in the Texas other services sector decreased by two percentage points, while nationally it barely increased by less than one percentage point.

Women working in the other services sector had higher business ownership rates than men in 2000 and the distinction is more noticeable in the 2009-2013 period. At the 2000 baseline, the difference between men and women was 3 percent and since then has increased to about eight percent.

- *Professional Services*

**Table 13: Percentage of self-employed workers in professional services in Texas and the U.S.,
2000 and 2009-2013**

Percentage of self-employed workers in the Professional Services Industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	9.64%	**	12.75%	**	##	10.39%	**	12.93%	**
Asian American	8.23%	**	9.99%	**	##	10.27%	**	11.02%	**
Native Hawaiian and Other Pacific Islander	14.82%	**	16.64%	**		13.15%	**	14.36%	**
Hispanic American	11.17%	**	13.83%	**	##	13.10%	**	15.08%	**
American Indian and Alaska Native	19.62%	**	23.86%	**	##	17.70%	**	20.50%	**
Other minority	6.70%	**	12.56%	**	##	9.79%	**	12.36%	**
Non-Hispanic White	20.68%		20.38%		##	21.60%		21.70%	
Gender									
Female	13.62%	**	15.03%	**	##	14.00%	**	15.79%	**
Male	23.27%		21.74%		##	25.32%		23.46%	
All Individuals	18.73%		18.75%			19.94%		19.96%	

Business ownership rates in 2009-2013

Table 13 shows the percentage of different groups working in the professional services sector
that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to 20 percent of non-Hispanic Whites working in the
professional services sector in Texas were self-employed. Nationally the rate stayed about the
same for that period.

Business ownership rates among other ethnic groups working in the professional services sector
were lower than non-Hispanic Whites in 2009-2013:

- Asian Americans working in the Texas professional services sector owned businesses at
  one-half the rate of non-Hispanic Whites. This difference is statistically significant.
- About 13 percent African Americans working in professional services in Texas owned
  businesses in 2009-2013. This difference is statistically significant.
- American Indian and Alaska Native working in the professional services sector in Texas
  accounted for 24 percent. This is relatively close to the rate of self-employment for non-
  Hispanic Whites.

In 2009-2013, about 15 percent of female working in the Texas professional services sector were
self-employed, lower than the rate for males (22 percent). This difference is statistically
significant.

There were statistically significant disparities in the rates of business ownership in 2009-2013
among African Americans, Asian Americans, Native Hawaiians, Hispanic Americans, and
American Indians compared to non-Hispanic Whites working within this sector in Texas. Female

ownership rates during 2009-2013 were lower than the male rate. The difference is statistically significant.

Business ownership rates for African American, Hispanic American, other minority, and non-Hispanic white, along with both genders in the Texas professional services sector in 2009-2013 are similar nationally. The gender rates for both Texas and the United States moved in a very similar pattern. The female rate increased slightly while the male rates decreased by almost two percent.

Changes in business ownership rates in Texas since 2000

 In 2000, close to 21 percent of non-Hispanic Whites working in the professional services sector in Texas were self-employed. Self-employment rates for in this group decreased from 21 to 20 percent in 2009-2013. This was the only group whose rate dropped, increases in rate were found for:

- American Indians and Alaska Natives, which showed one of the largest increases in self-employment in professional services sector since 2000. (20 percent in 2000 and 24 percent in 2009-2013);
- Other minorities not specified with the largest increase in self-employment; going from seven to 13 percent from 2000 to 2009-2013; and
- African American, which increased from 10 percent in 2000 to 13 percent in 2009-2013.

Business ownership growth rates for Native Hawaiian and Other Pacific Islander is not statistically significant with only two percent increase statewide and nationally.

The differences in business ownership rates between males and females working in professional services in Texas narrowed between 2000 and 2009-2013. This was also seen nationwide. However, the female rate remained below that of the male rate overall.

➤ *Real Estate*

Table 14: Percentage of self-employed workers in real estate in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the Real Estate Industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	6.86%	**	14.02%	**	##	7.98%	**	10.95%	**
Asian American	26.16%	**	32.23%	**	##	20.19%	**	25.95%	**
Native Hawaiian and Other Pacific Islander	7.44%	**	6.20%	**		9.35%	**	10.58%	**
Hispanic American	6.77%	**	10.99%	**	##	9.22%	**	12.05%	**
American Indian and Alaska Native	20.32%	*	20.88%	**		13.65%	**	15.02%	**
Other minority	4.12%	**	9.30%	**	##	7.38%	**	9.04%	**
Non-Hispanic White	21.71%		23.49%		##	23.18%		26.74%	
Gender									
Female	17.25%	**	22.19%	**	##	18.63%	**	24.05%	**
Male	20.38%		21.82%		##	23.08%		24.56%	
All Individuals	18.85%		22.00%			20.89%		24.32%	

Business Ownership rates in 2009-2013

Table 14 shows the percentage of different groups working in the real estate sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, close to 23 percent of non-Hispanic Whites working within the real estate sector in Texas were self-employed, while the rate nationally was 26 percent for that period.

Business ownership rates among other ethnic groups working in the real estate sector were lower than non-Hispanic Whites in 2009-2013:

- Hispanic American and other minority working within this sector in Texas owned businesses at one-half the rate of non-Hispanic Whites. These differences are statistically significant.
- 14 percent of African Americans owned businesses in 2009-2013. The difference is statistically significant.
- American Indian and Alaska Native self-employment rate is relatively close to non-Hispanic White, but still significantly different.

In 2009-2013, around 22 percent of female working in the real estate sector were self-employed, higher than the rate for males (21.8 percent). The difference is statistically significant.

There were statistically significant disparities in business ownership rates for 2009-2013 for African Americans, Asian Americans, Native Hawaiian and Other Pacific Islander, Hispanic American, and American Indian and Alaska Native compared to non-Hispanic Whites working within this sector in Texas. Female ownership rates increased from 17 percent to 22 percent, while the male rate increased by less than 2 percent.

Business ownership rates for other minority, non-Hispanic Whites and both genders within the Texas real estate sector in 2009-2013 are similar nationally. The most notable difference was business ownership rates for Asian Americans, which were considerably higher in the Texas sector than in the United States.

Changes in business ownership rates in Texas since 2000

 In 2000, approximately 22 percent of Non-Hispanic Whites working in the real estate sector in Texas were self-employed. Self-employment rates for this group increased to nearly 23 percent in 2009-2013. Increases were also found for:

- African American rates increased from 7 percent in 2000 to 14 percent for 2009-20013.
- Asian American rates increased from 26 percent in 2000 to 32 percent for 2009-2013.
- Hispanic American rates increased from 7 percent in 2000 to 11 percent in 2009-2013.

This growth rate is not evident for Native Hawaiian and Other Pacific Islander and American Indian and Alaska Native:

- Ownership rates decreased from 2000 for Native Hawaiian and Other Pacific Islander in Texas, but increased nationwide for 2009-2013.
- American Indians and Alaska Native rates stayed relatively the same Texas from 2000 to 2009-2013, while it increased by one percent from 2000 to 2009-2013 nationally.

The differences in business ownership rates between males and females working in Texas increased for both genders. The female rate increased more than the male rate for 2009-2013 in Texas. Nationally, the rate for both genders reached 24 percent.

➢ *Retail Trade*

Table 15: Percentage of self-employed workers in retail trade in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the retail trade industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	2.95%	**	2.92%	**		2.99%	**	2.67%	**
Asian American	15.28%	**	14.99%	**		12.57%	**	12.07%	**
Native Hawaiian and Other Pacific Islander	3.31%	**	3.67%	**		4.72%	**	4.00%	**
Hispanic American	5.39%	**	5.60%	**	##	6.19%	**	5.17%	**
American Indian and Alaska Native	6.52%	**	7.38%		##	5.76%	**	5.22%	**
Other minority	4.54%	**	5.31%	**	##	5.74%	**	5.13%	**
Non-Hispanic White	8.61%		7.17%		##	8.57%		7.07%	
Gender									
Female	6.79%	**	6.07%	**	##	6.12%	**	5.62%	**
Male	8.78%		7.79%		##	9.71%		7.93%	
All Individuals	7.76%		6.92%			8.00%		6.74%	

Business ownership rates in 2009-2013

Table 15 shows the percentage of different groups working in the retail trade sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, about 7.1 percent of non-Hispanic Whites working within the retail trade sector in Texas were self-employed, and around 7.0 percent of non-Hispanic Whites nationally.

Business ownership rates among other ethnic groups working in the retail trade sector were lower than the non-Hispanic Whites in 2009-2013:

- African Americans and Native Hawaiians and Other Pacific Islanders working in the Texas owned businesses at a half of the rate of non-Hispanic Whites. These differences are statistically significant.
- The other minority group and Hispanic Americans working in retail trade sector in Texas were significantly different from non-Hispanic Whites.

Asian Americans was the only group that had a significant greater overall rate of self-employment in retail trade sector than non-Hispanic Whites.

In 2009-2013, female ownership rates was close to six percent in Texas. This rate was lower than the male rate of eight percent. This difference is statistically significant.

There were statistically significant disparities in the rates of business ownership in 2009-2013 among all ethnic groups in Texas when compared to non-Hispanic Whites with the exception of American Indians and Alaska Natives. Female ownership rate were lower for 2009-2013 than the male rate. The difference is statistically significant.

Business ownership rates for all ethnic groups in Texas for 2009-2013. These rates were similar nationally with the exception of American Indian and Alaska Native rates. Another notable exception was business ownership rates for Asian Americans, which were considerably higher in the Texas sector than in the United States.

Changes in business ownership rates in Texas since 2000

In 2000, nearly nine percent of non-Hispanic Whites working in the retail trade sector in Texas were self-employed. Self-employment rates for this group decreased significantly to about seven percent in 2009-2013.

Statistically significant increases were found for:

- Other minority, Hispanic Americans and American Indians and Alaska Natives increased less than one percent since 2000.

Rates for African American, Asian American and Native Hawaiians and Other Pacific Islanders from 2000 to 2009-2013 in the retail trade sector was not statistically significant.

The differences in business ownership rates between males and female in Texas narrowed between 2000 and 2009-2013. Female rates decreased by 0.7 percent over this time frame, while male rate decreased by one percent point. However, the male rate still surpassed the female rate overall.

➤ *Transportation and Warehousing*

Table 16: Percentage of self-employed workers in transportation and warehousing in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the transportation and warehousing industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	5.99%	**	7.70%	**		5.42%	**	6.90%	**
Asian American	6.14%	**	6.83%	**	##	8.28%	**	12.79%	**
Native Hawaiian and Other Pacific Islander	4.29%	**	1.36%	**	##	4.40%	**	4.27%	**
Hispanic American	9.42%	**	10.09%	**	##	9.36%	**	9.55%	**
American Indian and Alaska Native	10.93%	**	11.28%	**		8.07%	**	8.02%	**
Other minority	9.33%	**	9.40%			9.51%	**	9.54%	**
Non-Hispanic White	8.72%		9.65%		##	8.77%		9.38%	
Gender									
Female	3.67%	**	4.69%	**	##	3.84%	**	4.34%	**
Male	9.77%		10.58%		##	9.75%		10.64%	
All Individuals	8.19%		9.16%			8.18%		9.07%	

Business ownership rates in 2009-2013

Table 16 shows the percentage of different groups working in the transportation and warehousing sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, nearly ten percent of non-Hispanic Whites working within the transportation and warehousing sector in Texas were self-employed, and about nine percent nationally.

Business ownership rates among other ethnic groups working in the transportation and warehousing sector were lower than the non-Hispanic Whites in 2009-2013:

- Native Hawaiians and Other Pacific Islanders owned businesses at a tenth of the rate of non-Hispanic Whites. The difference was statistically significant.
- Asian Americans and African American in Texas accounted for about 7 percent. This was significantly different from non-Hispanic Whites.

Hispanic Americans and American Indians and Alaska Natives both had greater rates of self-employment than non-Hispanic Whites. These differences are statistically significant.

In 2009-2013, female ownership rates were close to five percent in Texas. This was lower than the male rate of 11 percent. This difference is statistically significant.

There were statistically significant disparities in business ownership rates for 2009-2013 among all other ethnic groups and non-Hispanic Whites in Texas with the exception of the other minority group. Female ownership rates for 2009-2013 were lower than that of the male rate. The difference is statistically significant.

Business ownership rates for African American, other minority, non-Hispanic white and both genders groups in Texas for 2009-2013 were similar nationally. Another notable exception was business ownership rates for Asian Americans, which were considerably lower in the Texas sector than in the United States.

Changes in business ownership rates in Texas since 2000

In 2000, nine percent of non-Hispanic Whites working in the transportation and warehousing sector in Texas were self-employed. Self-employment rates for this group increased significantly to ten percent in 2009-2013. Statistically significant increases were also found for:

- Asian Americans increased by one percent since 2000.
- Hispanic Americans increased about 0.5 percent since 2000.

Although the proportion of African Americans, American Indians and Alaska Natives increased over this time period, those changes were statistically not significant.

Native Hawaiians and Other Pacific Islanders was the only group to experience a decrease in this sector since 2000.

The differences in business ownership rates between males and females working in transportation and warehousing in Texas narrowed between 2000 and 2009-2013. The rate of self-employment for female increased for one percent point over this time frame, while the rate for males decreased 0.8 percent. However, the overall rate for males surpassed that of females.

Table 17: Percentage of self-employed workers in wholesale in Texas and the U.S., 2000 and 2009-2013

Percentage of self-employed workers in the wholesale industry									
	TX					U.S			
	2000	test	2009-2013	test	p-value(change)	2000	test	2009-2013	test
Race									
African American	3.74%	**	5.00%	**	##	3.09%	**	3.78%	**
Asian American	18.72%	**	15.79%	**	##	12.67%	**	14.00%	**
Native Hawaiian and Other Pacific Islander	1.80%	**	0.00%	**	##	5.85%	**	5.33%	**
Hispanic American	5.22%	**	5.78%	**	##	4.78%	**	5.44%	**
American Indian and Alaska Native	5.46%	**	7.61%	**	##	5.95%	**	7.74%	**
Other minority	3.83%	**	5.02%	**	##	4.02%	**	4.32%	**
Non-Hispanic White	9.51%		9.01%		##	9.23%		9.63%	
Gender									
Female	6.42%	**	6.75%	**	##	6.12%	**	6.95%	**
Male	9.62%		9.51%			9.60%		10.09%	
All Individuals	8.62%		8.69%			8.49%		9.12%	

Business ownership rates in 2009-2013

Table 17 shows the percentage of different groups working in the wholesale sector that were self-employed between 2000 and 2009-2013.

During the 2009-2013 period, nearly nine percent of non-Hispanic Whites working within the wholesale sector in Texas were self-employed, and about ten percent nationally.

Business ownership rates among other ethnic groups working in the wholesale sector were lower than the non-Hispanic Whites in 2009-2013:

- Nearly none of Native Hawaiians and Other Pacific Islanders working in the wholesale sector owned business.
- African Americans and the other minority group owned businesses at a half of the rate of non-Hispanic Whites. These differences are statistically significant.
- Hispanic Americans working in wholesale sector in Texas accounted for about six percent. This was significantly different from non-Hispanic Whites.
- American Indians and Alaska Natives accounted for approximately eight percent. This was relatively close to the rate of self-employment for non-Hispanic Whites. This difference is statistically significant.

Asian Americans was the only group that had a greater self-employment rate than non-Hispanic Whites. This difference is statistically significant.

In 2009-2013, female ownership rates were around seven percent in Texas which were lower than the male rate of ten percent. This difference is statistically significant.

There were statistically significant disparities in business ownership rates for 2009-2013 among all ethnic groups in Texas when compared to non-Hispanic Whites. For each of these groups, the

differences in self-employment rates compared with non-Hispanic Whites were substantial. Female ownership rates for 2009-2013 were lower than male rates. The difference is statistically significant.

Business ownership rates for Asian, Hispanic, American Indian and Alaska Native, White, and both genders in Texas for 2009-2013 were similar nationally. Another notable exception was ownership rates for Native Hawaiians and Other Pacific Islanders, which were considerably lower in the Texas sector than in the United States.

Changes in business ownership rates in Texas since 2000

In 2000, close to 9.5 percent of non-Hispanic Whites working in the wholesale sector in Texas were self-employed. Self-employment rates for this group decreased significantly to nine percent in 2009-2013. Statistically significant decreases were also found for:

- Asian Americans decreased by three percent since 2000;
- Native Hawaiians and Other Pacific Islanders rate decreased about two percent from 2000 to nearly zero in 2009-2013.

Statistically significant increases were found for:

- American Indians and Alaska Natives increased about two percent from 2000 to 2009-2013.
- African Americans and other minority increased about one percent significantly.
- Hispanic Americans rate increased 0.5 percent from 2000 to 2009-2013.

The differences in business ownership rates between males and female in Texas narrowed between 2000 and 2009-2013. Female ownership rates increased by 0.3 percent over this time frame, while the male rate decreased by 0.1 percent. The male rate still surpassed the female ownership rate overall.

Intergenerational Ownership of Small Businesses

Small businesses play an integral role in the state's economy, more importantly are the business owners behind them. Ventures into self-employment have long been associated with factors such as age, the male gender and most prominently in the US, certain racial groups. Other determining factors have been examined in relation to their impact on an individual's decision to enter into self-employment. There is strong evidence to suggest that children of small business owners are more likely to become small business owners themselves (see Lentz and Laband 1990; Fairlie 1999; Dunn and Holtz-Eakin 2000; Hout and Rosen 2000). This literature review will focus on factors such as access to human capital, early exposure to small business operations, and parent role modeling as influencing an individual's decision to become self-employed.

Several explanations exist for why children of self-employed parents later themselves become self-employed. The literature exploring this correlation points to privileged access to human and financial capital, inheritance of family business, and that parents may pass on occupation or sector specific preferences. Lentz and Laband (1990) demonstrate that self-employed individuals acquire human capital primarily through experience. There are two ways to obtain sector-specific managerial skills: market experience and pre-market experience or exposure. They argue that pre-market experience substitutes for market on-the-job experience. On average those whose parents were business owners were found to have started their own business at a younger age than first time business owners. Children of business owners were also found to begin their business careers with a significantly greater quantity of managerial human capital. This is consistent with Dunn and Holtz-Eakin (2000) and Fairlie and Robb (2007).

Dunn and Holtz-Eakin (2000) demonstrate that parents influence their offspring's decision to become self-employed. Previous research hypotheses are parents' willingness to transfer wealth to offspring making finance start-up ventures more feasible and that parents transmit valuable work experience, reputation, or other managerial human capital. However, data support the transmission of skills over the transfer of wealth with the increased probability that offspring will become entrepreneurs. Fairlie and Robb (2007) have similar findings such as working in a family member's business provided general and specific business human capital and that small business inheritance played only a minor role in determining offspring self-employment.

Another factor thought to affect entry into self-employment is education and race. Fairlie (1999) examines racial patterns in transitions between self-employment and traditional salary workers between black and white males. He finds that the relationship between education and self-employment is weak for both races however individuals who had self-employed fathers while growing up had a higher probability of becoming self-employed. Hout and Rosen (2000) on the other hand examines how individuals' family backgrounds affect the probability of self-employment with the human capital received from a self-employed father among minorities, primarily African-Americans and Latino. Results indicated that the primary factor affecting an individual's self-employment is the father's self-employment status.

Despite a large amount of evidence for intergenerational transmission there remains ambiguity in the mechanisms behind it. Lindquist, Sol and Van Praag and Sorensen (2007) find little evidence supporting the inheritance of family business, access to social capital, and parent-offspring similarities in choice sector as key indicators for children entering into self-employment. Dunn and Holtz-Eakin's (2000) findings demonstrate that fathers who have been or still are self-employed have a strong influence on the son's self-employment while self-employed mothers have little if any influence over the son. This is similar to Lindquist, Sol, and Van Praag (2015) who also found large same sex-associations in entrepreneurship which they argue favors parent role modeling. In summary, there are many factors that influence offspring entrance into self-employment with the most prominent variable being whether or not the father was also self-employed. The mechanisms as to why children of self-employed parents also became self-employed was thought to be access to human and financial capital, business inheritance, and more recently parent role modeling.

	Summary	These studies examine likelihood of an individual becoming self employed having had parents that are self employed. The studies explore these theories further by evaluating the effect of transgenerational skill and asset transferal on the likelihood of successive generations entering into self employment. The studies also evaluate the relationship between exit and entry rates of self employment and various factors such as race, gender and education.
Lentz and Laband (1990)	Summary	Sampled 514 self-employed (SE) proprietors' economic performance and acquired human capital.
	Findings	Results support that informally acquired human capital can substitute for market on-the-job experience and early managerial human capital that can be gained *only* through experience implies differentially greater proprietary success for 2nd generation vs 1st generation proprietors.
	Data Source and Sample Size	National Federation of Independent Business (NFIB);n=514
	Method	OLS Regression
Fairlie (1999)	Summary	Examined racial patterns in transitions (entering and exiting) between SE and wage/salary among black and white prime-age men.
	Findings	1) relationship btw education and SE is weak for both races, 2) relationship btw father's education & SE appears somewhat stronger than the relationship for the individual's education level, 3) assets have a positive effect on transition to SE for both races, 4) individuals from both races who had SE fathers while growing up had a higher probability of becoming SE.
	Policy Recommendations	Findings suggest that funding for programs that assist minority business owners in obtaining start-up capital may help.
	Data Source and Sample Size	PSID, SEO and SRC ; n=6,417 employed men w/ avg of 8.2 yrs of data
	Method	Logit Regression (Blinder-Oaxaca decomposition)
Hout and Rosen (2000)	Summary	Investigated how family backgrounds affect the probability of SE
	Findings	Results confirm intergenerational pick-up rate (probability that child of a SE parent will also be SE) is affected by SE fathers & varies considerably among major ancestry groups. Primary factor affecting an individual's SE is the father's SE status.
	Data Source and Sample Size	GSS; n=15,820 English-speaking adults living in the US
	Method	Multivariate analyses and logistic regression analyses

Continuous with the previous table:

Dunnand Holtz-Eakin (2000)	Summary	Looked at why children with parents who are SE are more likely to be entrepreneurs themselves
	Findings	Data suggests that the transmission of skills within families enhance the probability of offspring becoming entrepreneurs.
	Data Source and Sample Size	NLS; CPS; n= ? of young men (14-24 y/o) in 1966, women (30-44 y/o) in 1964, older men (45-59y/o) in 1966
	Method	Multivariate analyses
Fairlie and Robb (2007)	Summary	Discussed patterns among self-employment and empirically assesses data on intergenerational businesses
	Findings	Literature demonstrates an individual with a self-employed parent is roughly 2 to 3 times more likely to be SE than someone without a SE parent. Access to human capital- provides opportunities for individuals to obtain general and specific business skills.
	Policy Recommendations	Provide mentoring, internships/ apprenticeships that may help reduce historical inequalities in business ownership patterns.
	Data Source and Sample Size	1992 CBO, n=?
	Method	logit, linear, and ordered probit regressions
Sorenson (2007)	Summary	Analyzed life histories to examine impact of parental self-employment links to individual self-employment in Denmark
	Findings	Results indicate parental role modeling plays an important contribution while finding little evidence to suggest children become self-employed because they have access to parents' financial or social capital or parents' self-employment allows children to develop superior entrepreneurial abilities.
	Data Source and Sample Size	Danish Integrated Database for Labor Market Research between 1980-1997, sample size contained 228,372 individuals
	Method	Logistic regression models, competing risk logistic regression, and OLS regression estimates
Lindquist, Sol, and Van Praag (2015)	Summary	Explored the prebirth and postbirth factors (nature vs nurture).
	Findings	Found that parental entrepreneurship increases the probability of children's entrepreneurship by about 60% is consistent. Found little evidence supporting the inheritance of family business, access to cheap capital, and parent-offspring similarities in choice industry as key indicators. Did find large same-sex associations in entrepreneurship, which they argue as indirect evidence favoring parent role-modeling.
	Data Source and Sample Size	Sweden's Multigenerational register and Statistics Sweden
	Method	OLS, descriptive statistics, sensitivity analysis

These studies examine the likelihood that an individual whose parents were self-employed also become self-employed themselves. The studies explore these theories further by evaluating the effect of transgenerational skill and asset transferal on the likelihood of successive generations entering into self-employment. The studies also evaluate the relationship between exit and entry rates of self-employment and various factors such as race, gender and education.

Giganomics

As technology advances and companies such as Uber, Lyft, Airbnb, and TaskRabbit user base continues to grow, the "gig economy" has become a consistent topic in the media. The gig economy – the sharing economy, on-demand economy, the 1099 economy, or the freelance economy or whatever is preferred – is not new. What has changed is its demographic reach and mode of accessibility, i.e. smartphones (Intuit 2010; Zumbrun and Sussman 2014). With numerous definitions for contingent work and different data sources, gigs currently are not easily defined as is estimating the number of its participants. This in turn has led to worker classifications issues, data limitations, policy implications as well as some skepticism as to whether there is a shifting trend towards self-enterprise.

The McKinsey Global Institute June 2015 report on the labor market defines the gig economy as contingent work that is strictly transacted via a digital marketplace. They estimated less than 1percent of the U.S. working-age population participates in the gig economy. Freelancers accounted for 34 percent of the U.S. workforce according to a 2014 Freelancers Union and Elance-oDesk survey. Freelancers were defined as individuals who engaged in supplemental, temporary, or project- or contract-based work within the past 12 months. The Government Accountability Office (GOA) most recent report found that the contingent workforce ranges from less than 5 percent to more than a third depending on the definition and data set used. The existing literature on nonstandard employment also acknowledges this classification difficulty (Feldman 2006; Connelly and Gallagher 2006; Cappelli and Keller 2013).

Offers of autonomy, escapement of bureaucracy, flexibility, and increased income for those with higher skill sets are often cited as the advantages of contingent work (Kunda, Barley, and Evans 2002; Connelly and Gallagher 2004). Intuit estimates that by 2020 contingent workers will make up 40 percent of the U.S. workforce. With so many reports predicting an increase of those participating in non-standard work arrangements and definitional inconsistencies, there is a growing concern regarding the misclassification of workers and labor rights. Contingent work can be seen as exploitative for those with low skills and can exacerbate the marginalization of vulnerable populations.

With employers opting to hire 1099 independent contractors rather than W-2 employees, gig workers experience greater insecurity and often lack access to established systems of social insurance (GAO 2015;U.S. Department of Labor 2015). Disadvantages often cited are difficulty in finding steady jobs, skills and expertise subjected to market dynamics, lack of pension, no health insurance, lack of career advancement, and higher tax rates. Furthermore, contingent workers are also more likely to have poor working conditions such as low wages and high work related expenses. Disputes between clients, agencies, and workers over payment and hours as well as a sense of isolation, exclusion, estrangement, and dissatisfaction with work have also been noted.

As the number of contingent workers continue to grow, so does the need to understand this trend. A gap in the literature is the focus on the third party between a firm and a contractor (Kunda, Barley, and Evans 2002). The third party is typically a staffing firm that brokers market information and matches workers to clients in return for a significant cut of the contractor's hourly rate which is similar to that of Uber, Lyft, and TaskRabbit. With this in mind, existing labor laws are in need of reevaluation if the gig economy is to continue. Contingent work is diverse and requires a more expansive research agenda (Ashford, George, and Blatt 2007). There is still much to be desired in understanding these new precarious work arrangements.

Glossary

Giggers are often classified as a 1099 employee depending on the working relationship. According to the IRS, there are three characteristic that determine the relationship between businesses and workers: 1) behavioral control, 2) financial control, and 3) type of relationship.[32] If a company controls how the worker does their job, such as setting the worker's schedule, and if the company controls certain aspects of the worker's job, such as providing tools and uniforms, then the worker should be considered an employee.

Contingent workers, as broadly defined by the U.S. Bureau of Labor Statistics (BLS), are individuals with no explicit or implicit contract for long-term employment.[33] An employment arrangement may be defined as both contingent and alternative, however this is not always the case as contingency is defined separately from the four alternative work arrangements. Alternative work arrangements include independent contractors, independent consultants, or freelance workers whether self-employed, or wage and salary workers.

A **nonemployer** is a business with no paid employees with yearly receipts of $1,000 or more and is subject to federal income taxes.[34] The Census Bureau further states that most nonemployers are self-employed individuals operating very small unincorporated businesses that may or may not be the individual's primary income source.

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[32] For more information, please see https://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Independent-Contractor-Self-Employed-or-Employee
[33] For more information, please see http://www.bls.gov/news.release/pdf/conemp.pdf
[34] For more information, please see https://www.census.gov/epcd/nonemployer/view/define.html

Job Creation and Small Businesses: Businesses Birth and Death Rates

Small businesses have long been claimed as the primary source for job creation. David Birch's 1979 report was one of the first to provide evidence supporting small businesses as the main generator of jobs. Birch's initial findings have stimulated a significant amount of discussion that continues today. The literature on business birth and death rates encounter general issues such as data measurement limitations, misclassification of businesses, and statistical difficulties relating to employer size and growth as well as a limited focus on the manufacturing sector (Davies 2010; Kliesen and Maués 2011; Neumark, Wall, and Zhang 2011). Another difficulty lies in the definition of small business as there is no universal consensus. Most studies tend to find that while smaller firms do create a majority of new jobs, they also have higher exit rates than larger firms. The current literature finds itself at a crossroads. More recent studies have suggested it is not a matter of firm size that is driving job creation but rather firm age.

One of the more current studies to challenge Birch's original findings was Davis, Haltiwanger, and Schuh (1996). They criticized Birch's methodology and dataset. They claimed Birch's method did not account for regression nor size distribution fallacies while arguing that the Dun and Bradstreet Market identifier data was not suitable for statistical analysis. Using the Longitudinal Research Database (LRD) from 1972 to 1988 for the manufacturing sector and attempting to correct for the regression fallacy, they found no systematic relationship between net job growth rates and firm size. These findings contrasted with Birch's claim that firms with 20 or fewer employees made up two-thirds of all new jobs between 1969 and 1976 (Kliesen and Maués 2011). However, several studies spurred by the conflicting results of Birch and Davis et al. (1996) more often than not corroborate Birch's findings even when using Davis et al. (1996) methodology.

With the claims of small business benefits so widely spread, Robbins et al. (2000) sought to empirically assess the contributions of small businesses by examining 48 contiguous states' economic performance in relation to productivity, Gross State Product (GSP), wage employment, and unemployment. Results indicate that businesses with under 20 employees exhibit a positive significant effect on productivity growth. They also found that this relationship was absent among business with under 500 employees. The authors conclude that very small businesses result in macroeconomic benefits such as lower wage inflation, more productive workforce, higher levels of GDP growth, and lower rates of unemployment.

Complementary to Robbins et al. (2000) are Shaffer's works (2006a; 2006b; 2002). In his 2002 article, Shaffer investigates the relationship between firm size and income growth for more than 700 U.S. cities. Shaffer suggests that economic development might strategically encourage smaller manufacturing, retail and service firms as a result of finding smaller firms in these sectors are associated with faster income growth. His later studies would find that smaller establishments are significantly and robustly associated with faster subsequent growth of median household incomes across all sectors at the county level. Expanding on his two previous studies

(Shaffer 2006a; Shaffer 2002), he explores the association between average establishment size and local employment growth for over 2000 U.S. counties. He found no indication of empirical tradeoff between per capital income growth and employment growth as a function of establishment size. Shaffer concludes that per capita income growth and employment growth are complementary related to establishment size. These results are consistent with his 2002 study as well as Robbins et al. (2000).

Seeking to understand the driving forces of employment growth, Neumark, Wall, and Zhang (2005) examine the National Establishment Time Series (NETS) for California during 1992-2002. They found that business establishment births and expansions are responsible for nearly all job creation whereas deaths and contractions are responsible for most job destruction. Furthermore, they found that new firm births created more jobs than the birth of new establishments of existing firms, and that deaths of new businesses did not significantly contribute to job destruction. These results highlight the importance of entrepreneurship in employment growth as well as suggest policies to encourage business creation and expansion.

Additionally, Neumark,Wall and Zang's (2011) later study revisited the role of small business in job creation particularly Davis, Haltiwanger, and Schuh's (1996) critique of Birch's methodology. Examining all sectors of the economy and accounting for regression fallacy, the authors' results indicate that small firms and establishments create more net jobs which is consistent with Birch's findings albeit the difference was much smaller than Birch suggested. They also found a negative relationship between establishment size and job creation within the manufacturing sector using the NETS data for the overall economy and within different sectors. This finding is inconsistent with Davis, Haltiwanger, and Schuh (1996).

More recent studies into the dynamics of employment growth and small businesses are finding that it is not so much firm size but rather firm age that contributes to job creation. Haltiwanger, Jarmin, and Miranda (2013) using the Census Bureau's Business Dynamic Statistics and Longitudinal Business Database (LBD), from 1976 to 2005, find an inverse relationship between net growth rates and firm size when not controlling for firm age. This is consistent with Neumark, Wall, and Zhang (2011). However, after controlling for firm age, results indicated no systematic relationship between firm size and net growth rates. These results demonstrate that new firms tend to be small thus reflecting the systematic inverse relationship found in other studies. Lawless (2014) also finds evidence supporting the suggestion that younger firms are the ones that contribute more to overall job creation. Examining Ireland's manufacturing and internationally traded services firms spanning almost 40 years, the study's results are consistent with Haltiwanger, Jarmin, and Miranda (2013). Lawless finds that particularly newer and younger firms contribute to job creation. Results also suggest that younger firms are more dynamic than mature firms regardless of size class.

The studies reviewed thus far would indicate the importance of start-ups and young firms as important sources for job creation. However, start-ups and young firms also have high exit rates. Shane (2009) claims that start-up myths are a disservice to the economy and encourages bad

public policies. He argues that typical start-ups are not the high growth firms that generate wealth and jobs rather these typical start-ups are wage substitution ventures. Citing data from the U.S. Bureau of Labor Statistics and Davis and Haltiwanger (1992), Shane argues that new firms account for a smaller portion of gross and net job creation. Furthermore, he emphasizes that the number of jobs created by new firms and then lost after closure far exceeds the number of jobs added by the surviving and expanding firms. Similarly Hurst and Pugsley (2011) combine quantitative and qualitative data to examine what small businesses do and how they relate to job creation and innovation. Using data from the Statistics of U.S. Business (SUSB) between 2003 and 2007, they find that most small businesses occupy 40 narrow industries offering primarily standard services. Small businesses define here are firms with between 1 and 19 employees. Their results showed that most surviving small businesses do not grow by any significant margin. This contrasts with Haltiwanger, Jarmin and Miranda (2013) who argued new firms contributed the most, on average to job growth. Hurst and Pugsley demonstrate that small business do not grow by any significant margin rather most businesses start small and stay small. As far as assessing innovation among small businesses by examining how many firms acquired patents, trademarks, copyrights and the like, they found that many small businesses do not innovate nor have an expectation nor desire to expand. Both Shane (2009) and Hurst and Pugsley (2011) suggest creating policies that target high growth potential and innovation rather than create policies aimed at particular business sizes.

Yet Mason and Brown (2013) caution against Shane's (2009) high growth potential policies. They argue that creating high growth firm (HGF) oriented policies are impractical as HGFs are heterogeneous with respect to sector, size and origins. Rather they advocate for more than purely transactional relationship, i.e., capital assistance by suggesting several relational assistance opportunities to support HGFs. The role of small businesses, whether they be start-ups or existing businesses, are important sources for job creation. As seen throughout several studies, policy implications would be focusing initiatives away from strictly firm size.

Appendix A: Data Collection

The United States Census Bureau defines workers according to the type of ownership of the employing organization:

1) Employee of a private for-profit company
2) Employee of a private not-for-profit organization
3) Local government employee
4) State government employee
5) Federal government employee
6) Self-employed in an unincorporated business
7) Self-employed in an incorporated business
8) Working without pay in family business or farm[35]

The last category was not used for this analysis. The tables within the sector analyses aggregates the number of self-employed (both incorporated and unincorporated) workers among all seven classes of workers. The rate of traditional salary workers is one minus each percentage.

The American Community Survey (ACS) is one of the primary sources for household class of worker data. It is important to note that the estimates for 2009-2013 are not averages. Rather it is the aggregation of data collection over a specific time period, in this case 5 years. This aggregation is so that no month or year within that timeframe is overrepresented.[36]

Proportion tests were ran for all groups over the time frame from 2000 to 2009-2013. These tests were used to compare the differences between each ethnic group to non-Hispanic White.

* denotes that the difference in proportions is statistically significant at the 90% confidence level.

** denotes that the difference in proportions is statistically significant at the 95% confidence level. Proportion tests were also ran comparing each ethnic group over the time frame from 2000 to 2009-2013. #, ## denote the same meaning as * and **, respectively.

A blank means no significance (greater than 90 percent confidence level). The P-value indicates how significant the change is over the years. For a change over time to be significant the P-value must be less than 0.1 (0.05 is better) or the one pound sign ("#") means the same as one asterisk, and a P-value < 0.05 or two pound signs ("##") means the same as the double asterisk.

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[35] For more information, please see http://www.census.gov/people/io/about/classofworker.html
[36] For more information, please see http://www.psc.isr.umich.edu/dis/acs/handouts/Compass_Appendix.pdf

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Literature Review and Analysis of Small Business Environment

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Literature Review

Current Practices of Local Economic Development

Economic development policy has been a part of state and local planning for over 40 years. Yet how economic development should be undertaken and what tools to use continues to be a subject of debate, particularly in light of a changing landscape. Certainly there is no shortage of study concerning the topic of economic development (see Currid-Halkett and Stolarick 2011 for a broad summary). So while ongoing research is far from definitive, there are some nuggets that can be gleaned from studies to-date.

Scholars differentiate between three phases or "waves" of economic development (Bradshaw and Blakely 1999; Zheng and Warner 2010; Osgood, Opp, and Bernotsky 2012; Reese 2014). Yet, neither wave is mutually exclusive - each is more of an extension of the continuum from the previous wave.

The first wave of economic development emerged in the 1970s as a response to Nixon's New Federalism, and the end of federal revenue sharing (Hanley and Douglass 2014). First wave development strategies attract firms with financial incentives. As the 1980s approached, economic development practitioners began focusing on retaining and expanding existing local firms, initiating the second wave. The 1990s brought with it the third wave of economic development. There remains doubt as to whether this third wave constitutes a conceptually distinct approach.

The third wave emphasizes community level economic development and public investment. Examples of each wave strategy are below, though it is not an exhaustive list:

1st Wave: Business Attraction	2nd Wave: Business Retention	3rd Wave: Community Economic Development
- Various tax credits - Infrastructure improvement assistance - Free land - Subsidies	- Indirect assistance - Entrepreneurial policies - Technical assistance - Revolving loan fund	- Public-private partnerships - Quality of life focus - Small business development initiatives

Shaffer, Deller, and Marcouiller (2006) extend the third wave even farther. They characterize this third wave as a movement from economic growth to economic development. Economic growth is concerned with more jobs, buildings, equipment, sales, etc. On the other hand, economic development focuses on increasing a community's capacity to act and innovate. In essence, rather than replace the first and second wave, third wave strategies broaden those perspectives and opt for a more integrated approach.

In addition to the third wave of economic development, Reese (2014) notes the increased interest in human capital development and quality of life (QoL) in recent years. The importance of local

talent and QoL is based on the premise that highly mobile capital and skilled individuals will flock to amenity-rich communities, as proposed by Richard Florida's creative class theory.

Today, the general trend for economic development practitioners is still significantly tied to the practice of older waves. Incentives, for example, are widely used in local economic development. Although Zheng and Warner (2010) has noted a shift away from relying on incentives to a broader range of economic development strategies, Osgood, Opp, and Bernotsky (2012) find that due to the recent recession, many municipalities reverted back to heavily relying on incentives.

Some of the most commonly used practices in local economic development include:

1) Various tax credits
2) Subsidies to industries
3) Amenity-driven strategies (public art, cultural flagship, tourism to attract labor pool and visitors)
4) Contemporary development efforts to fund cultural districts and relax zoning
5) Workforce training
6) Tax credits, TIF, tax abatements, tourism investment, creative class, business incubators
7) Efforts and support systems directed towards promoting local entrepreneurial activity
8) Enterprise zones
9) Brownfield redevelopment and business improvement districts

At the state level, the following economic development trends have been noted:

- Strengthening the relationship between the state and its regions in terms of fostering economic development
- Emphasizing job creation within their borders
- Strengthening their support for advanced manufacturing as it encourages the development of clusters and supplier networks
- Creating partnerships between business, government, and academia to meet industry demands for talent.
- Raising expectations for universities to bridge the gap between research and commercialization
- Increasing business export initiatives (National Governors Association 2013)

The wide use of incentives naturally prompts questions regarding their effectiveness. Evaluation studies indicate mixed results (Peters and Fisher 2004; Sharp and Mullinix 2012; Reese 2014). There is concern as to whether the use of local economic development strategies delivers benefits to the communities issuing incentives. Peters and Fisher (2004) find scant evidence that incentives are effective. Similarly, Reese's (2014) analysis on the effectiveness of incentives suggests that offering no incentives may be the best approach, particularly for smaller

communities. Incentives also have a tendency to create unhealthy competition among neighboring communities.

Overall, study on economic development suggests that many localities are investing in faddish strategies or old school approaches that are not necessarily effective or suitable to their locale. Municipalities that are succeeding do so because each capitalizes on its strengths and unique competitive advantages. Recommendations for moving forward require clear goals, due diligence in monitoring and assessing incentive outcomes and performance agreements, as well as incorporating a set of broader strategies other than just financial incentives. Part of the resistance to such approaches is likely rooted in the pressure for economic developers to produce short-term results.

Going forward, research should be focused on developing better methodologies that explain why one community prospers and another struggles (Shaffer, Deller, and Marcouiller 2006; Osgood, Opp, and Bernotsky 2012). One example of an improved methodological approach is Reese and Rosenfeld's (2001) combination of surveys and comparative case studies. Through this hybrid method, they find partial truths in conventional wisdom of economic development. The authors urge researchers to examine local civic culture in order to better understand the local complexities of economic development. Much progress has been made in terms of our understanding of the nature of successful economic development, but clearly there is still plenty of work to be done.

Rural Economic Development

Rural has often been defined as the opposite of urban. Many federal agencies continue to operate under such relational definitions although they recognize the challenges associated with defining rural. The U.S. Census Bureau defines rural as "all population, housing, and territory not included within an urban area." The U.S. Department of Management and Budget (OMB) use a metropolitan - nonmetropolitan classification. Non-metro areas are designated as counties that fall outside of the boundaries of metro areas.

Isserman (2005) argues these two distinctions are fundamentally different as the U.S. Census Bureau separates and differentiates urban and rural while the OMB focuses on integrating rural and urban within (non)metropolitan and micropolitan areas. Isserman noted that often times the conflation of nonmetropolitan as rural results in misinterpretation of rural conditions and opens up the possibility of misdirected federal funds. However, the OMB recognizes this issue and cautions against the use of metropolitan-nonmetropolitan as an urban-rural classification.

Rural can no longer be synonymous with agriculture. This critical lesson, among six others, is highlighted in Irwin's et al. (2010) century of rural research. Lesson 2 follows with the dismantling of the urban-rural dichotomy and recognition of a continuum and interdependence between urban and rural. Lessons 3 and 4 center on how migration has affected rural development primarily through amenity driven development strategies and how sector-based policies, as learned with lesson 1, rural areas now have a diverse economic base. Policies need to be tailored to place rather than sectors. Lessons 5, 6, and 7 concentrate on how to better future rural research through various modeling techniques.

Several studies have grappled with the fundamental issue of defining rural. For example, Schaeffer, Kahsai, and Jackson (2013) identify several classification schemes while Isserman (2002) examines the different ways rural is defined statistically and those implications. The multiple definitions used to distinguish rural from urban reflects the reality of an integration of rural and urban. What is gleaned from studies such as these is that defining rural is subjective and must be better defined depending on its use. These studies further demonstrate that there is no longer an urban-rural dichotomy and needs to be a more careful assessment of what is rural so as not to misinterpret reality.

Rural areas, not just in Texas but across the United States are clearly in a period of transition. The systematic mechanization of agriculture that has been occurring since at least the 1930s has resulted in a steady outflow of city and county populations.

The following table highlights the steady decline of the agricultural workforce over the past century.

Year	Percentage of the Workforce Employed in Agriculture
1840	70%
1900	41%
1930	22%
1945	16%
1970	4%
2015	>2%

Once vibrant downtowns, that were supported by the large agricultural workforce have fallen into disrepair and decay. Even as recently as the period from 2000 to 2010, 79 counties in Texas continued to lose population.

With less than two percent of the U.S. workforce involved in agriculture, the economic drivers of a century ago are no longer applicable. Successful rural communities recognize the structural transformation underway. In rural areas, farm employment has been replaced to some degree by manufacturing, but mostly by service sector employment - as is the trend nationwide.

While manufacturing activity over much of the 20th century was a reliable job creator, two long-term trends have caused that to change. Because of increasing productivity and expected continued decline in manufacturing employment, future employment growth in rural areas will more and more be dependent on service sector.

In the years following World War II, manufacturing's share of overall employment held relatively steady until the end of the 1970s. In fact, absolute employment in manufacturing in the

U.S. didn't peak until 1979 at 19.5 million workers (though as a percentage of the overall workforce, the numbers had already started to shrink - see table below). As such, policymakers should be cautious with regard to touting manufacturing as a panacea. Clearly manufacturing will remain essential, just as agriculture has. But overall, fewer workers will be required. There will simply be fewer of us engaged directly in the manufacturing process.

Year	Total U.S. Manufacturing Employment (thousands)	Percentage of Workforce Employed in Manufacturing
1950	13923	22.3%
1960	15466	22.1%
1970	17930	21.7%
1980	18490	17.3%
1990	17776	14.2%
2000	17296	12.1%
2010	11545	7.5%
2015	12234	7.9%

This has happened for two reasons that are often not well-understood: outsourcing and productivity.

The story behind the first factor, outsourcing, begins with a shift in corporate organizational structures that was the direct result of companies shedding non-core activities. Manufacturing firms in the first half of the 20th century were vertically integrated, both with regard to supply chains and administrative support functions. In the 1960s that started to change with the emergence of information technology outsourcing led by Ross Perot. Even in the 1950s, ADP had begun processing payroll for many companies.

As organizations of all sizes have sought ways to focus on core competencies, many basic functions were outsourced to emerging companies like Electronic Data Systems (EDS, now HP Services). Nowadays, for example, very few companies still process their own payroll. In fact, all manner of business tasks such as accounting, customer support, web design, data entry, legal services, and even many creative services are routinely outsourced. The result of this transition has been to narrow the definition of a manufacturing firm. Most of the jobs shed by manufacturing companies didn't disappear - they simply moved to the service sector.

This transformation is one of the main reasons that the SIC or Standardized Industry Codes was replaced by NAICS (North American Industry Classification System). SIC codes were established during the manufacturing era, and did not adequately reflect the shift of industry and employment to service sectors (Tunstall 2007).

Similarly, it is a gross oversimplification to blame the decline in U.S. manufacturing employment on offshoring. While there was a period where U.S. jobs were outsourced to various

countries in Asia, that trend has subsided. It's true that the U.S. continues to shed manufacturing jobs, but now so does China. In fact, manufacturing employment decline globally as a percentage of the overall workforce has become a reality.

This brings us to the other reason for the decline in manufacturing jobs as a percentage of the overall workforce: productivity. Throughout the world, most countries produce more goods via the manufacturing sector than ever before. At the same time, they are using fewer people to do so. We are simply doing more with capital and less with labor.

As a case in point, during the interviews with city managers and economic development directors, one official indicated a proposed $120 million manufacturing facility would not qualify for TEF incentives because the project would create less than 50 jobs. In another instance, a multi-acre, multi-million dollar natural gas processing facility in South Texas completed recently employs less than two dozen people. Manufacturing facilities are becoming more productive all the time and thus require fewer employees.

In response to this apparently gloomy picture, people often ask where the new jobs will come from. The answer is that they will be in the service industries. Exactly what the new jobs will be cannot be forecast with precision, but there are some clues that can be examined.

Not so long ago, in 2007, the first generation iPhone was released. There were no jobs called iPhone application developer then. Yet, by 2011 Apple was generating over $15 billion in revenues from mobile applications. Ten years ago, there were no social media managers, no SEO (search engine optimization) specialists, no cloud services specialists and no big data analysts. The service industry has and will continue to create jobs that may literally be unimaginable right now. Yes, some service occupations will include Zumba instructors or retail sales. But many others occupations will include work in cloud computing, cybersecurity, gene sequencing, big data projects and others emerging fields.

With this shift in mind, it is important to consider how to create effective economic development policies. Rural economic development has been studied extensively, with continuous ongoing research. Pender, Marre, and Reeder (2012) provide an overview of both traditional strategies, which include:

- Industrial recruitment
- Regional trade centers
- Bedroom communities
- Amenity based development

The authors also present non-traditional strategies that focus on the wealth creation aspects of each:

- Entrepreneurship

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- Cluster-based initiatives
- Innovation and knowledge based approaches
- Creative class development

Despite much study, the literature makes clear there is no one set of best practices for rural economics. In many ways, rural strategies must take approaches that mirror those in the private sector. That is to say, a successful strategy must draw upon a community's inherent strengths and must be unique to some degree.

Several studies offer insights into rural economic development policy. Most of the analysis reviewed for rural economic development agreed that policymakers are moving from traditional sector based polices to more integrated approaches. There is a growing consensus that a one-size-fits-all approach does not work ("Policy Brief: Reinventing Rural Policy" 2006; Rickman 2007; Morgan and Lambe 2009; Kilkenny and Partridge 2009; Olfert and Partridge 2010; Pender, Weber, and Brown 2014). These new integrated approaches follow guidelines such as:

- Pooling knowledge resources from the private and public sector.
- Identifying regional and local assets, e.g., quality of life, environment, infrastructure, local capacity building capabilities.
- Understanding the spatial economic structure of rural areas, i.e., ripple effect of economic relationships between rural areas and urban areas.
- Multiple economic development strategies and tools may need to be combined to create a winning combination.
- Creating regional centers of economic activity that focus on spreading economic benefits outward.
- State leadership offering incentives for local areas as a way to help leverage funds.
- Tying regional partnership participation and cooperation to subsidies and tax breaks.

Olfert and Partridge (2010) caution against fad-based policies. However, they note that within a structured framework that 1) analyzes strengths and weaknesses, 2) develops clear working definitions, and 3) targets specific goals, fad-based policies can often provide the impetus for community leaders to begin thinking "outside the box."

For example, entrepreneurship development can offer a promising alternative that seeks to transform local citizens into job creators, though once again, urban and rural challenges diverge. McGranahan's et al. (2010) study of rural growth finds that entrepreneurship as an alternative development strategy may be limited where there are fewer amenities to attract entrepreneurs. Similarly, Fortunato's (2014) analysis finds that rural entrepreneurship is distinct and faces separate challenges from mainstream entrepreneurship research and practice. He notes that blanket policies fail to pick up on the different assets and strengths of many smaller and rural communities.

Case studies examining resource-based strategies such as unconventional oil and gas development demonstrate positive impacts, at least at first. Measham and Fleming (2014)

examine evidence from the development of unconventional natural gas, which indicate that regions experience population growth, poverty reduction, and greater educational attainment. At the same time, Tunstall (2015) while finding increases in per capital income, also noted challenges such as the potential for crowding out effects on other industries, as well as housing shortages. In addition, both studies encourage economic diversification as a way to buffer against downturns in the energy industry.

Using examples from emerging energy industries (ethanol, wind power, natural gas), Pender, Weber, and Brown (2014) demonstrate the dynamic relationships involved in rural wealth creation. Accounting for both tangible and intangible forms of wealth (natural, physical, financial, human, social, intellectual, cultural and political capital) they show that successful strategies intended to create new economic development are highly contextual.

Energy-based economic development (EBED) in general can provide economic, social and environmental benefits, but they lack a basic framework, common definitions, and clear goals (Carley, Brown, and Lawrence 2012). In addition, sometimes even if clear objectives have been articulated, sustainable development remains highly contextual.

Ratner and Markley (2014) recognize the interconnections between a region's social, economic, and natural infrastructure and how decisions in one area affect the others. Their wealth creation framework focuses on more fully integrating rural assets into broader regional and national economies. Similarly, Lambe's (2008) analysis of 45 case studies examining small town development efforts again demonstrates that local context matters and that economic development must be comprehensive.

As can be seen, most studies emphasize contextualizing rural development due to the heterogeneity of rural areas. Simply injecting money into rural areas does not adequately address issues or ensure sustainable development. As a result, policies now tend to be focused on identifying unique local economic opportunities, fueled by collective efforts by community leaders, in coordination with state government and private stakeholders.

Policy intervention is costly and therefore its application must be selective. In order to properly gauge success, metrics and policy evaluations must be put in place *in advance* of the intervention. By doing this, both successes and failures can be objectively analyzed, thus paving the way for steady, incremental progress toward long-term community economic development efforts (Morgan and Lambe 2009; Olfert and Partridge 2010).

Creative Class

The creative class is a term used to describe those individuals that work in knowledge intensive areas such as design, entertainment, computer sciences, management, law, engineering, education, healthcare, and the arts. While over thirty percent of all U.S. workers are part of the creative class, they make account for over half of the salaries (Florida 2014). Cities with large portions of their working individuals employed in the creative class professions are amongst

some of the fastest growing cities in the United States, while those with less creative class workers are amongst the slowest (Florida 2012).

Creative class cities have been found to have lower rates of unemployment during times of recession and a quicker rebound to pre-recession employment levels once the crisis has passed (Currid-Halkett and Stolarick 2013). The percentage of creative class workers in a city is an important factor for increasing resilience and growth during troubled and regular economic periods. However, the impacts of these creative class industries were dependent on the size of the city and the majority creative class industry clusters present.

The mobility of the creative class is an important issue for economic development officials. Economic development policies have traditionally focused on the first two waves of economic development strategies, i.e. attraction and retention of businesses outside and within a region. However, the third wave of economic development strategies focuses more on community development. Economic development policies have shifted to from sole aim of attracting industry to attracting both industry and people to a region as both are required for successful development (Mellander and Florida 2014). The creative class is a large and diverse group, but several common desires have been found key to the attraction and retention of this class of workers to a region. These common traits are openness to diversity, QoL and amenities.

Critics of the creative class have pointed to an uneven focus on the attraction of these workers and the effect this has on lower income populations that are not being targeted (Grodach and Loukaitou-Sideris 2007). Other criticisms include that while the increased creative class population will bring regional growth, higher wages and jobs, it will also bring a higher cost of living which will disproportionately become a burden of the lower income population.

Small Business Barriers

In 2012, small businesses in the United States accounted for 28.2 million jobs and made up forty-nine percent of all private entity employment, small businesses accounted for over 75% of those classified as non-employers (SBA Office of Advocacy 2014). [37] With such a large impact on the economy, the success of small businesses has many implications for regional economic development. There is no one characteristic that determines the probability of success for small business owners, but rather a complex web of interrelated conditions, where a shortfall in one area may be compensated by others (Watson, Hogarth-Scott, and Wilson 1998).

Some of the largest barriers to small business formation and success are access to capital, lack of assets, in addition to management and information (Loscocco, Karen A., Robinson 1991; Servon et al. 2010; Perlmeter 2015; Bates 1995; Watson, Hogarth-Scott, and Wilson 1998). Access to capital Barriers and how they affect individual groups has large implications in how small

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[37] Non-employers are defined as a business without paid employees. Source: SBA Firm Data Size, https://www.sba.gov/advocacy/firm-size-data#ne

business assistance organizations should offer support to these individuals. In a study of New York City small and micro businesses, Servon et al. (2010) found that organizations often lacked the capacity to serve the demand of small businesses. It also found that services offered were fragmented among numerous private, nonprofit and government agencies with many services being duplicated.

Barriers to small business are being addressed nationwide by a variety of agencies throughout the United States. In order to be effective these agencies will need to assess the barriers for each population and focus their training and assistance on what is needed the most. Areas such as managerial and human resource training is a service area that most organizations are not addressing effectively enough.

Export Opportunities for Small Businesses in Texas

While Texas is the number one exporting state in the U.S., export opportunities for small business continue to be largely underutilized here. In many cases, the role and value of the various resources chartered with increasing exports are not well-known or understood. This section of the report will briefly highlight key entities associated with business export and suggest how their respective functions can be best leveraged by small business.

There are only about 25 small business development centers (SBDCs) in the entire U.S. that focus specifically on export opportunities, with capabilities that range from intermediate to high. This constitutes a small fraction of the approximately 1100 SBDCs located in the U.S. Yet, of the SBDCs that do work with small companies to increase export volume, the results can be significant.

At the University of Texas at San Antonio, the International Trade Center (part of the South-West Texas Border SBDC Network) assisted 413 small business clients generate $490 million in export revenues and create 909 jobs in 2014.[38] Overall however, the number of small companies that export from the U.S. is only about one percent of the total. This low figure clearly suggests untapped potential for small business export opportunities. Having said that, it is worthwhile to debunk some commonly-held notions about why small businesses do not export more. Many approaches taken to-date do not engage small businesses in a way that systematically generates results. For example, not all companies are in a position to export, so not all small businesses should be encouraged to try to do so. The first basic criterion is that a company needs to be export capable. That is, the company must be established in its own domestic market and also have an exportable good or service. This is a necessary, but insufficient prerequisite.

The next step that a small business must undertake is to establish a commitment to export. The decision to export must be part of the organization's overall strategy, with buy-in at the highest levels of the company. The commitment is necessary because there are rarely shortcuts to export

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[38] International Trade Center, 2014 Annual Report. https://texastrade.org/about-us/annual-reports/

success. Time and money will be required, with a timeframe that is 18 months on average and a working capital outlay of $50,000 or more over that period. Foreign travel to establish relationships will be essential, and trade missions are often useful at opening doors to export opportunities.

Many small businesses are reluctant to export because they are already successful in the U.S. market. These businesses understand the regulatory environment and are familiar with the banking system. As a result, the prospect of exporting is often perceived as risky. However, incorporating the export of goods and services into a company's business model can add resiliency and diversification, which can buffer a small business during economic downturns.

While becoming an exporter can seem daunting to small businesses at first, the reality is that the transition process can be executed as a series of sequential steps, each of which is generally manageable. In addition, international sales often provide higher profit margins, higher average order sizes, and tend to put small businesses on a path for much stronger long-term growth. There are also intangible benefits: the ability to sell abroad increases the credibility of a small business in its home market.

In order to be effective, export assistance should be provided on two levels. First, companies typically need assistance expanding their internal capacity to accommodate the mechanics of trade. These include the ability to make pricing decisions, determine shipping logistics, and set up payment terms and financing - all of which require a mix of training and consulting. Less systematic approaches that consist of only training, or only networking events invariably fall short of success because it is difficult to know in advance at which stage in the process a small business will need assistance.

This is where mentorship or hand-holding become critical elements of successful export strategy implementation. Once the small business owners and managers understand the mechanics of export, the ongoing, periodic consulting necessary to bring the strategy to fruition can last anywhere from six months to two years. This consulting will consist of business planning and foreign market research, among other things. Often small businesses will need assistance narrowing the scope of the initial effort to two or three target markets. After a small business has turned the corner and obtains its first export sale, momentum tends to build in subsequent years. It is not unusual for small businesses that receive *consistent* support to go from 1-2 percent of export sales to 20-30 percent.

Company size and maturity are also key factors that can help ensure a successful export strategy. Experience strongly suggests that small businesses should have at least $1 million in annual revenues, maintain positive cash flow and have been in existence at least one year before considering export opportunities. Ideally, small businesses should have annual sales between $5-20 million.

The small businesses in the Texas that are exporting tend to be in a single country market - usually Mexico or Canada. However, once a small business has successfully entered one country, it is much easier to move into additional markets.

Export promotion agencies, typically organized at the federal level (e.g., Foreign Commercial Service, U.S. Export Assistance Centers, International Trade Administration) tend to perform a different function. They are good at providing information from foreign commercial posts, but their ability to assist clients is limited.

At the local level, economic development corporations, chambers of commerce, and municipal governments also attempt to provide support. However, neither export promotion agencies nor local organizations have the resources to provide the hands-on, periodic-but-regular interaction with small business that drive long-term, consistent export activity. The situation in Texas, as well as the rest of the U.S., is not unusual. Export promotion agencies in other countries also struggle to grow exports and broaden the base of companies capable of exporting. Here again, experience suggests that the SBDC methodology is the most systematic approach implemented to-date.

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┌────────────────────────────────────────────────┐
│   Economic Development Corporations (EDC)       │
│            Chambers of Commerce                 │
│  (First contact with small businesses in need   │
│                of assistance)                   │
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┌────────────────────────────────────────────────┐
│  Small Business Development Center (SBDC)        │
│                  Network                        │
│  (Provides strategy, capacity building,          │
│   research and implementation assistance)       │
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┌────────────────────────────────────────────────┐
│             Free Trade Agencies:                │
│         Foreign Commercial Service              │
│         U.S. Export Assistance Centers          │
│        International Trade Administration        │
│  (Provides access to export networks and         │
│          contacts worldwide)                    │
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At the same time, export promotion agencies are in a good position in the final stages of the process cycle to facilitate relationship networks for small businesses. With commercial posts all over the world, export promotion agencies could go a long way toward closing the loop with the

SBDC network by providing export capable small businesses with additional local contacts in other countries.

The population of small businesses is quite high, and there is significant churn associated with them. In the U.S., well over half a million small businesses (defined as less than 500 employees) both open their doors and, somewhat less often, go out of business each year. The options for small businesses to receive hands-on support are generally limited. Business owners looking for assistance have relatively few viable options.

Large consulting firms (Pricewaterhouse Coopers, Ernst & Young, Deloitte, KPMG, McKinsey, Boston Consulting Group, etc.) are geared toward Fortune 1000 companies, where fees can run into the hundreds of thousands of dollars or more for a single project engagement - cost-prohibitive for small firms. Consulting companies that *are* geared toward small businesses typically charge $250 per hour or more, plus consultant travel expenses, which generally exceed $10,000 for each week of assistance - a very expensive option for most businesses. Tax advisors, such as CPAs in private practice may provide some assistance, but are generally not well-equipped to assist small businesses in the *marketing*, *operations* and *financial* functions related to export. The combination of 600+ economic development corporations throughout Texas, export promotion agencies, and the SBDC network constitute an important support infrastructure for small business that are not otherwise available or affordable elsewhere.

Interview Findings from City Managers and Economic Development Directors in Texas

Background

As part of the study on the state of small business in Texas, the University of Texas at San Antonio Institute for Economic Development designed a survey ***with the goal of further understanding the relationship between municipalities and small business formation/operation.*** The most promising source for this information was city managers and economic development directors across Texas. With that in mind, the institute developed a stratified sample identifying 180 contacts from 66 municipalities, including city managers, economic development directors and other economic development entity leaders throughout Texas (e.g. heads of chambers of commerce, city mayors). The research team requested interviews through email and telephone. When a city manager or economic development official was not available, the research team contacted the local chamber of commerce. Each entity received at least two contact attempts.

The research team conducted 48 telephone interviews with city managers, economic development directors, and other economic development leaders from 41 Texas cities. For a complete list of participating cities and questionnaire, see Appendices A and B. Interviews were administered using a questionnaire intended to assess the small business environment, identify barriers, and evaluate regional approaches to economic development. The research team analyzed and categorized responses based on recurring themes, which in turn formed the basis for a summary of recommendations.

General Responses

One interesting finding was that the definition of small business is highly dependent on the context of the local community. While the majority of respondents were familiar with the standard Small Business Administration (SBA) definition of small business, only six respondents actually found that metric useful.[39] Three of the most cited working definitions for small business were either 10, 50 or 100 employees or fewer. The range of definitions depended primarily on the size and types of businesses that the economic developers tended to assist.

According to the respondents, small businesses face a variety of obstacles. While some are common to all small business, some obstacles stemmed from factors such as location and size dependent.

Access to capital was the most-often cited barrier for small business formation and expansion. Other challenges for small enterprises included lack of business acumen, unaware of resources available such as the SBDC network, and/or lack of a suitable workforce.

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[39] SBA defines small businesses as those having fewer than 500 employees for manufacturing and mining industries and $7.5 million in average annual receipts for nonmanufacturing industries. There are a number of exceptions for certain industries, please see Table of Small Business Size Standards. https://www.sba.gov/content/small-business-size-standards.

In some instances, lack of available real estate was an issue. Very often, local and state permitting processes had presented a challenge for small businesses. For example, some respondents mentioned difficulties that stemmed from the length of time required to obtain a permit. The city managers and economic development directors indicated that business owners raised issues regarding the cryptic applications, processing inefficiencies or complex municipal codes. However, while many respondents seemed to be aware of these problems, only a few municipalities appeared to be actively seeking ways to improve the bureaucratic process.

When comparing small communities to large communities, responses revealed a discrepancy in available resources. Some of the most-often utilized small business resources included local SBDCs, chambers of commerce, educational institutions and public-private economic development partnerships. Some of the most reported examples used by cities involved business workshops, advisory services, co-working spaces, workforce development and training, marketing aid, and networking events. However, smaller communities possessed fewer resources with regard to small business assistance resources and partnerships. By contrast, larger communities typically enjoy a wider variety of partnerships or had specific entities dedicated for small businesses assistance.

Respondents answered pertinent questions on how current economic trends and quality of life initiatives influence small businesses. Specifically, to what extent do quality of life components factor into their overall economic development strategy? Most respondents considered quality of life important. However, 8 of the 48 respondents indicated that quality of life did not affect small business formation as most small businesses were created organically from within their communities. Instead, these same respondents considered workforce, infrastructure, and incentive offerings more important than quality of life factors. The majority of respondents who did report quality of life as important or critical provided specific examples on this topic; downtown revitalization initiatives, investment in green spaces, education, and a focus on cultural and arts amenities contribute to quality of life.

Quality of life issues mesh with related topics such as the creative class workforce and giganomics employees.[40] Investments in quality of life components are associated with attracting and retaining the creative class.[41] Of the 48 respondents, 24 reported being unfamiliar with the term. However, that did not deter some of the respondents from discussing indirect efforts underway to retain and attract this workforce - 27 respondents discussed both indirect and direct efforts. The most commonly cited efforts were those that targeted the following areas:

- Technology
- Medical fields
- Entrepreneurs
- Arts and cultural amenities

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[40] Giganomics: combining multiples skills, talents, and abilities to generate income for living. Taken from the old musical term "gig" which means a performance. Many "gigs" in a variety of disciplines, when worked together, can provide a livable income. Source: Wikipedia.

[41] For questionnaire purposes, creative class was broadly defined as those who work in education, arts, sciences, design, media, i.e. knowledge based workers.

Some respondents acknowledged the role of the creative class in generating new economic opportunities yet cautioned against focusing an entire economic development strategy solely on the creative class. The creative class is also related to the gig economy, however, when it comes to policies that will affect or have affected gig companies, e.g. Uber, Lyft, TaskRabbit, Airbnb,[42] very few respondents were aware of any specific policies. Respondents who were aware of specific policies reported that they were currently working to find appropriate regulation agreements. Most of the respondents who were not aware of any specific policies stated their communities did not have the demographics to warrant interest from gig companies.

Respondents identified incentive programs that they found most effective and least effective. Incentives cited as being the most effective were those such as Chapter 380 and 381 agreements, which respondents said can be quite effective since they promote flexibility and creative latitude for proposed projects.[43] In addition, job creation incentives, workforce grants, the Texas Enterprise Fund (TEF), infrastructure improvement grants, and tax abatements also received frequent mention as effective programs.

The metrics below linked to business attraction capture the most frequently used measures of success for community leaders:

- Job creation
- Capital investment
- Increase in sales tax revenue
- Average salaries
- Total payroll
- Economic impact

Several respondents indicated that rather than track on a per job basis, the municipality tracked annual payroll annually because it is easier to track and report. Job counts are more difficult because of employee attrition. Another noticeable trend regarded the timing of distribution of incentives. Typically, communities have two choices. On one hand, they can offer businesses upfront incentive funds combined with clawback provisions. Alternatively, city economic

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[42] Uber Technologies Inc. is an American international transportation network company headquartered in San Francisco, California.
Lyft is a privately held American transportation network company based in San Francisco. The company's mobile-phone application facilitates peer-to-peer ridesharing by connecting passengers who need a ride with drivers who have a car.
TaskRabbit is an online and mobile marketplace that allows users to outsource small jobs and tasks to others in their neighborhood.
Airbnb is a website for people to list, find, and rent lodging. It has over 1,500,000 listings in 34,000 cities and 190 countries. Source: Wikipedia.
[43] The Local Government Code authorizes municipalities and counties to offer incentives promoting economic development using city funds or public monies respectively through loans or grants. Municipalities can offer Chapter 380 agreements while counties can offer Chapter 381 agreements. Both of these agreements are intended to stimulate business and commercial activity within respective jurisdictions. For more information, please see http://texasahead.org/tax_programs/ch380-381/.

developers can provide rebates or after-the-fact incentive payments once the business fulfills the agreement criteria.

Of the 11 respondents who commented specifically on clawbacks, only one indicated a preference for upfront funding with clawback provisions. This respondent was from a smaller community and commented that up-front grants or incentives were more effective at convincing company management to choose their community. Two other respondents indicated that they rarely used clawback provisions, preferring instead to base agreements strictly on performance, as this fosters transparency and accountability. Another issue raised regarding clawback provisions was the need for vigilance in enforcement and recovery of previous up-front payments. When a company failed to meet the agreed criteria and clawbacks became necessary, and the process was often arduous.

Incentive Frameworks and Community Characteristics

Incentive issues such as metrics and eligibility were context dependent, particularly for smaller communities. Respondents from these areas stated that qualifying for incentives could be difficult when projects did not meet job creation target numbers that are simply too large to be applicable. As a result, these respondents reported that smaller communities often have fewer economic development tools at their disposable. State-level blanket incentive policies often disqualify larger cities in rural counties. The respondents indicated that the scale of job creation is not the same for smaller communities compared to large metropolitan areas.

For example, to be approved for Texas Enterprise Funds, applicant cities must demonstrate that projected new job creation must be "significant" which is defined as creating more than 75 jobs in urban areas or more than 25 in rural areas.

A rural city is usually defined as having fewer than 50,000 people.[44] Yet it is worth noting that the characteristics of a city that has fewer than 50,000 people on the outskirts of Dallas-Fort Worth, Houston, Austin and San Antonio is very different from the traditional notion of a rural community. Conversely, cities with populations of 100,000 - 200,000 in West Texas tend to display many rural features. Some respondents suggested incentives based on the size of the project relative to the size of community.

A couple of communities indicated that they were experimenting with incentives more creatively. One example was requiring companies that receive incentives to offer internships as well, thus creating and strengthening community linkages.

When asked about regional marketing efforts, most cities either already had established relationships with a regional entity or were open to the prospect of joining a regional group. Regional participation occurs through entities such as TexasOne (through Texas Economic

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[44] The Economic Development & Tourism division of the Office of the Governor follow the Federal Community Development Block Grant Program (CDBG) for entitlement versus non-entitlement communities. Information provided by the Economic Development & Tourism Office stated that cities with 50,000 or fewer and counties with fewer than 200,000 in population as rural. For information on TEF and CDBG, please visit https://texaswideopenforbusiness.com/services/texas-enterprise-fund and https://www.hudexchange.info/cdbg-entitlement/cdbg-entitlement-program-eligibility-requirements.

Development Corporation - TxEDC), Team Texas (through the Texas Economic Development Council - TEDC), Texas Municipal League (TML), various Council of Governments (COGs) and other regional marketing associations. Some respondents reported that although they were members of various regional groups, these groups were not as effective as they could be. Five respondents said that they only focused locally and were not pursuing regional relationships at this time.

Once again, respondents noted contextual disparity between large and small cities. With regard to regional participation, smaller communities often believed that they did not receive adequate attention from the state/regional marketing groups. These respondents indicated that their financial contributions, while limited, should not be the sole basis for level of marketing participation.

Regional Discussion

Texas is a large state and as such, regional characteristics and relationships are worth exploring. Toward that end, the research team groups cities into five regions: Northeast, South Central, Coastal Plains, West Texas and the Panhandle, and the Rio Grande Valley.[45] This sub-division of the state provides localized insights into regional collaboration.

Northeast

Most of the respondents from the Northeast cities reported a high level of competitiveness within the region. Yet at the same time, they also recognized the benefits of regional collaboration. One respondent noted in the Northeast that there was no common regional voice on a consistent basis, and that communities in the DFW area often compete with each other. Discussion about the competitive nature of the region led to some commentary regarding incentives. Several respondents did in fact note that they tried to avoid head-on competition with other communities. Two cities specifically commented that they maintain a policy of not incentivizing neighboring projects.

South Central

Respondents in South Central Texas made very little mention of local competition, which contrasts with Northeast Texas cities. Only one respondent mentioned any difficulty collaborating regionally, the result of neighboring cities offering competing incentive packages. Most respondents were interested in regional collaboration but suggest that regional marketing resources would help.

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[45] **Northeast**: Allen, Corsicana, Dallas, Denton, Fort Worth, McKinney, Plano, Texarkana, and Tyler. **South Central**: Austin, Brownwood, Bryan, Cotulla, Crystal City, Hillsboro, Kerrville, Killeen, Laredo, San Antonio, Schertz, Temple, and Waco. **Coastal Plains**: Baytown, Beaumont, Corpus Christi, Houston, and Victoria. **West Texas and the Panhandle**: Midland, Odessa, Pecos, San Angelo, Snyder, Sweetwater and Lubbock. **The Valley**: Edinburg, Harlingen, McAllen, and Mission.

Coastal Plains

The Coastal Plains respondents most commonly noted that communities tended to work on their own projects, but were open to regional collaboration. Only one respondent stated that although regional approaches had been tried, they were repetitive and unnecessary.

West Texas and the Panhandle

Respondents tended to differ about the prospective benefits of state-led regional collaboration in West Texas. One respondent indicated that regional needs are being met through various economic development groups. Another suggested that state-led marketing partnerships should include the EDCs. Yet another suggested that regionalism creates more in-region competition and is therefore unproductive. This concern derives from the West Texas geography, where towns and cities have greater spatial separation. Benefits accruing to one city will not likely spillover to another 50 or 100 miles away.

Rio Grande Valley

Valley cities reported good collaboration with each other and maintain strong working relationships with neighboring cities. Each respondent was able to give multiple examples of regional collaboration. However, one respondent noted that regional collaboration could not be forced. Another was unsure of how a regional policy would be applied.

Concluding Remarks

Across the different regions, many respondents were interested in regional collaboration. However, there was widespread uncertainty about how formal regional policies could exist. The confusion could stem from the fact that communities often do not appear to be coordinating well and sometimes even compete with each other over projects. From a policy implementation perspective, there were also questions about how regional incentives, marketing resources, and economic benefits would be shared and distributed. The survey sample exhibits significant variation across localities with regard to perspectives on regionalism and with whom communities are willing to (or not) work.

One of the takeaways from the interviews, as well as ongoing research at the UT-San Antonio Institute for Economic Development is that city context is clearly an important, yet often unacknowledged factor that can drive different economic development strategies. Not all border and rural communities face the same issues or have similarities.

Municipalities on the Texas-Mexico border, for example, often look for ways to find complementary strengths and work together if possible. However, those on the border of Texas and Louisiana more typically find themselves competing for economic development projects across state lines. Similarly, rural South Texas is very different from rural West Texas. The cities and associated economic drivers vary because the population centers in West Texas have much greater geographical separation - not just from the largest cities but also from each other - compared with those in South Texas.

Regionalism is currently not the norm, however, several respondents suggested ways the state could encourage regional cooperation. Many indicated they would like to see the state take a more active role with lead generations and collaboration on regional projects. Several suggested a regional marketing budget, or state matching regional marketing funds. Respondents who were open to regionalism recommend a statewide assessment of assets, and the creation of a regional scorecard. When discussing a statewide assessment, respondents referred to a 2005 cluster initiative that sought to identify assets regionally.[46] As mentioned previously, several respondents suggested that 4A and 4B (and possibly other) funds be restructured so that communities could more easily pool resources for regional projects.

Another issue that respondents raised several times was the general emphasis on the Texas Triangle[47] geography to the relative exclusion of other areas of the state.

Other respondents indicated that collaboration between neighboring cities and counties was often problematic and that city/county issues might need to be addressed before they can work regionally. A few respondents indicated concern with the amount of emphasis on the triangle and the challenges faced when located outside of the triangle. Respondents believed that the state should know the strengths and efficiencies outside of the triangle. One suggestion was to offer state incentives to persuade companies to locate to other regions. This suggestion is interesting as some respondents from the triangle area reported infrastructure issues, space availability and real estate affordability concerns due to the amount of growth being experienced.

From a research standpoint, it is interesting to note that many economic studies are conducted at the county level (where data are more readily available) even though cities clearly have more economic development decision authority than counties.[48]

The interviews with key economic development leaders across Texas not only provided important insights into the small business environment at the local level, but also about mechanisms used to track effectiveness of business attraction for a given municipality. No set of best practices were found for tracking incentive effectiveness. Some of the most commonly cited barriers for small businesses were the lack of information about resources available to them, access to capital, worker skill gaps, and real estate availability/affordability issues.

Responses also shed light on issues associated with emerging trends such as the creative class, giganomic policies, and sentiments on regional collaboration. Even when respondents were unfamiliar with the term "creative class" (approximately 50% of the survey respondents) they still recognized the importance of quality of life components. While there has been substantial media attention on the topic of giganomics, most of the respondents were unfamiliar with any

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[46] For more information, please see http://gov.texas.gov/files/ecodev/Texas_Industry_Clusters_Initiative.pdf
[47] This area consists of Dallas-Fort Worth, Austin, Houston, and San Antonio.
[48] Forwood v. City of Taylor, Supreme Court of Texas. November 1948. 147 Tex. 161.

policies that would encourage or hinder these types of companies or the workers engaged with them.[49]

The survey responses also make clear that one size does not fit all. Incentive criteria may benefit from more transparency with regard to eligibility criteria, coupled with greater flexibility, depending on location. In this regard, many respondents reported frustration with the lack of incentive flexibility. While a small number of respondents expressed disinterest in regional collaboration or were unsure about how effective a regional policy would be, the majority of respondents were open to regional collaboration.

Appendices
1. Appendix A
    List of participating cities
2. Appendix B
    Questionnaire

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[49] Greg Bensinger, 2015. "Amazon Taps 'On-Demand' Workers for One-Hour Deliveries." Wall Street Journal, September 29. Josh Zumbrun and Anna Sussman, 2015. "Proof of a 'Gig Economy' Revolution Is Hard to Find." Wall Street Journal, July 26.

Appendix A

A. List of Participating Cities

1. Abilene
2. Allen
3. Austin
4. Baytown
5. Beaumont
6. Brownwood
7. Bryan
8. Corsicana
9. Corpus Christi
10. Cotulla
11. Crystal City
12. Dallas
13. Denton
14. Edinburg
15. El Paso
16. Fort Worth
17. Harlingen
18. Hillsboro
19. Houston
20. Kerrville
21. Killeen
22. Laredo
23. Lubbock
24. McAllen
25. McKinney
26. Midland
27. Mission
28. Nacogdoches
29. Odessa
30. Pecos
31. Plano
32. San Angelo
33. San Antonio
34. Schertz
35. Snyder
36. Sweetwater
37. Temple
38. Texarkana
39. Tyler
40. Victoria
41. Waco

Appendix B

Questions for City Manager and Economic Development Directors

1. How long have you worked in your current position? Where else have you worked?

2. How do you define small businesses? Do you work with small businesses with fewer than 100 employees?

3. What are the current trends and recent developments within your community and what implications does this have for job creation?

4. What barriers exist for small business formation or expansion within your community? What is the permitting process like?

5. What specific efforts are directed towards post start up, existing or struggling small businesses if any?

6. What collaborative/support relationships are currently in place and how do these relationships fulfill small business needs?

    a) Incubators
    b) Educational institutions
    c) Business professional network and referrals
    d) Internship/apprenticeship collaborations

7. To what extent do you rely on public amenities, cultural vitality and quality of life components as part of your economic development strategy to attract the formation of small businesses in your region?

8. What initiatives are in place in your community to attract, develop and retain creative class workers? (Creative class broadly work in education, arts, sciences, design, media, knowledge based workers, etc.)

9. Are there any policies in place that have affected or will affect giganomic companies operating or hoping to operate in your community? (1099 contractors and freelancers who piece together full time incomes through several temporary employment projects. Ex. TaskRabbit, Favor)

10. What current or past incentive programs do you find to be most effective and least effective?

11. How do you measure effectiveness or success with incentive offerings? What specific metrics do you use to determine success of your incentive programs? What evaluation timeframe do you use?

12. What are your current community outreach efforts for existing and potential businesses?

13. Do you participate with other entities regionally to promote economic development? If so, who?

14. What policies or incentives could be offered by the state to encourage regional cooperation? Is there a way to create a regional approach to economic development?

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