2018

Tampa Bay
E-Insights Report

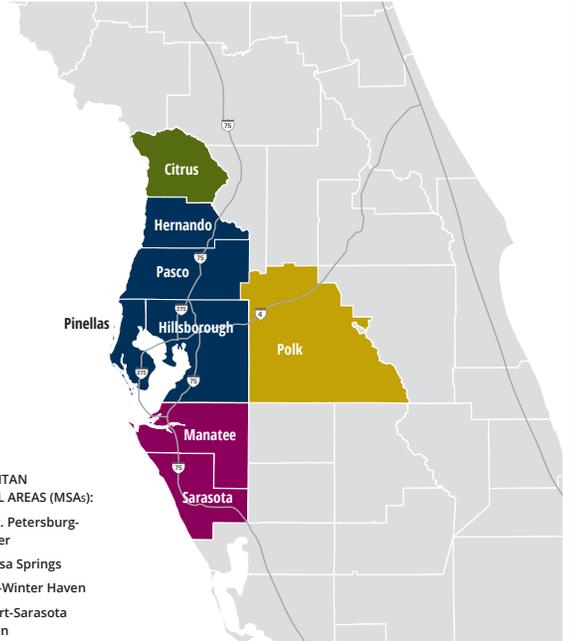**USF MUMA**
COLLEGE OF BUSINESS
UNIVERSITY OF SOUTH FLORIDA

A Competitiveness Report and Economic Forecast of Tampa Bay from USF: A Preeminent University

TAMPA BAY E-INSIGHTS REPORT BY THE MUMA COLLEGE OF BUSINESS

The Tampa Bay E-Insights report examines the relative performance of the Tampa Bay region with respect to 19 comparable Metropolitan Statistical Areas, referred to as MSAs, on real-time and traditional economic indicators. It identifies drivers for economic prosperity and presents policy experiments that inform business and civic leaders of the region about potentially impactful initiatives.

In this report, the Tampa Bay region includes the eight counties of Citrus, Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk and Sarasota, which encompass four MSAs: Tampa-St. Petersburg-Clearwater, Homosassa Springs, Lakeland-Winter Haven and North Port- Sarasota-Bradenton. The data presented has been compiled by using corresponding population values as the weights for the each of the four MSAs in the Tampa Bay region. Similarly, we have also compiled the data for Raleigh-Cary and Durham-Chapel Hill MSAs to create values for Raleigh-Durham region.

The 19 comparable MSAs have been selected following the methodology used in the Regional Competitiveness Report of the Tampa Bay Partnership. The MSAs studied in the report are shown in the map below.
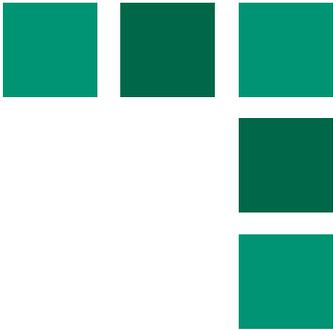
METROPOLITAN STATISTICAL AREAS (MSAs):
- Tampa-St. Petersburg-Clearwater
- Homosassa Springs
- Lakeland-Winter Haven
- North Port-Sarasota Bradenton

TABLE OF CONTENTS

INTRODUCTION

I am pleased to present the Tampa Bay E-Insights project. This USF Muma College of Business initiative is the first of its kind in the state of Florida. This report focuses on real-time big data signals in addition to traditional economic indicators. The core objective of this project is to combine novel real-time big data signals with traditional economic indicators to generate insights and identify drivers of economic prosperity for the region that can be used to inform business and civic leaders about potentially impactful policy initiatives.

The unique real-time big data signals our students and faculty collected and studied came from sources such as Google, Twitter, Airbnb, LinkedIn, Indeed and Zillow. The data collected was used to generate insights about the relative economic prosperity of the Tampa Bay region. This approach of benchmarking the economic performance of the region based on real-time big data signals is the first of its kind. They also studied how Tampa Bay has performed relative to the other MSAs for the past 10 years using economic parameters such as unemployment rate, GRP per capita, poverty rate and net migration rate. More importantly, they also identified the key potential drivers of economic prosperity using standard econometric techniques. The results of policy experiments to study the impact of specific initiatives on improving the competitive position of the Tampa Bay region.

Why has the USF Muma College of Business undertaken this initiative? The college contributes to the economy of the Tampa Bay region in many ways Faculty and students conduct impactful scholarly research with impact to address and solve business challenges. Accredited business programs are designed to create world-class business leaders.

But we do not want to stop there.

We want to work closer with the business community and policy makers to improve the economic health of the region to make our region a very attractive destination for economic activity. And to do so we wish to take a scientific approach. We strongly believe that *"if you cannot measure it, you cannot improve it and the best way to predict the future is to shape it."* Data-driven insights are key for impactful decision making and this project is an important step in that direction.

Enjoy our report,

Moez Limayem, Dean
USF Muma College of Business

PREEMINENCE. A NEW ERA FOR USF.

Preeminence is the highest designation that a research university can earn from the State of Florida. Since the program became Florida Law in 2013, USF has had its sights firmly set on achieving Preeminence.

While our journey to reach national excellence started long before then – and by no means will stop now – USF has finally reached all the thresholds necessary to achieve the designation. Naturally, we rose to meet this challenge, driven to always be better than we were the day before.

But Preeminence isn't the end of the story. This is just the beginning of a new era for USF and our community.

The possibilities are endless.

To learn more about USF's full journey to Preeminence, including testimonials, USF in the news and the steps we took to earn this status, visit **usfnewera.org**.

ABOUT THE USF MUMA COLLEGE OF BUSINESS

Our mission guides what we do now and our vision guides where we want to go, but it is our strategic priorities that help us focus our actions.

Our first priority is student success. We want students to leave USF with the best possible business education so that they can begin careers in their fields, with competitive salaries, using the knowledge gleaned through our programs.

But we are committed to doing more than simply providing the technical training students seek. We are committed to guiding students through their academic journey by providing opportunities for them to develop as professionals from their first moments on campus.

Mission: We emphasize creativity and analytics to promote student success, produce scholarship with impact and engage with all stakeholders in a diverse global environment.

Strategic Vision: We aspire to be internationally recognized for developing business professionals who provide analytical and creative solutions in a global environment.

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SIGNALS FROM REAL-TIME SOURCES

As a part of this project, we have focused on innovative ways to assess the economic health of the Tampa Bay region and compare it against other MSAs. We examined the data from the real-time sources such as Google Search Trends, Twitter, Linkedin, Indeed, Airbnb and Zillow.

Traditionally, most of the economic analyses have focused on traditional economic indicators such as unemployment rate, poverty rate etc. to assess the economic prosperity of a region. However, such data comes with a lag and may not reflect the current economic status of the region. Real-time online data sources such as search engines, social media platforms, job portals offer us tons of data on daily basis, which can be used to gain real-time insights into the economic competitiveness and attractiveness of a region.

For this project, we have chosen six real-time data sources. We group those six data sources into four groups depending on the type of information each presents. Below are the sources considered.

Google Search Trends: Google Search Trends provides insights about the search behavior of the public. This information can be used to assess how the search behavior differs across MSAs.

Job Portals and Professional Networks: LinkedIn and Indeed provide data regarding number and types of jobs posted in different regions. This data can be used to analyze the charecteristics of job market in a region.

Rental and Housing Portals: Airbnb and Zillow provide insights about the real estate scenario of a region.

Social Media: Social media platforms such as Twitter provide insight about public perception towards a particular region.

GOOGLE SEARCH TRENDS

Google Search Trends is a tool that shows how frequently a term is searched for relative to the total search volume on Google over a given time period. The data is available starting from 2005. The tool provides a search term's popularity within any geographical region, which we leveraged to generate comparisons across MSAs. Google is the dominant platform for information search in the United States and reportedly serves almost two-thirds of all searches in the nation. It has an even higher share of all mobile searches.

Google searches are useful in the context of understanding and benchmarking economic activity across regions since the search engine is often used to look up information such as hotel availability, job opportunities, market research, home prices or the quality of schools. In our work, we use data from Google search trends to infer the relative strength of economic activity across regions.

Rather than using individual search terms, we used "personas" to generate a set of search terms, which we then aggregated to derive an index that can be used to compare MSAs. A persona is a conceptual model of an individual which is based on common beliefs, wants, needs, aspirations and desires. We present comparative data on four personas: (1) a family seeking to relocate to a different city/town, (2) an entrepreneur aiming to start a business, (3) a business traveler and (4) a leisure traveler or vacationer/tourist.
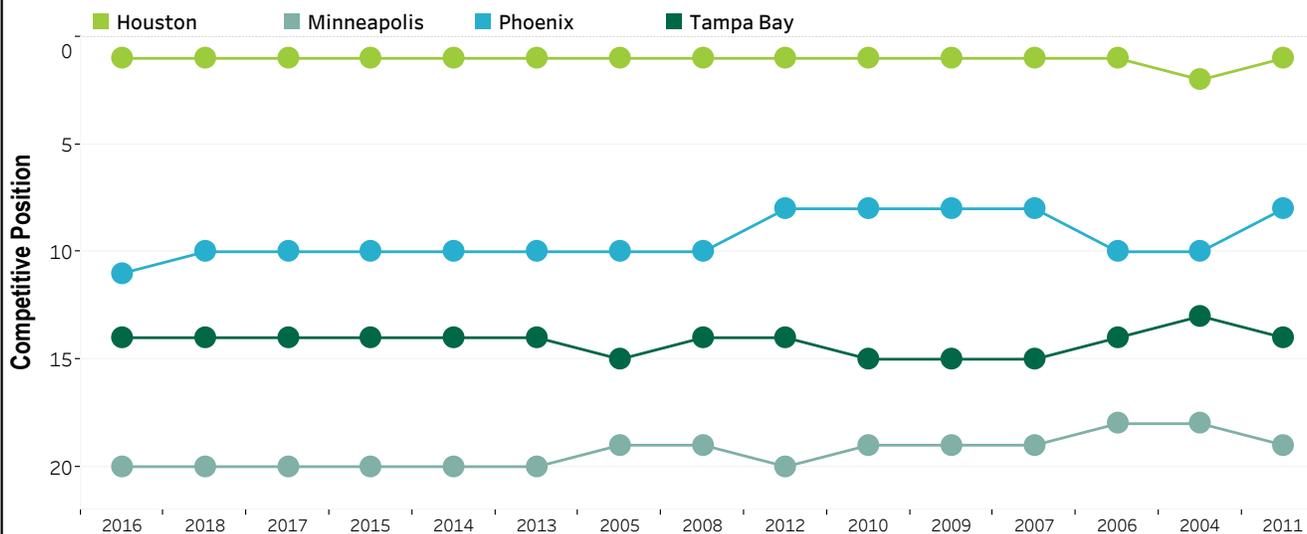
One of the important issues is determining the set of different search terms that constitute a specific persona. For example, the "tourist persona" may be mapped to searches for "hotels in Tampa Bay," "things to see in Tampa Bay" and other related queries. To identify the set of keywords that map into each persona, we used the popular crowdsourcing platform Mechanical Turk to recruit participants who provided us with sample search queries they might conduct in each such scenario. Aggregating from these responses we derived the set of search terms that constitute each persona.

Family persona:
A family with children looking to move to a new city might search for houses for sale, elementary schools, jobs, cost of living and insurance. Searches for such keywords are combined to derive the family persona index.

Family Persona - Competitive Position Trend

Legend: Houston, Minneapolis, Phoenix, Tampa Bay

X-axis: 2016, 2018, 2017, 2015, 2014, 2013, 2005, 2008, 2012, 2010, 2009, 2007, 2006, 2004, 2011
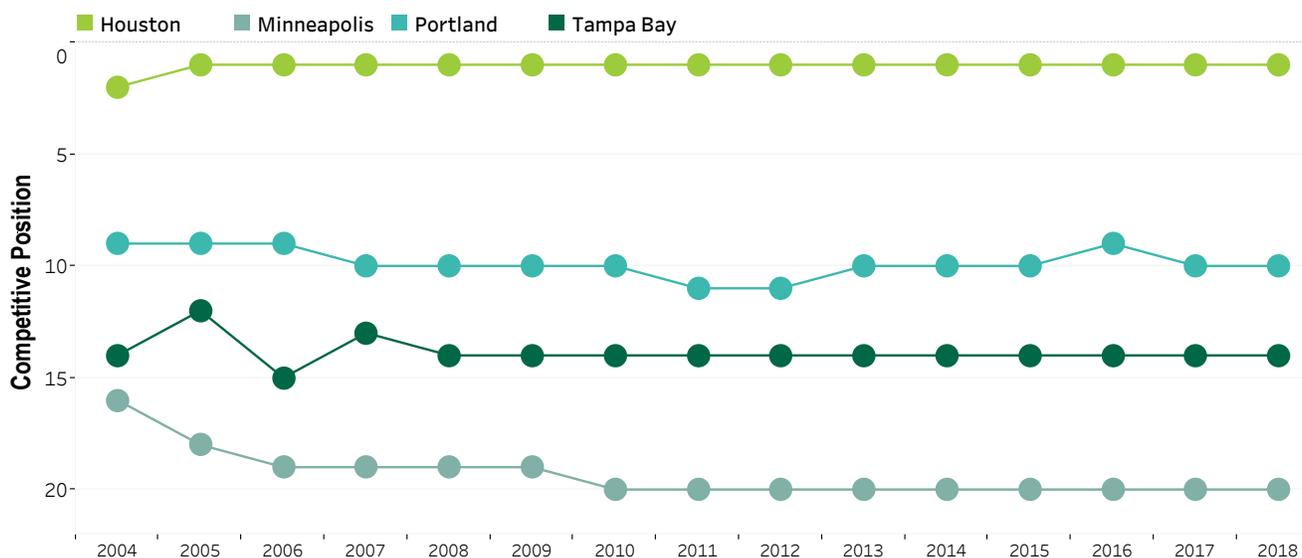
Entrepreneur persona:
An entrepreneur might search for terms such as office for rent, office lawyer, small business. Searches for such keywords are combined to derive the entrepreneur persona index.

Entrepreneur Persona - Competitive Position Trend

Legend: Houston, Minneapolis, Portland, Tampa Bay

X-axis: 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018

INSIGHTS
- Tampa Bay is around the middle of the pack for the last 10 years for both family and entrepreneur personas.
- Houston has consistently had the highest scores in this index for both family and entrepreneur personas.
- Interestingly, the competitive positions in these signals seem relatively stable over time.

Business traveler persona:
A business traveler might search for keywords such as accommodation, travel tickets and rental cars, conferences and other professional events. Searches for such keywords are combined to derive the entrepreneur persona index.

Business Traveler Persona - Competitive Position Trend

Legend: Austin, Orlando, Raleigh-Durham, Tampa Bay
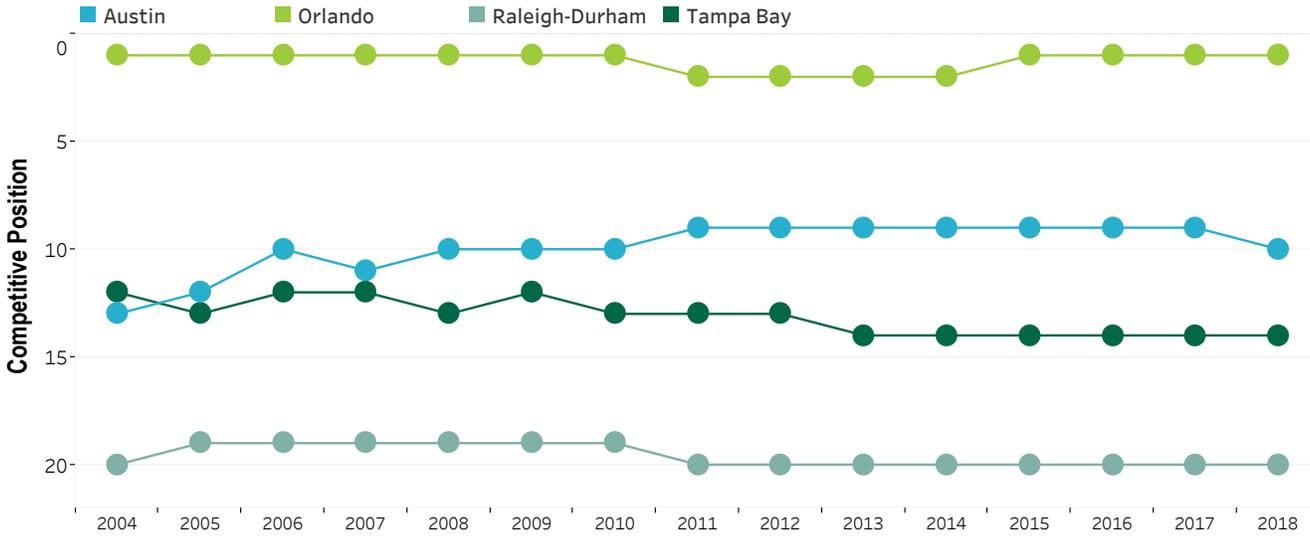
Leisure traveler persona:
A leisure traveler might search for keywords such as tourist attractions, things to do, hotels, restaurants and rental cars in that city. Searches for such keywords are combined to derive the leisure traveler persona index.

Leisure Traveler Persona - Competitive Position Trend

Legend: Austin, Orlando, Raleigh-Durham, Tampa Bay
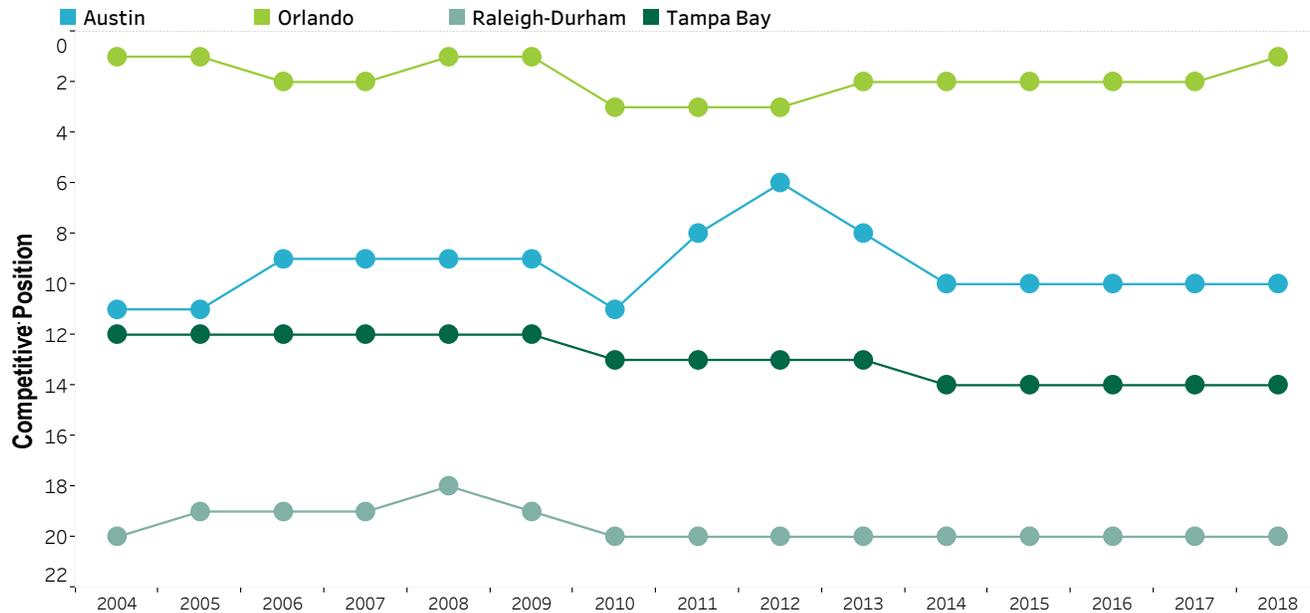
INSIGHTS

- Orlando has consistently been the leader with respect to both of these signals.
- Tampa Bay appears to have slightly declined competitively but seems relatively stable from a rankings perspective.

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REAL-TIME SIGNALS ON JOB OPPORTUNITIES

The availability of jobs is one of the most important signals of economic strength of any region. Traditionally, such data has been collected with a lag and reported by federal and state agencies. However, the opportunity to derive real-time insights about labor market using signals from online platforms such as LinkedIn and Indeed exists. These platforms are increasingly being used by both job seekers and employers.

We obtained data on the number of internship job postings and senior management positions from LinkedIn (specifically categorized in LinkedIn as executive/director positions). We chose these two job categories since they represented two extremes – one an entry level position and the other a senior management role. Also, given the importance of the technology industry, we collected data on IT job postings across MSAs.

From Indeed, we gathered job postings data categorized into salary estimate buckets and used this data to quantify the opportunities in high-paying and low-paying job categories.

In both cases, we gathered weekly data for each MSA over a four-month (August – November 2018) period. We are presenting the latest snapshot of the data in this report.

About: Job data for industry and experience level collected for each MSA.
Source: www.linkedin.com

IT Industry Jobs Per Million Individuals

IT Industry Jobs Per Million Individuals
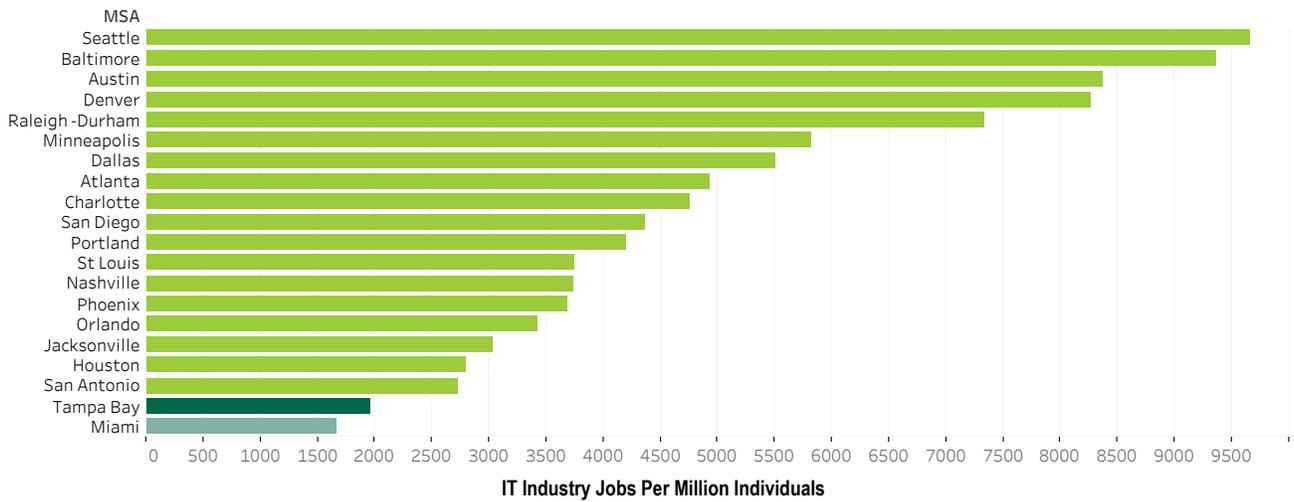
Executive Jobs Per Million Individuals
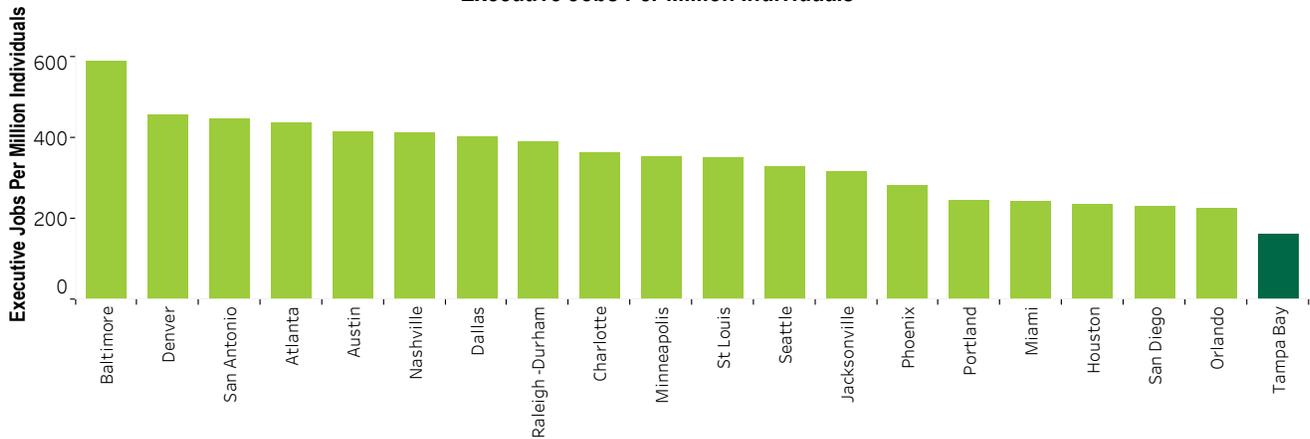
Internship Jobs Per Million Individuals
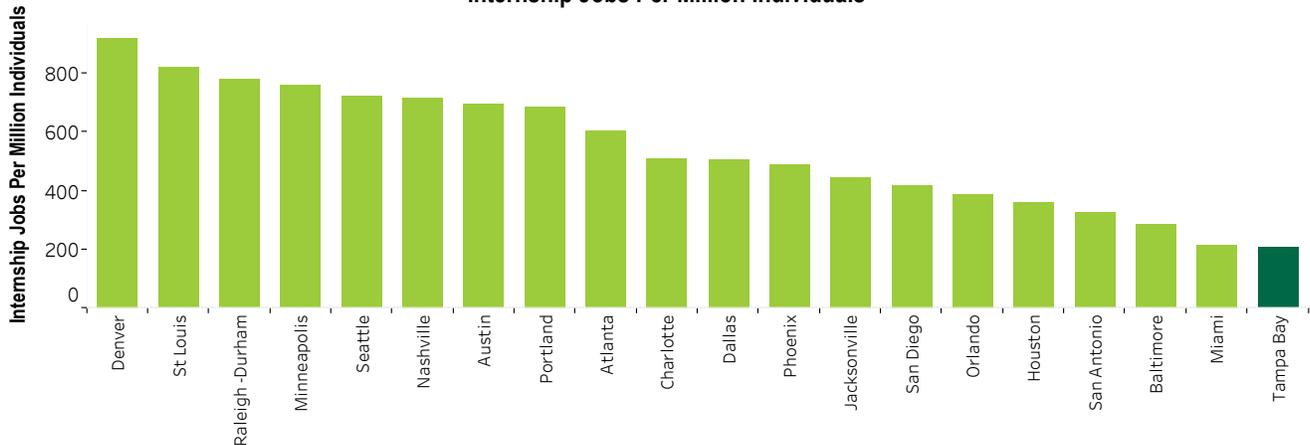
INSIGHTS

- Out of all the prominent industries collected from LinkedIn, the IT industry is present for all the MSAs in the data and Seattle has the most jobs in the IT industry.
- Orlando is No. 19 in executive jobs but is No.15 for the internship jobs per million.
- The Tampa Bay region has the lowest number of executive and internship jobs per million individuals.
- It appears that most of the Florida MSAs rank relatively low here.

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About: Data on number of jobs available based on salary buckets for each MSA collected from Indeed.com.
Source: www.indeed.com

Highest Paying Jobs Per Million Individuals

Bar chart — Highest Paying Jobs Per Million (y-axis 0 to 4000):
Denver ~4100, Austin ~3050, Raleigh-Durham ~2900, Minneapolis ~2650, Orlando ~2600, Portland ~2500, Nashville ~2380, Baltimore ~2320, Jacksonville ~2270, Seattle ~2260, Charlotte ~2240, San Antonio ~2100, Phoenix ~2000, Dallas ~1950, Atlanta ~1800, St Louis ~1780, Houston ~1620, San Diego ~1600, Tampa Bay ~1300, Miami ~1060

Lowest Paying Jobs Per Million Individuals

Bar chart — Lowest Paying Jobs Per Million (y-axis 0K to 15K+):
Denver ~18.5K, Austin ~15.7K, Raleigh-Durham ~14.8K, Minneapolis ~14.3K, Baltimore ~12.8K, Nashville ~12.5K, Portland ~11.9K, Orlando ~11.8K, Jacksonville ~11.7K, Charlotte ~11.6K, Seattle ~11.5K, Phoenix ~10.8K, Dallas ~9.6K, San Diego ~9.2K, San Antonio ~9.1K, Atlanta ~8.8K, Houston ~8.7K, St Louis ~8.6K, Tampa Bay ~6.4K, Miami ~5.5K

INSIGHTS
- Tampa Bay is No. 19 for both highest paying and lowest paying jobs per million individuals.
- Denver, Austin and Raleigh appear to lead with maximum number of high paying and low paying jobs per million individuals.

REAL-TIME SIGNALS ON RENTALS AND HOUSING

Traditionally, hotel occupancy rates and home prices have been used as signals for economic activity in regions. As with other traditional signals, these are often collected and studied at a lag, based on the processes used by the appropriate local or federal agencies. As platforms such as Airbnb and Zillow explode in popularity there is increasingly opportunity to use these platforms to obtain real-time proxies of some of these traditional measures.

Airbnb is an online platform facilitating short-term rentals ranging from shared accommodations to entire homes and has contributed more than 10 million worldwide bookings. Airbnb has served more than 50 million guests since it was founded in 2008 and has a private market value of over $30 billion.
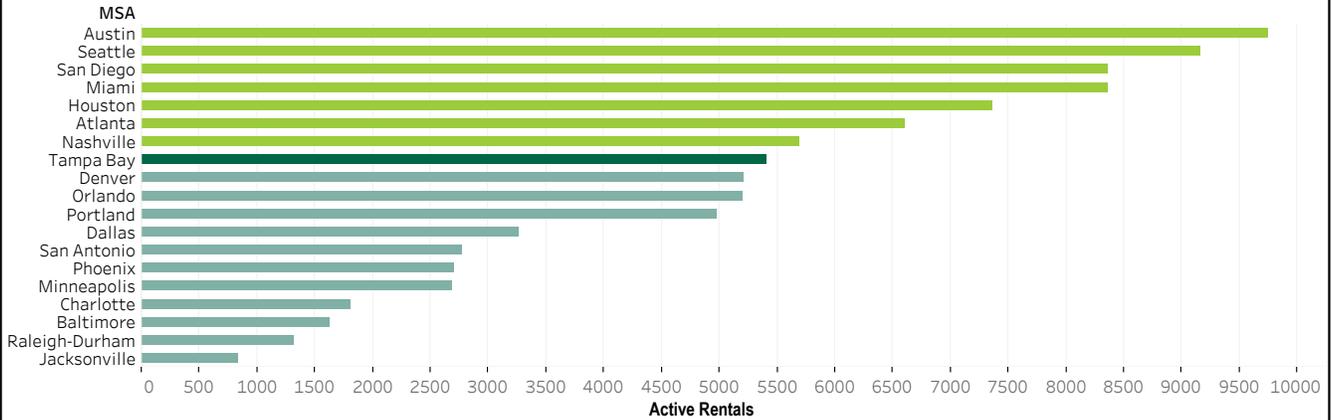
Zillow describes itself as a real estate marketplace. It provides information on homes listed for sale directly to potential homebuyers, largely bypassing the need for an agent's access to the MLS. In addition it houses a database of more than 100 million United States homes not currently listed for sale, including basic facts on each home and its sales history.

We collected monthly data of Airbnb for five months (July-November 2018) from AirDNA, a data provider firm that collects short-term vacation rental data from Airbnb. We collected monthly data on the number of active rentals in each of the 20 MSAs. In this report, we are presenting the latest snapshot of active rentals data i.e., for the month of November. We also collected the occupancy rates and average daily rates for all the listings in each MSA and calculated units utilization per capita from all listings. From Zillow we obtained a monthly median home value per square foot, which is a common indicator to compare MSAs on the relative value of their real estate. We aggregated the values on an annual basis and adjusted them for the varying cost of living and inflation.
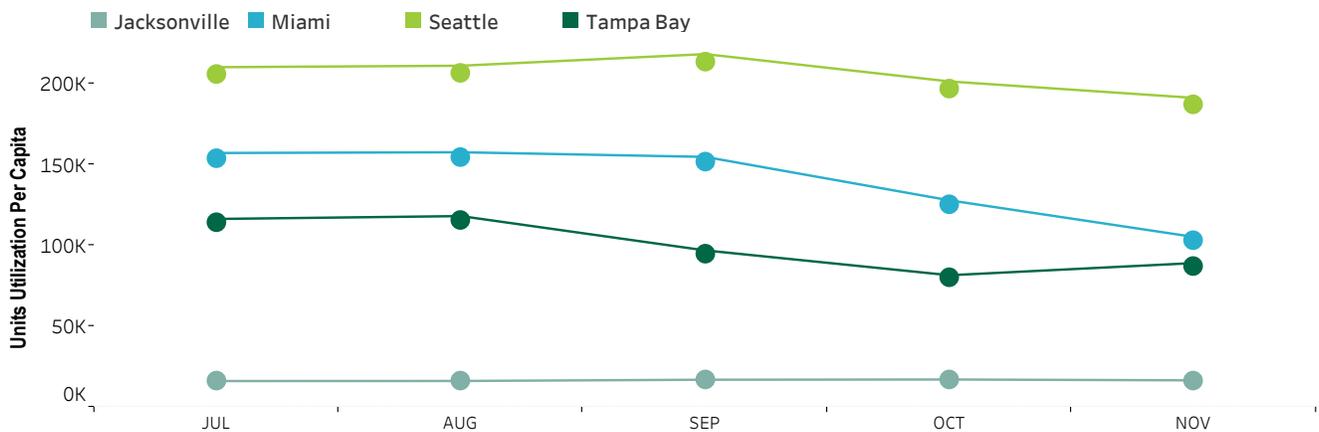
About: Measures active rentals and units utilization over months from Airbnb for the two charts and median home values per sq.foot from Zillow.
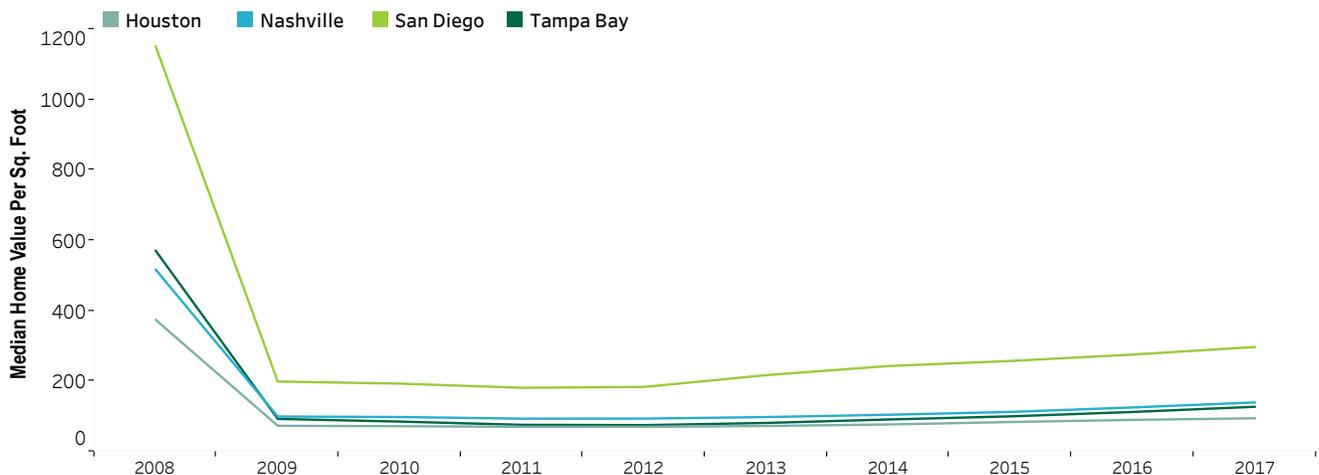**Source:** www.airdna.co and www.zillow.com

Number of Active Rentals (Airbnb)

MSA

Austin	~9700
Seattle	~9100
San Diego	~8400
Miami	~8400
Houston	~7400
Atlanta	~6600
Nashville	~5700
Tampa Bay	~5400
Denver	~5200
Orlando	~5200
Portland	~4900
Dallas	~3300
San Antonio	~2800
Phoenix	~2700
Minneapolis	~2700
Charlotte	~1800
Baltimore	~1600
Raleigh-Durham	~1300
Jacksonville	~800

Active Rentals

Units Utilization Per Capita Trend (Airbnb)

Legend: Jacksonville, Miami, Seattle, Tampa Bay

Median Home Value Per Square Foot (Zillow)

Legend: Houston, Nashville, San Diego, Tampa Bay

INSIGHTS

- Airbnb rentals are important from both the supply and demand side for the Tampa Bay region. On the supply side these units serve to generate additional income for residents. On the demand side they show interest from tourists or young travelers with families, a demographic that uses Airbnb more than other groups.
- Both in terms of active rentals and utilization, Tampa Bay is in the middle of the pack comparatively and has room for improvement.
- Home price trends show a gradual recovery from the sharp recession of 2008.

SOCIAL MEDIA SENTIMENT

Sentiment analysis, also known as opinion mining, is the process of determining the emotional tone behind a series of words. It is used to gain understanding of the attitudes, opinions and emotions expressed within an online mention. Sentiment analysis is extremely useful in social media monitoring as it provides an overview of the wider public opinion behind wide range of topics. The extraction of insights from social data is a practice that is now commonplace in leading organizations across the world.
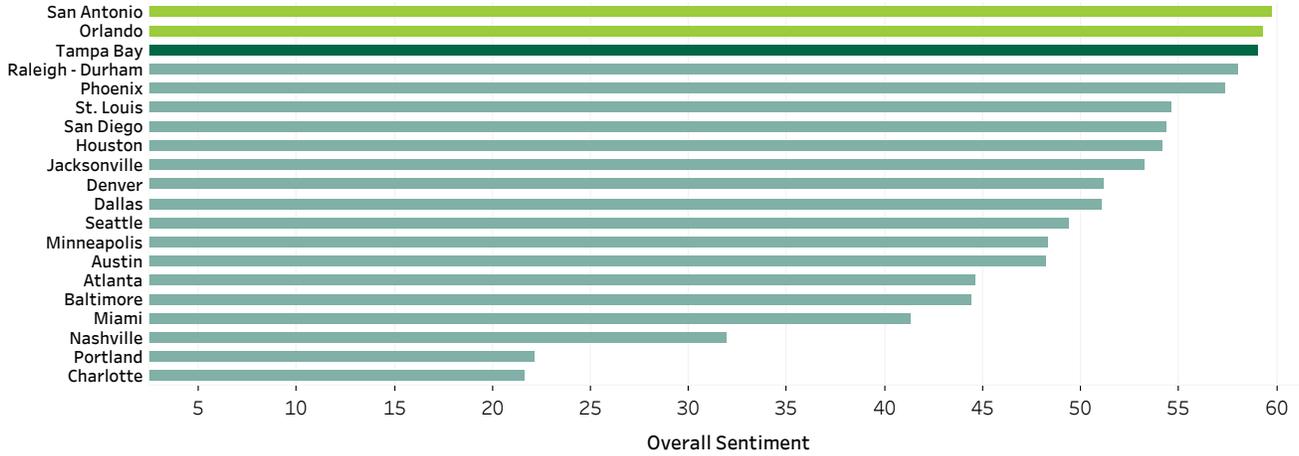
However, this technique has not been used to measure and compare public sentiment towards cities so far. We have used social media data from Twitter to understand what the public thinks about each MSA's infrastructure, efficiency of public services and institutions.

Tweets were gathered from official Twitter handles belonging to universities, traffic departments, police and local agencies promoting downtown activities for specific cities in each MSA. Tweets for the most recent two-month period (October and November 2018) for all the MSAs were scraped using Twitter's Python search API. We pre-processed the raw tweets and used an ensemble machine learning algorithm to determine the sentiment of each tweet. Then sentiment for all the tweets was aggregated to derive the overall sentiment of each MSA.

About: Sentiment analysis of the tweets helps in understanding the public opinion and satisfaction about various policies, products or any entity.
Source: Twitter Search API - https://developer.twitter.com/en/docs.html

Twitter Public Sentiment

(Horizontal bar chart, "Overall Sentiment" on x-axis from 5 to 60, cities listed top to bottom)

San Antonio
Orlando
Tampa Bay
Raleigh - Durham
Phoenix
St. Louis
San Diego
Houston
Jacksonville
Denver
Dallas
Seattle
Minneapolis
Austin
Atlanta
Baltimore
Miami
Nashville
Portland
Charlotte

Deeper Look Into San Antonio's (Most Positive MSA) Sentiment

Downtown
82.18%

Police Department
35.13%

Trinity University
59.46%

Cities
64.75%

Traffic
34.02%

Deeper Look Into Tampa Bay's Sentiment

Downtown
82.17%

Police Department
31.6%

USF
58.91%

Cities
67.18%

Traffic
8.78%

INSIGHTS

- Overall sentiment of Tampa Bay is relatively more positive when compared to most of the MSAs.
- Tampa Bay's public sentiment towards traffic is very low when compared to San Antonio and hence overall sentiment is affected.
- Like San Antonio, Tampa Bay's downtown sentiment is strongly positive.

OUTCOME VARIABLES

"Outcome variables" such as GRP per capita have been studied traditionally to understand the economic performance of a region. The outcome variables we considerd include:
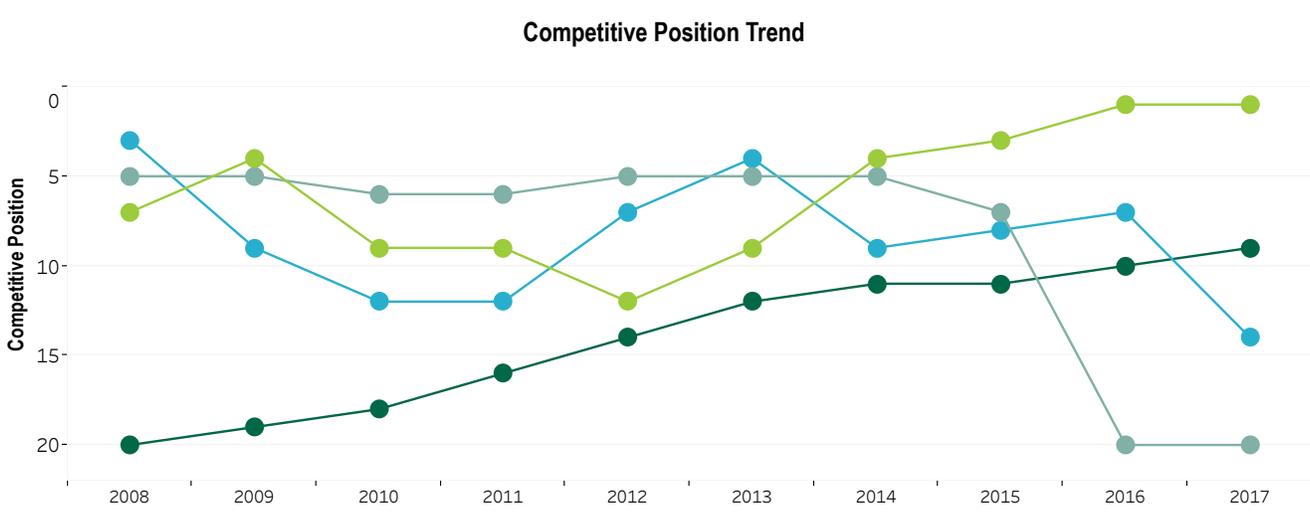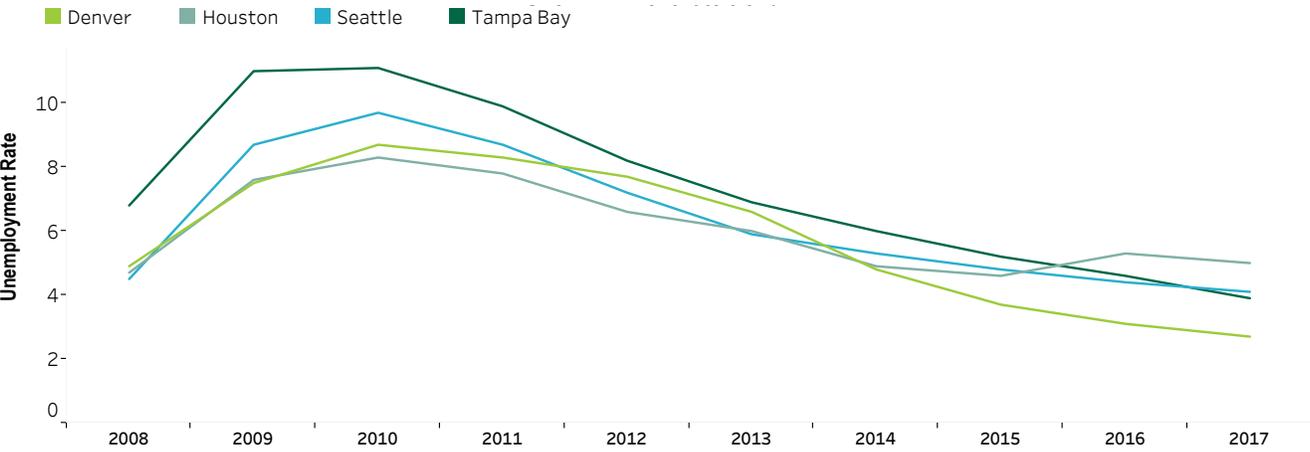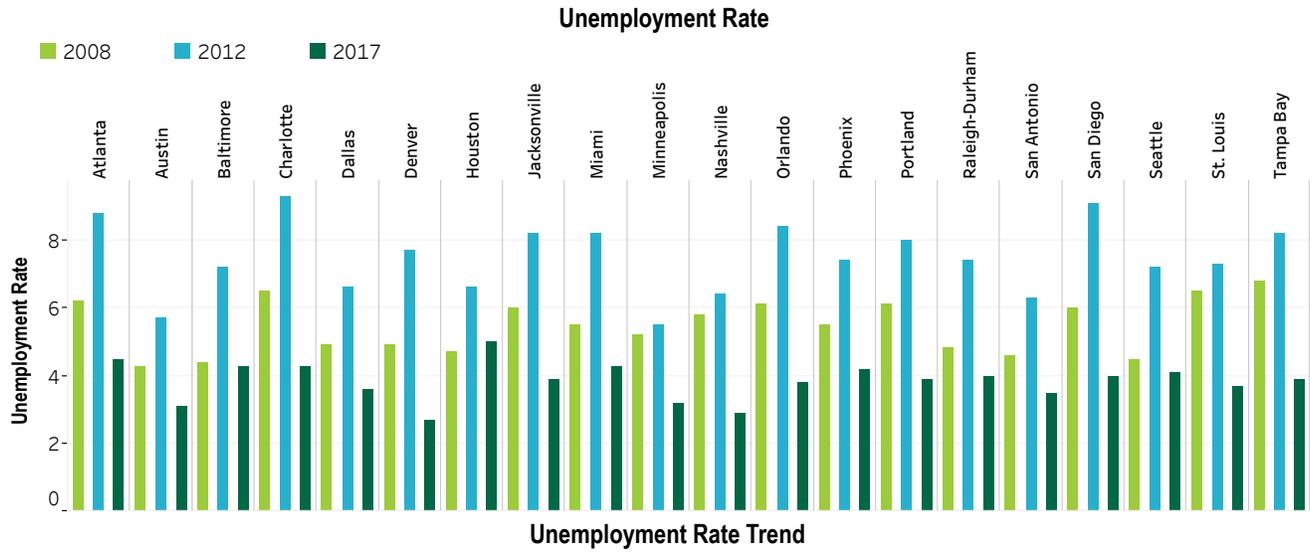
- Unemployment Rate

- Gross Regional Product Per Capita

- Net Migration Rate

- Overall Poverty Rate

We collected data on these traditional indicators over a 10-year period (2008-2018) to analyze important historical trends. Subsequently in this report we identify drivers for these outcome variables using econometric modeling.

Unemployment Rate

About: Measures the share of the labor force that is jobless. Generally, an individual is considered unemployed if he or she is willing and able to work but unable to find a job.
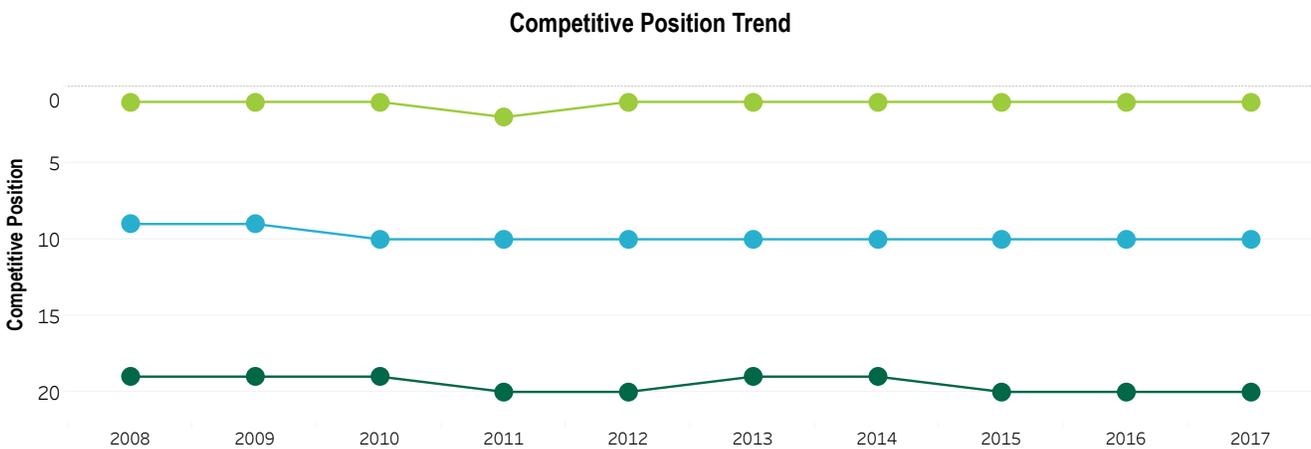**Source:** Bureau of Labor Statistics, local area unemployment statistics.

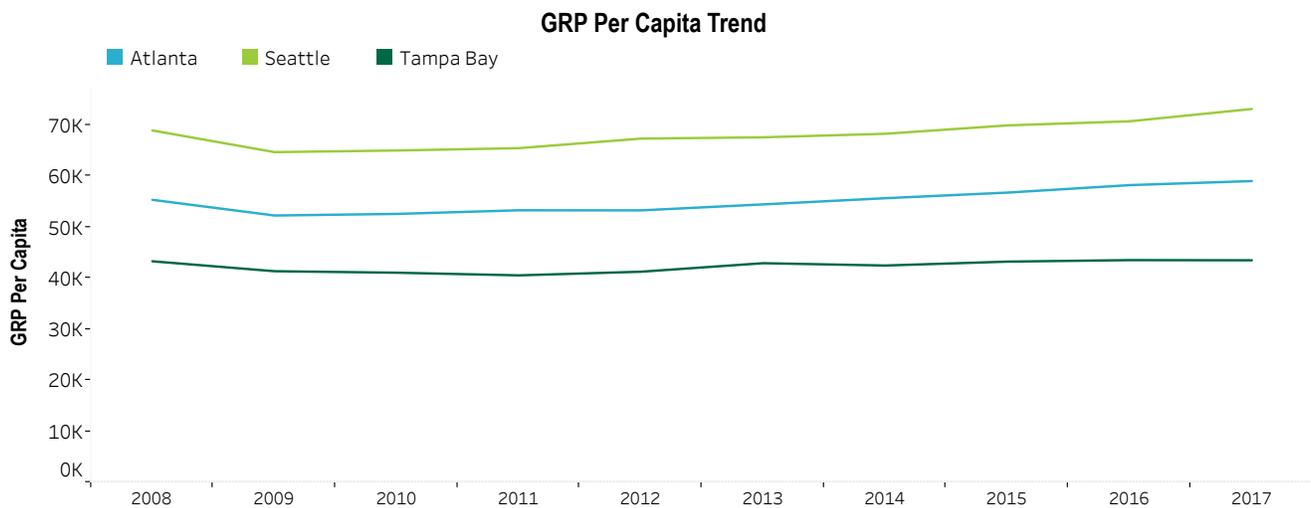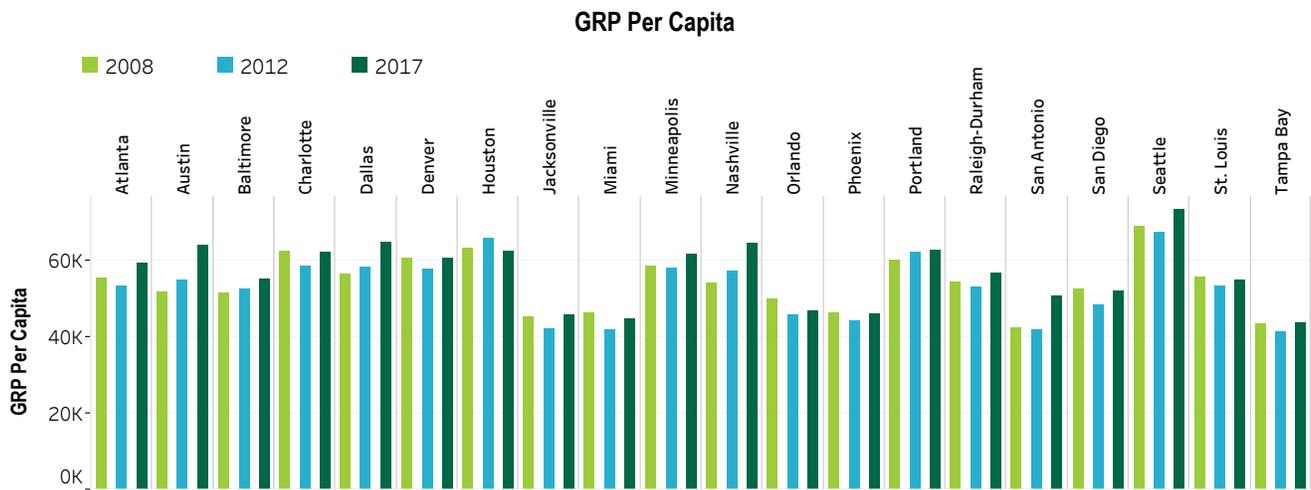Unemployment Rate

Unemployment Rate Trend

Competitive Position Trend

- Tampa Bay started at No.20 in 2008 and has consistently improved over the past 10 years and is currently ranked No.9.
- Unemployment rate for the Tampa Bay region has experienced a decline since 2010.

Per Capita Gross Regional Product

About: This measurement divides the Gross Regional Product, the value of all goods and services produced in the region by the population of the region.
Source: Bureau of Economic Analysis, Regional Data, Per Capita Real GDP.

GRP Per Capita

Legend: 2008, 2012, 2017

Cities: Atlanta, Austin, Baltimore, Charlotte, Dallas, Denver, Houston, Jacksonville, Miami, Minneapolis, Nashville, Orlando, Phoenix, Portland, Raleigh-Durham, San Antonio, San Diego, Seattle, St. Louis, Tampa Bay

Y-axis: GRP Per Capita (0K, 20K, 40K, 60K)

GRP Per Capita Trend

Legend: Atlanta, Seattle, Tampa Bay

Y-axis: GRP Per Capita (0K, 10K, 20K, 30K, 40K, 50K, 60K, 70K)
X-axis: 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017

Competitive Position Trend

Y-axis: Competitive Position (0, 5, 10, 15, 20)
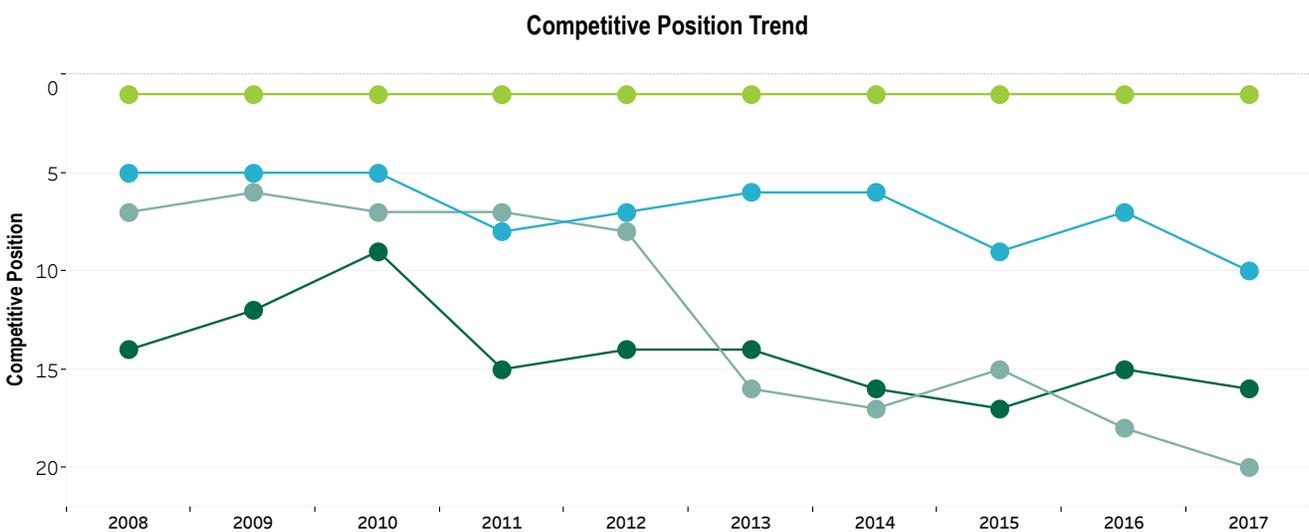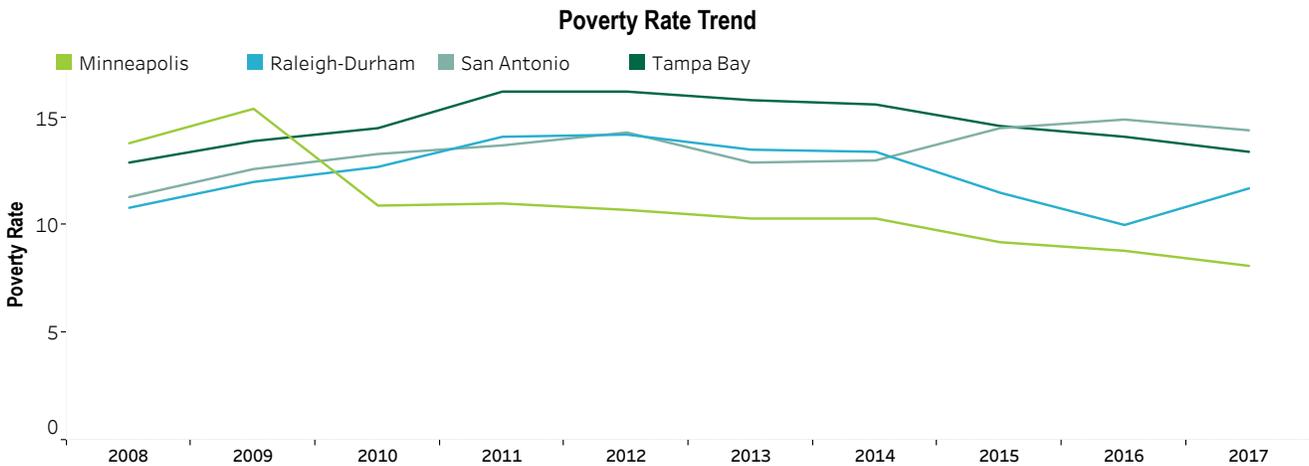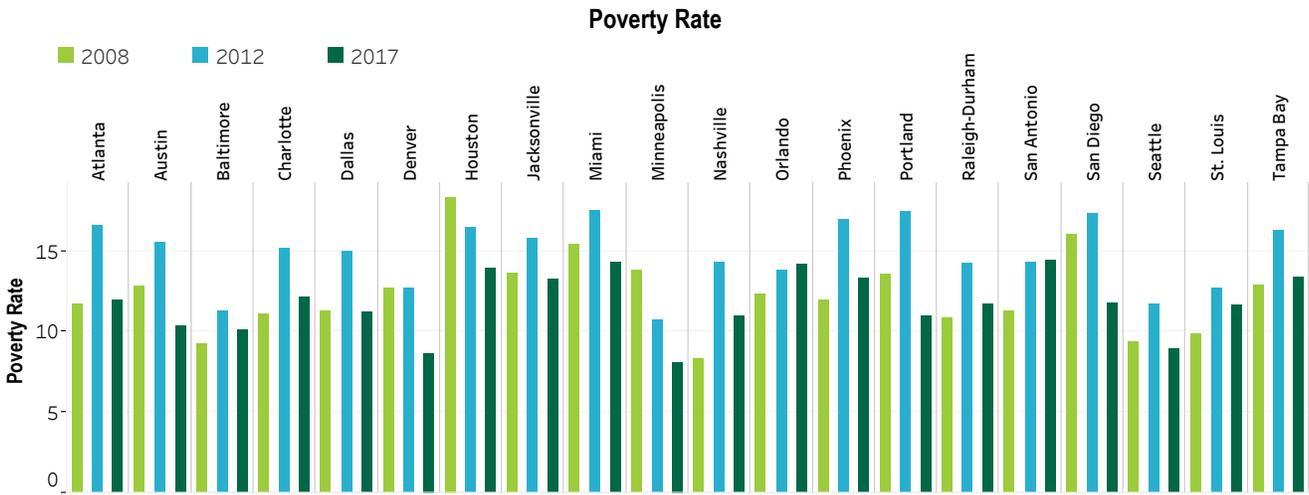X-axis: 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017

INSIGHTS
- Seattle consistently has the highest GRP per capita over the years.
- Most Florida MSAs consistently rank low in this metric.
- Tampa has consistently been at the bottom across the years shown.

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About: Measures the percentage of population that is living below the federal poverty level as defined by the U.S. Census Bureau. (Income thresholds vary by family size).
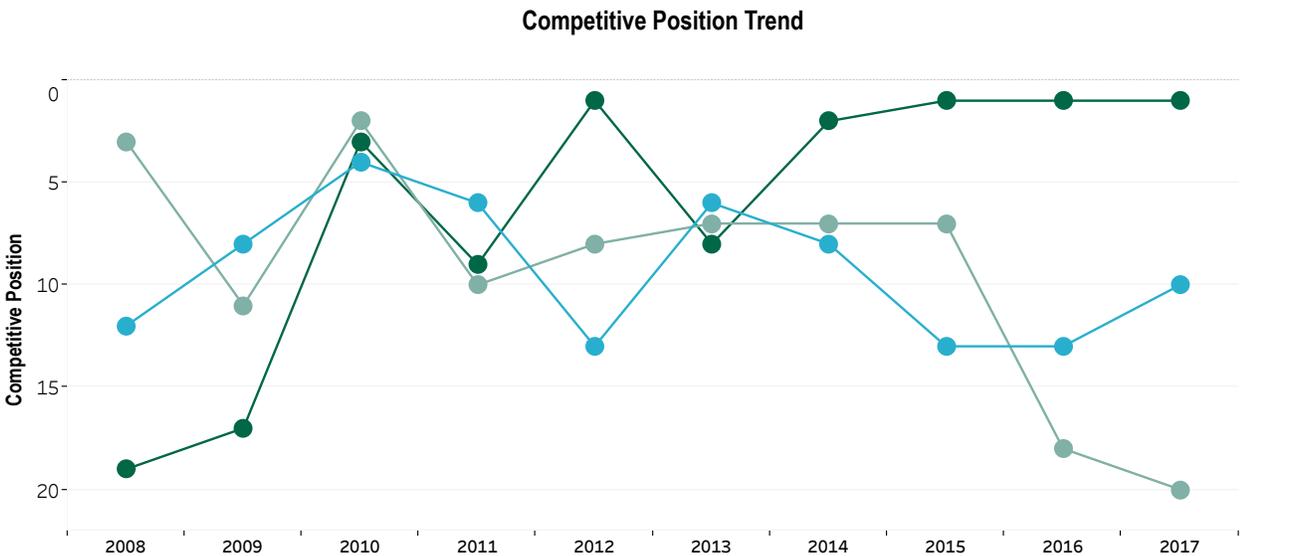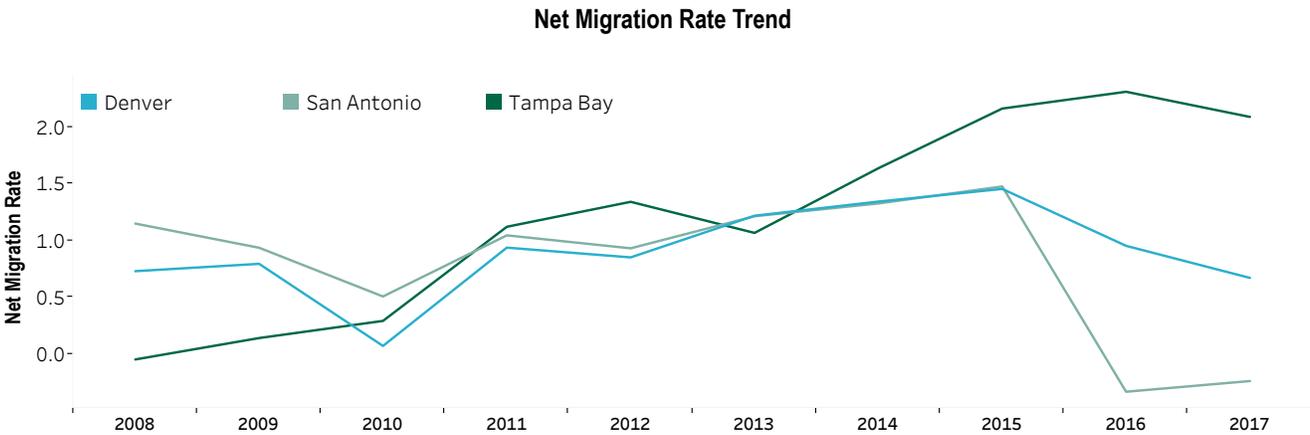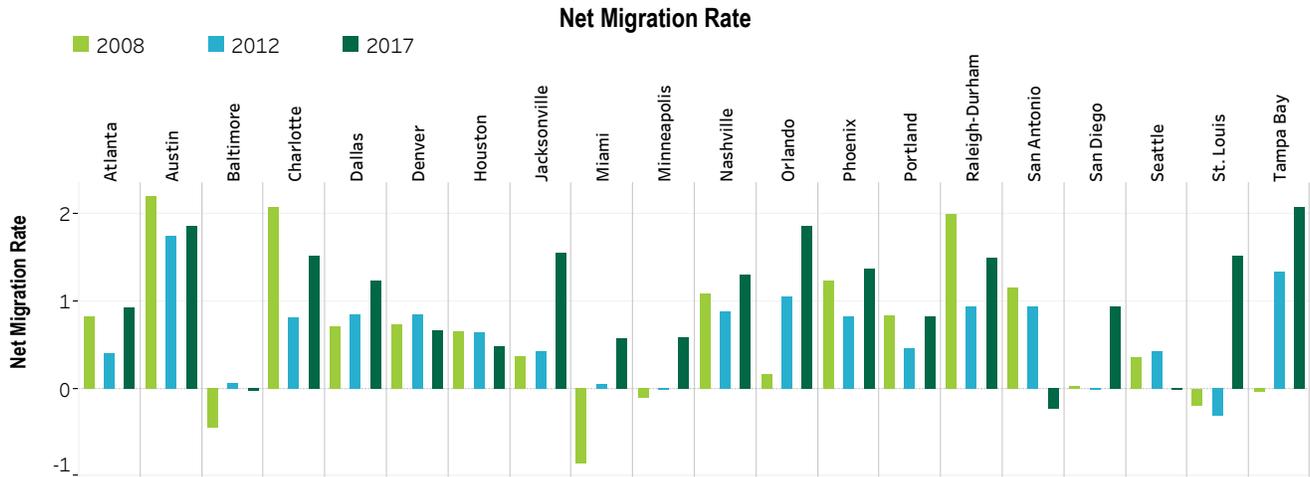**Source:** Census Bureau, American Community Survey, Table B17001, 1 year estimates.

Poverty Rate

Legend: 2008, 2012, 2017

Cities: Atlanta, Austin, Baltimore, Charlotte, Dallas, Denver, Houston, Jacksonville, Miami, Minneapolis, Nashville, Orlando, Phoenix, Portland, Raleigh-Durham, San Antonio, San Diego, Seattle, St. Louis, Tampa Bay

Poverty Rate Trend

Legend: Minneapolis, Raleigh-Durham, San Antonio, Tampa Bay

Competitive Position Trend

- Tampa Bay's poverty rate has increased from 2008 to 2011 and has since been declining.
- Tampa Bay's competitive position declined from No.10 in 2010 to No.16 in 2017.
- Minneapolis holds the rank at No.1 in competitive position for having the least poverty rate for all years.

Net Migration

About: Calculated as population change, less the net effect of natural increase (births minus deaths), relative to the population as a whole.
Source: Census Bureau, Estimates of the Components of Resident Population Change.

Net Migration Rate

Legend: ■ 2008 ■ 2012 ■ 2017

Cities (left to right): Atlanta, Austin, Baltimore, Charlotte, Dallas, Denver, Houston, Jacksonville, Miami, Minneapolis, Nashville, Orlando, Phoenix, Portland, Raleigh-Durham, San Antonio, San Diego, Seattle, St. Louis, Tampa Bay

Net Migration Rate Trend

Legend: ■ Denver ■ San Antonio ■ Tampa Bay

Competitive Position Trend

- Tampa Bay has been registering a strong growth in net migration rate over the years.
- Tampa Bay has maintained the No.1 position for the past three years.

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DRIVERS OF ECONOMIC OUTCOMES

In the previous section, we have looked at the performance of Tampa Bay region in comparison to other MSAs. The trend graphs enable us to see the direction in which the region is moving in terms of competitive position as well as actual values across the outcomes. At this juncture, a couple of questions arise. Can we do something to perform better? Are there any policy initiatives that can be taken to improve the competitive position of the Tampa Bay region in coming years? To answer these questions, we identify the drivers of economic prosperity. We built econometric models with each of the four outcomes as dependent variables and a set of independent variables. We have conducted the analysis as described below.

The independent variables used for the analysis are possible drivers of the economic growth. These variables fall into five different categories: economic vitality, talent, infrastructure, civic quality and innovation. These possible driver variables have been identified after many interviews with the business leaders of the Tampa Bay region. A total of 19 variables were considered for the analysis. We downloaded the annual data for these variables for 24 MSAs from 2008 through 2017 data from federal sources such as the U.S. Census Bureau, Bureau of Labor Statistics, and Bureau of Economic Analysis. The data for the four Tampa Bay MSAs was aggregated to derive the values of the Tampa Bay region and the data for Raleigh and Durham was aggregated to derive the values for Raleigh-Durham region. Thus, we have data for four outcome variables and 19 possible economic drivers for 20 regions for 10 years. We then adjusted the dollar values to consider the varying cost of living in different regions, taking inflation into account.

We have used panel data methods to create models for each outcome. For each of the outcomes, we have then identified one driver, for which there is a strong causal explanation.

DRIVERS

The significant drivers for each of the economic indicators are mentioned in the tables below. The sign indicates the direction of impact. The plus (+) sign indicates the impact in positive directions such as, the value of the indicator increases as the value of the driver increases and the value of the indicator decreases as the driver value decreases. The minus (-) sign indicates the impact in opposite direction. We then identified one prime driver for each of the indicators as an actionable driver. The choice was made based on the strength of causal explanation. The prime drivers, which are highlighted in green, can be used for policy initiatives.

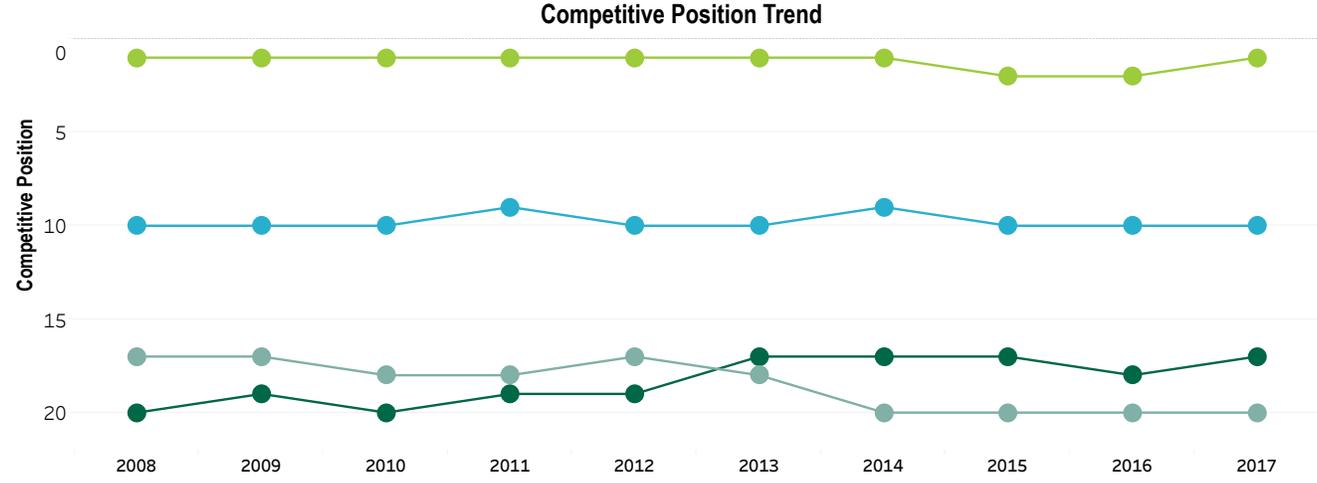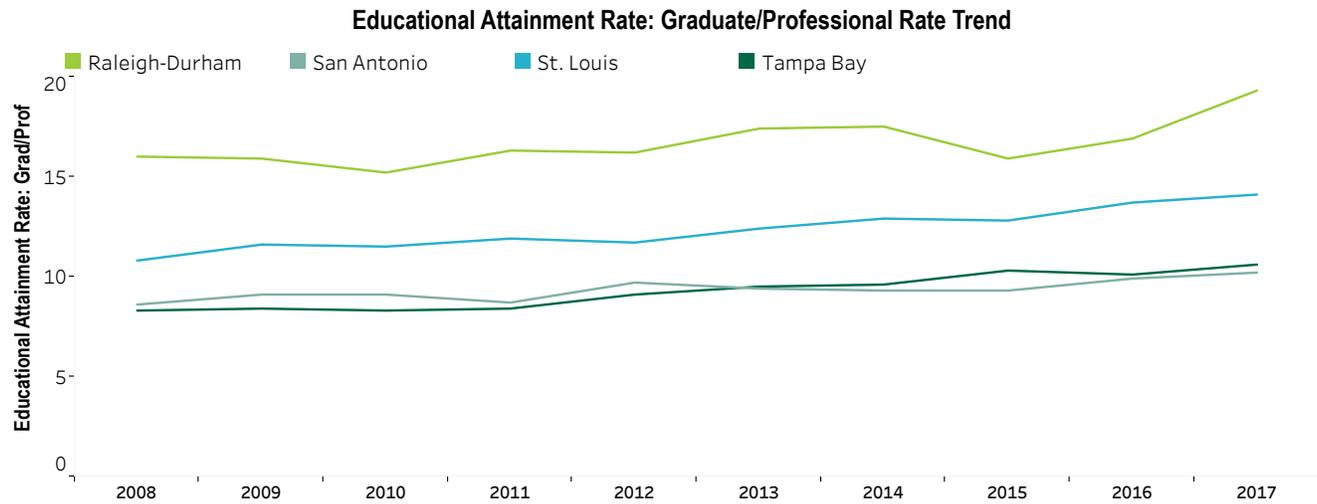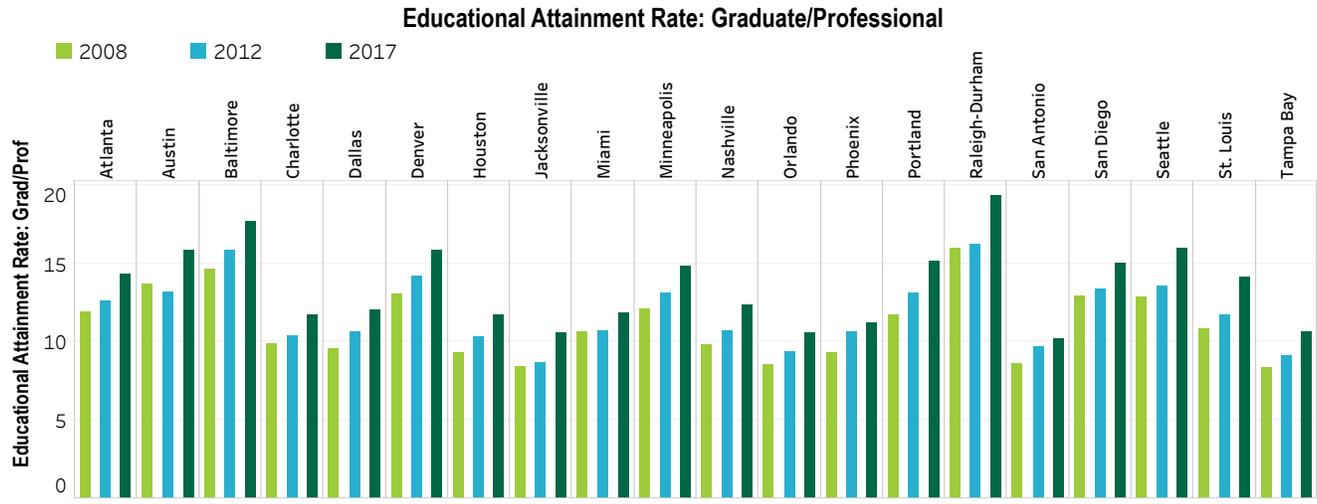| Unemployment Rate	
Mean Income of the Lowest Quantile	-
Educational Attainment (Graduates/Professionals)	-
Mean Commute Time	-
Business Establishment Start Rate	-
Labor Force Participation Rate (ages 25-64)	+
Mean House Value Per Square Foot	-

GRP Per Capita	
Mean Income of the Lowest Quintile	+
Average Wage Rate	+
Mean Commute Time	-
Transit Availability	+
Share of Commuters with 1+ Hour of Commute Time	+
Business Establishment Start Rate	+

Poverty Rate	
Mean Income of the Lowest Quintile	-
Transit Availability	-
Share of Commuters With 1+ Hour of Commute Time	+
Mean House Value Per Square Feet	-
Labor Force Participation Rate (ages 25-64)	-

Net Migration Rate	
Mean Income of the Lowest Quintile	+
Air Traffic Growth Rate	+
Mean Commute Time	+
Merchandise Exports Growth Rate	-
Labor Force Participation Rate (ages 25-64)	-

Educational Attainment Rate: Graduate/Professional

About: Measures the percentage of the population, 25 years or older, who have attained a graduate or professional degree.
Source: Census Bureau, American Community Survey, 1-Year Estimates, Table S1501

Educational Attainment Rate: Graduate/Professional

Legend: 2008, 2012, 2017

Cities (left to right): Atlanta, Austin, Baltimore, Charlotte, Dallas, Denver, Houston, Jacksonville, Miami, Minneapolis, Nashville, Orlando, Phoenix, Portland, Raleigh-Durham, San Antonio, San Diego, Seattle, St. Louis, Tampa Bay

Educational Attainment Rate: Graduate/Professional Rate Trend

Legend: Raleigh-Durham, San Antonio, St. Louis, Tampa Bay
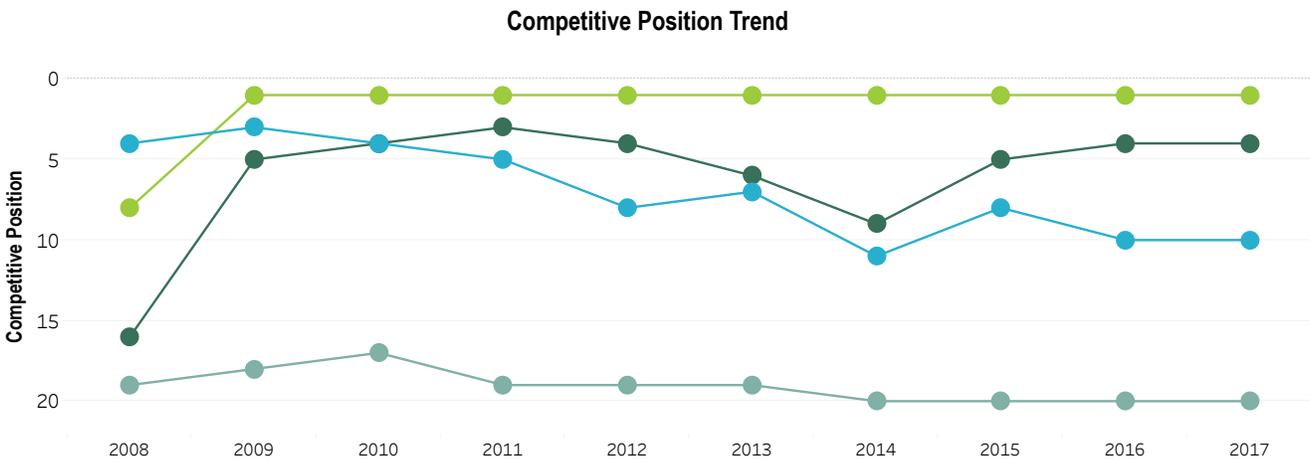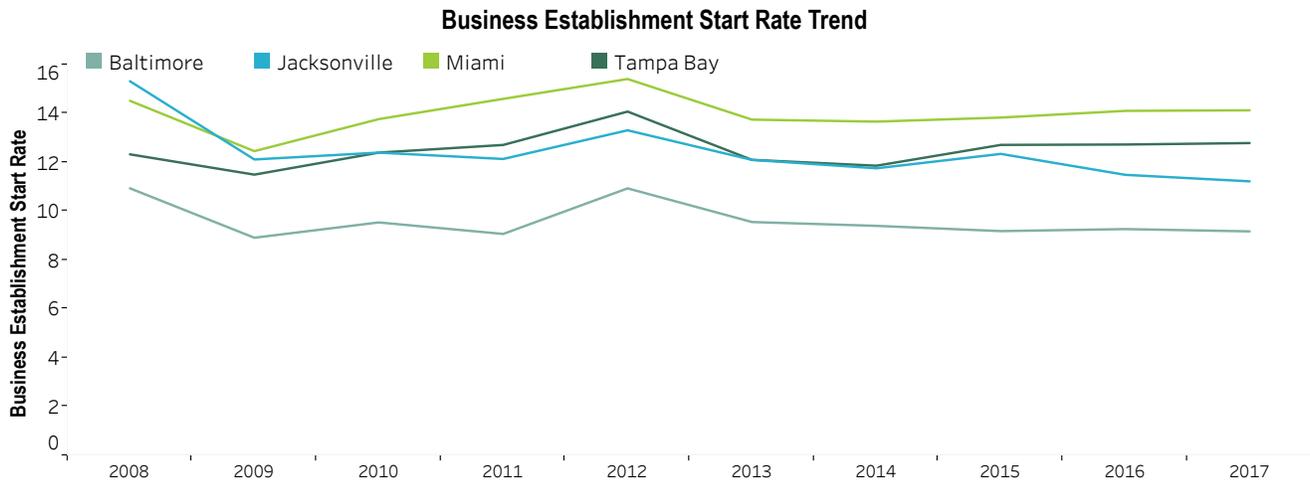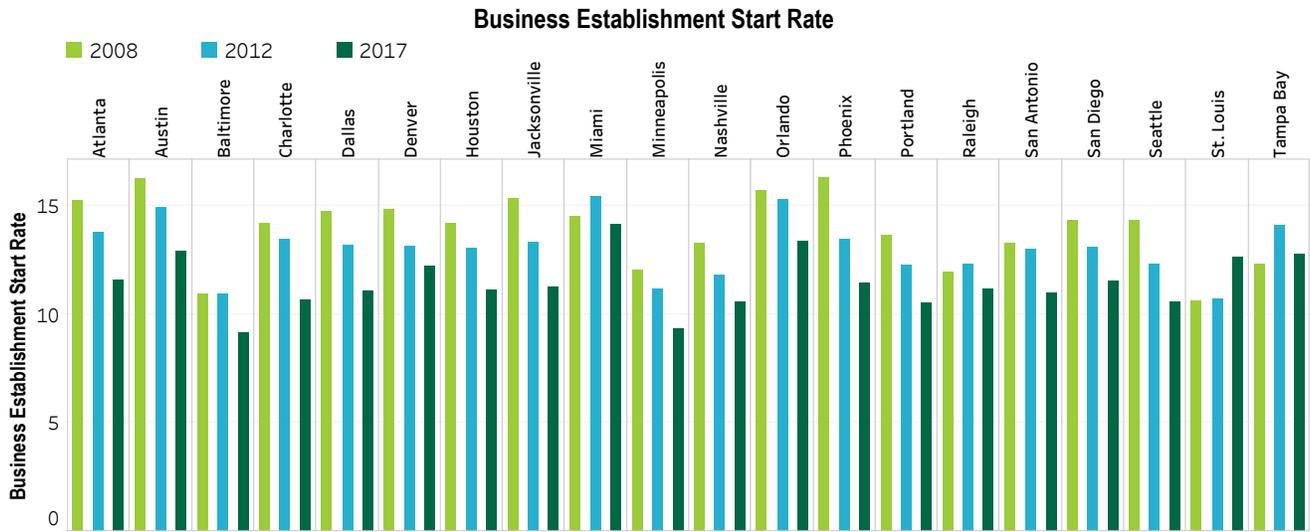

Competitive Position Trend

INSIGHTS
- Tampa Bay's education attainment (graduate/professional) has been consistently increasing over the years.
- Tampa Bay started at No.20 position in 2008 and gradually improved to 17th position in 2017.
- Raleigh-Durham has the highest graduate attainment rate for 8 of the 10 years and is maintaining rank No.1 for all years.

Business Establishment Start Rate

About: Measures the number of new businesses with employees started in a year, divided by the number of businesses with employees in the previous year.
Source: Census Bureau, Business Dynamic Statistics, Establishment Characteristics Data Tables.

Business Establishment Start Rate

Legend: 2008, 2012, 2017

Cities: Atlanta, Austin, Baltimore, Charlotte, Dallas, Denver, Houston, Jacksonville, Miami, Minneapolis, Nashville, Orlando, Phoenix, Portland, Raleigh, San Antonio, San Diego, Seattle, St. Louis, Tampa Bay

Y-axis: Business Establishment Start Rate (0–15)

Business Establishment Start Rate Trend

Legend: Baltimore, Jacksonville, Miami, Tampa Bay

Y-axis: Business Establishment Start Rate (0–16), X-axis: 2008–2017

Competitive Position Trend

Legend: Baltimore, Jacksonville, Miami, Tampa Bay

*Y-axis: Competitive Position (0–20), X-axis: 2008–2017*

INSIGHTS
- Tampa Bay started at the No.16 position in 2008 and has made significant progress to stand currently at the No.4 position.
- Tampa Bay and St. Louis are the only MSAs where the most recent net business establishment rate is higher than it was in 2008, just prior to the recession.

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About: Measures, on a per capita basis, the number of miles traveled by public transit vehicles during revenue service— meaning that the vehicle is transporting passengers while on the road.
Source: Federal Transit Administration, National Transit Database, Annual UZA Sums

Transit Availability

Transit Availability Trend

Competitive Position Trend
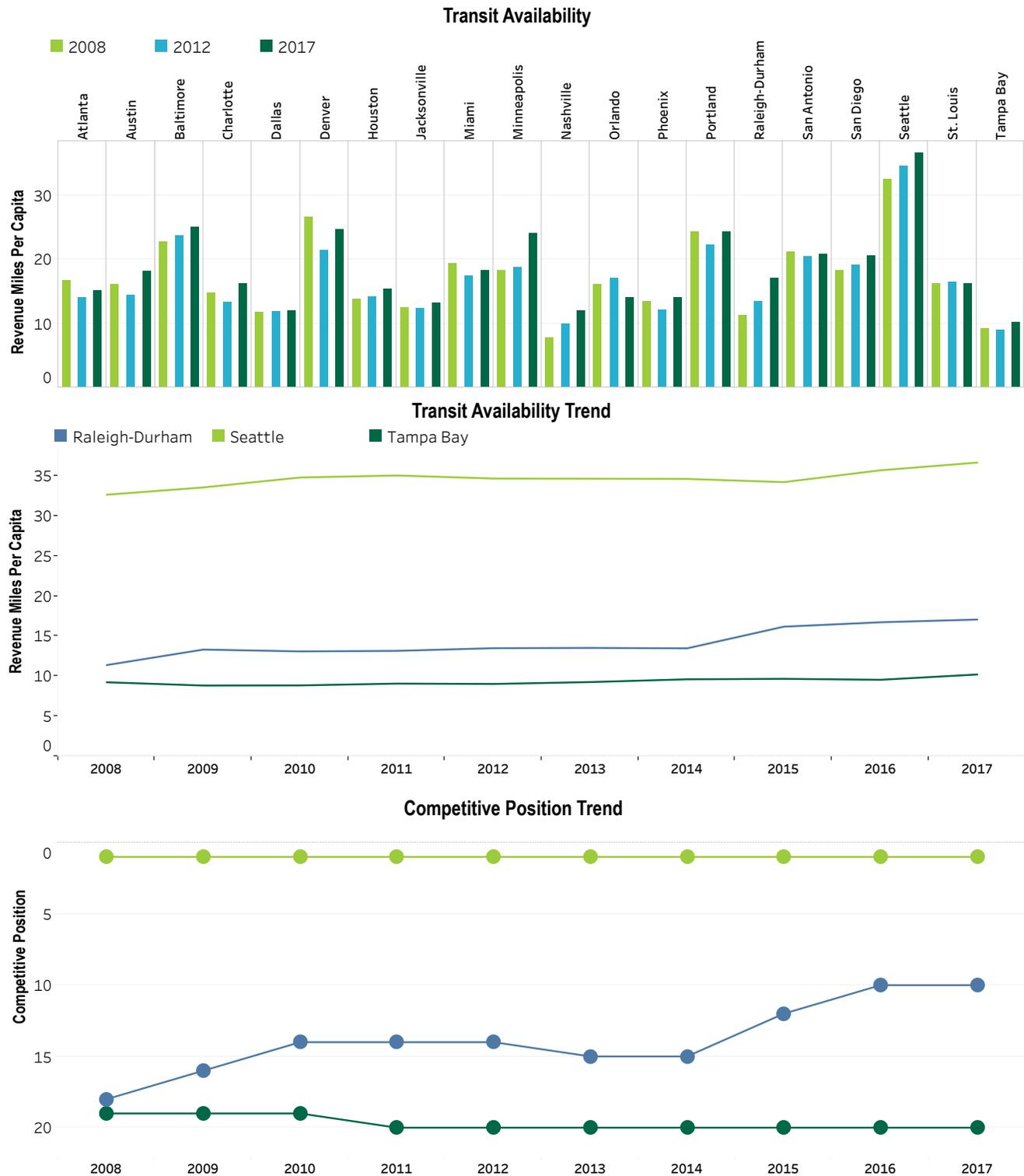
INSIGHTS
- Tampa Bay has maintained the competitive rank at No.20 consistently since 2011.
- Seattle has the highest revenue miles per capita and is consistently ranked at position No.1 since 2008.
- Raleigh-Durham has seen a significant improvement in the competitive rank from No.18 position in 2008 to No.10 position in 2017.

About: Measures the average household income for the households that have income in the lowest 25% of all households.
Source: Census Bureau, American Community Survey, 1-Year Estimates, Table B19081.

Mean Household Income Lowest Quintile

Mean Household Income Lowest Quintile Trend

Competitive Position Trend
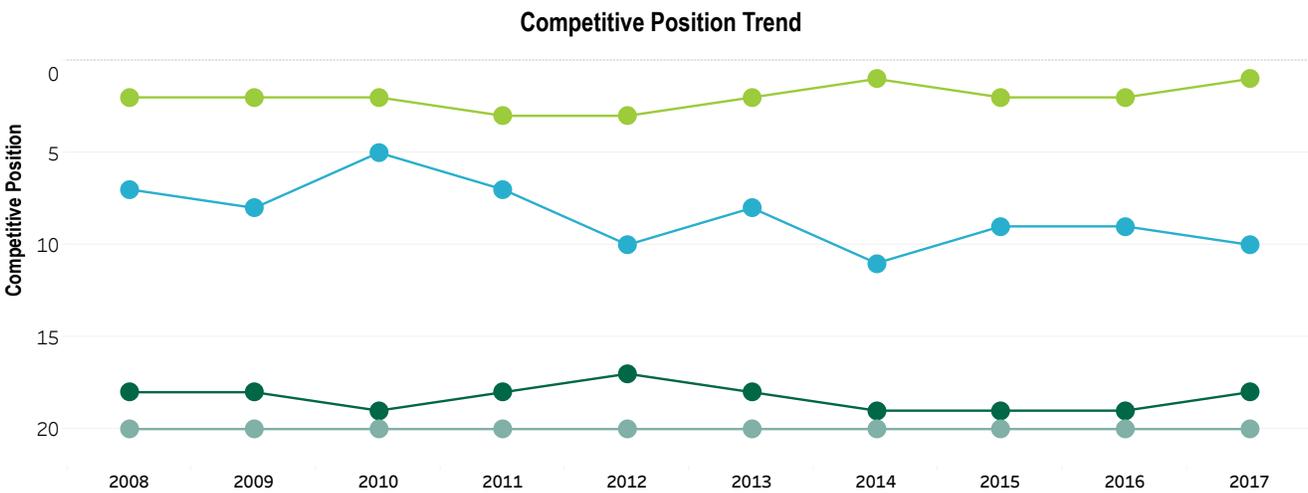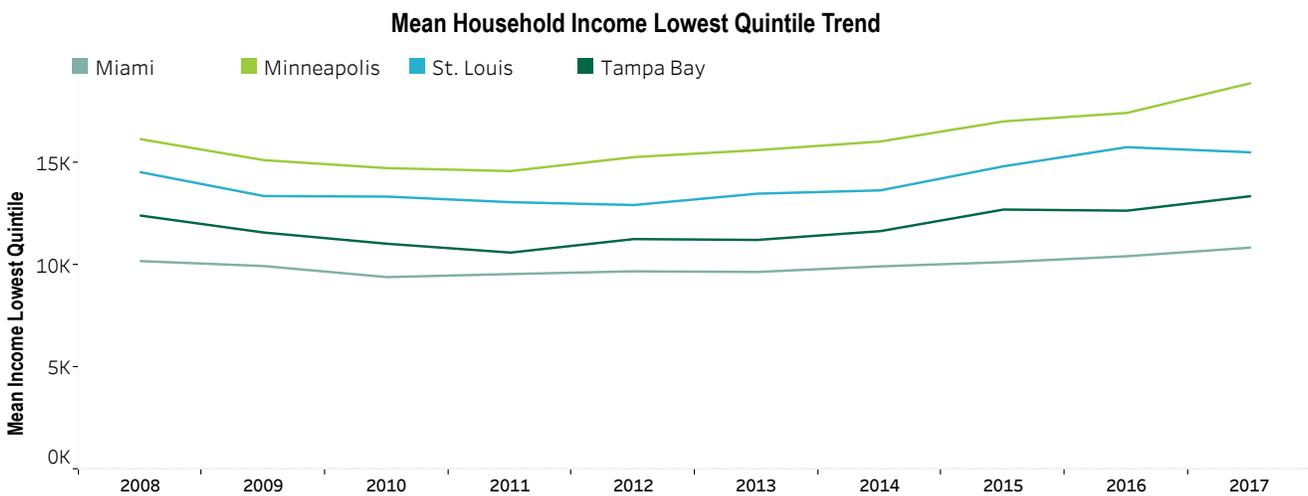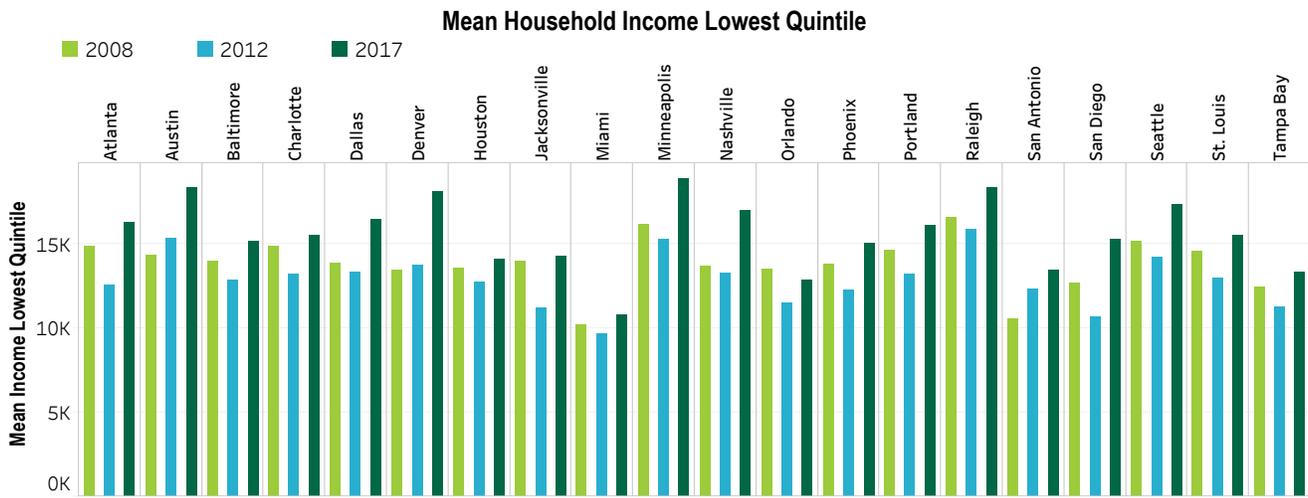
INSIGHTS
- Tampa Bay has seen a slight decline in median household income from 2008 to 2011 and gradually improved since then.
- Tampa Bay has been fluctuating between position 17 and 19 in the competitive positions since 2008 and is currently held at 18th position.
- Miami has been consistently at the 20th position in the competitive positions.

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POLICY EXPERIMENTS AND LOOKING AHEAD

In the previous section, we have identified the drivers of economic prosperity of a region. In this section we present some policy experiments. These policy experiments inform the business and civic leaders about the impact of certain policy initiatives which change the drivers of economic prosperity on the regional competitiveness of Tampa Bay region. We do this by applying the technique of sensitivity analysis.

We forecast the competitive positions of the MSAs for three years (2018, 2019 and 2020) on the outcomes. If all remains the same and the MSAs follow the trends that they have been following for the recent years on the outcomes, the MSAs will achieve the forecasted competitive positions. Then, we use the econometric models to forecast the values of outcomes when some of the values of the driver variables for Tampa Bay region are changed. This allows us to forecast the Tampa Bay's competitive positions for the next three years when certain policy initiatives are implemented.

In our econometric analysis to identify the drivers, we have focused on unemployment rate, poverty rate, GRP per capita and net migration rate. Since the Tampa Bay region has been consistently ranked No.1 for net migration rate for last three years, we did the policy experiments only for unemployment rate, poverty rate and GRP per capita.
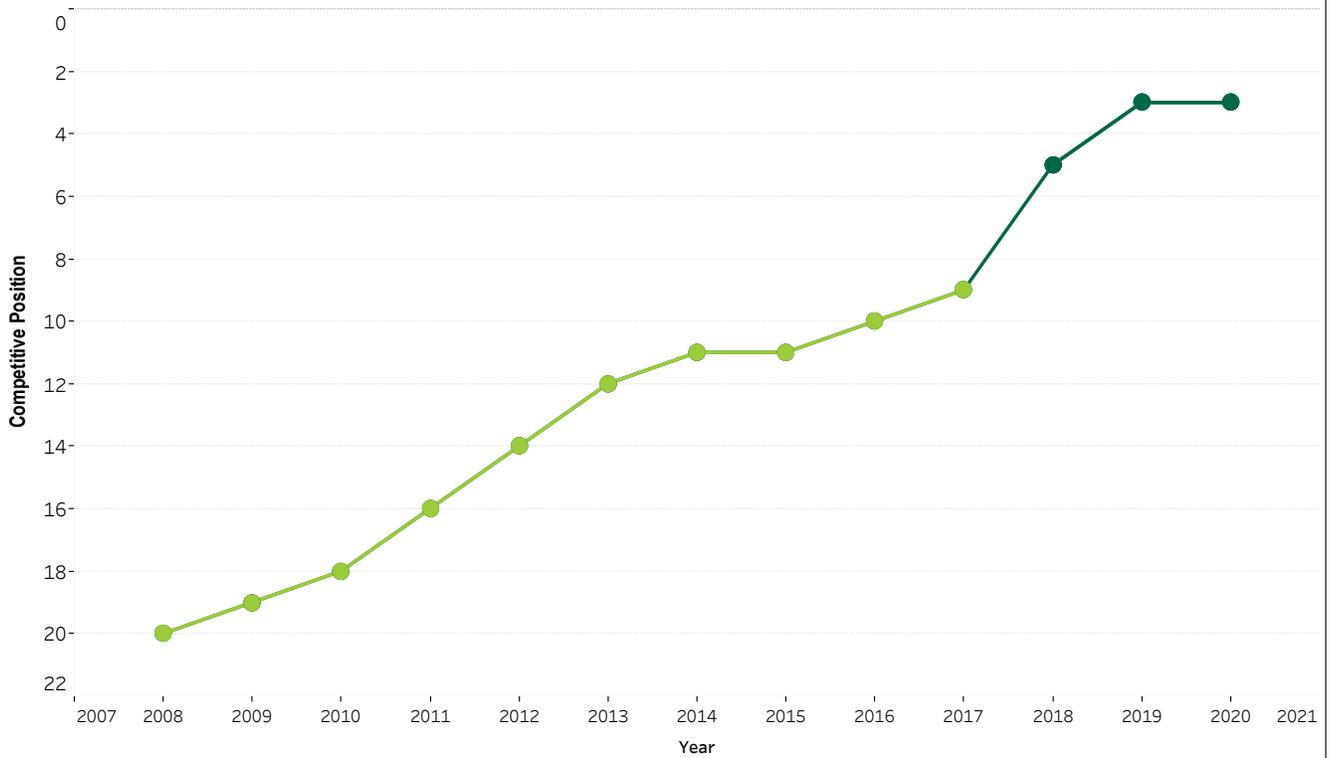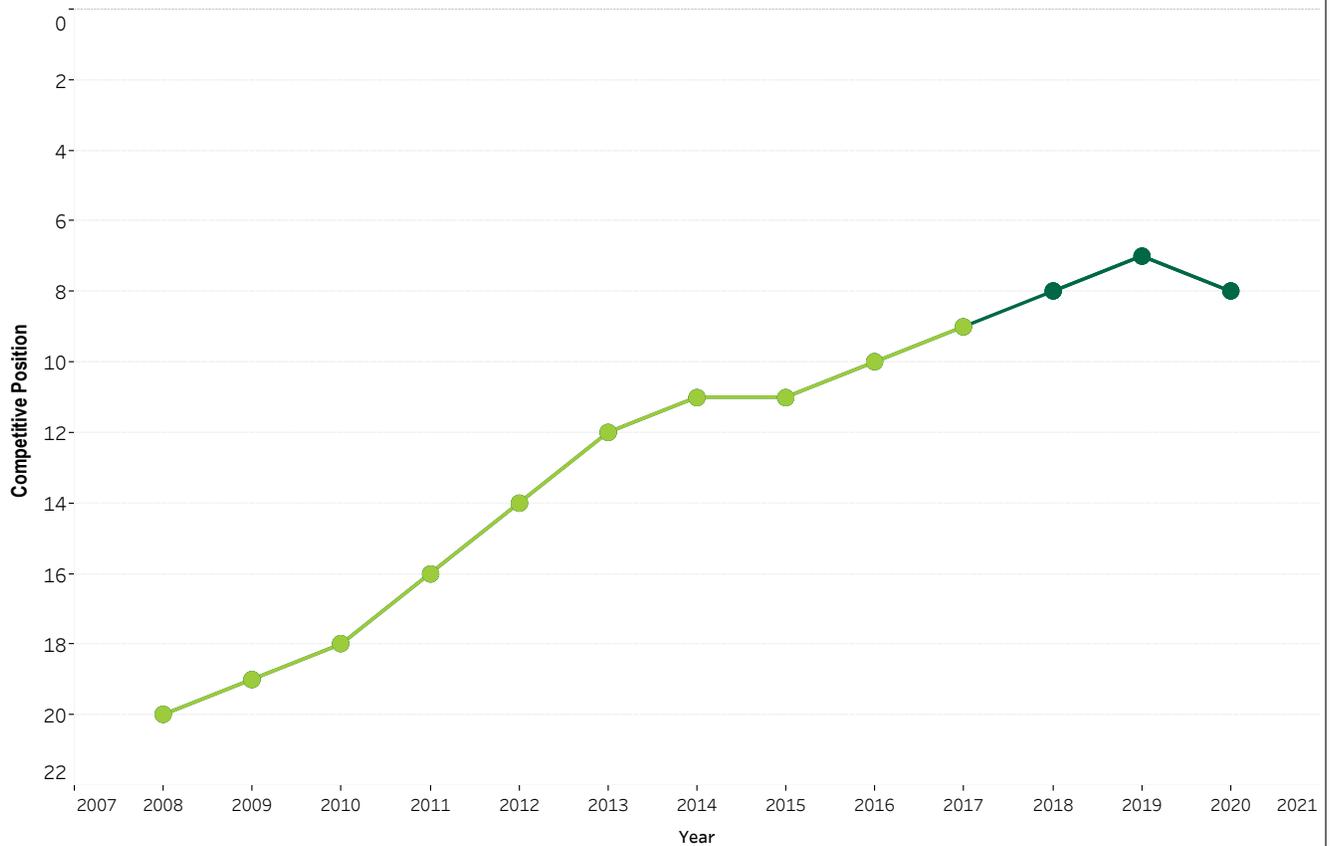
Policy initiative:
Increase in educational attainment rate (graduate/professional) by 1% for 2018,2019 and 2020.

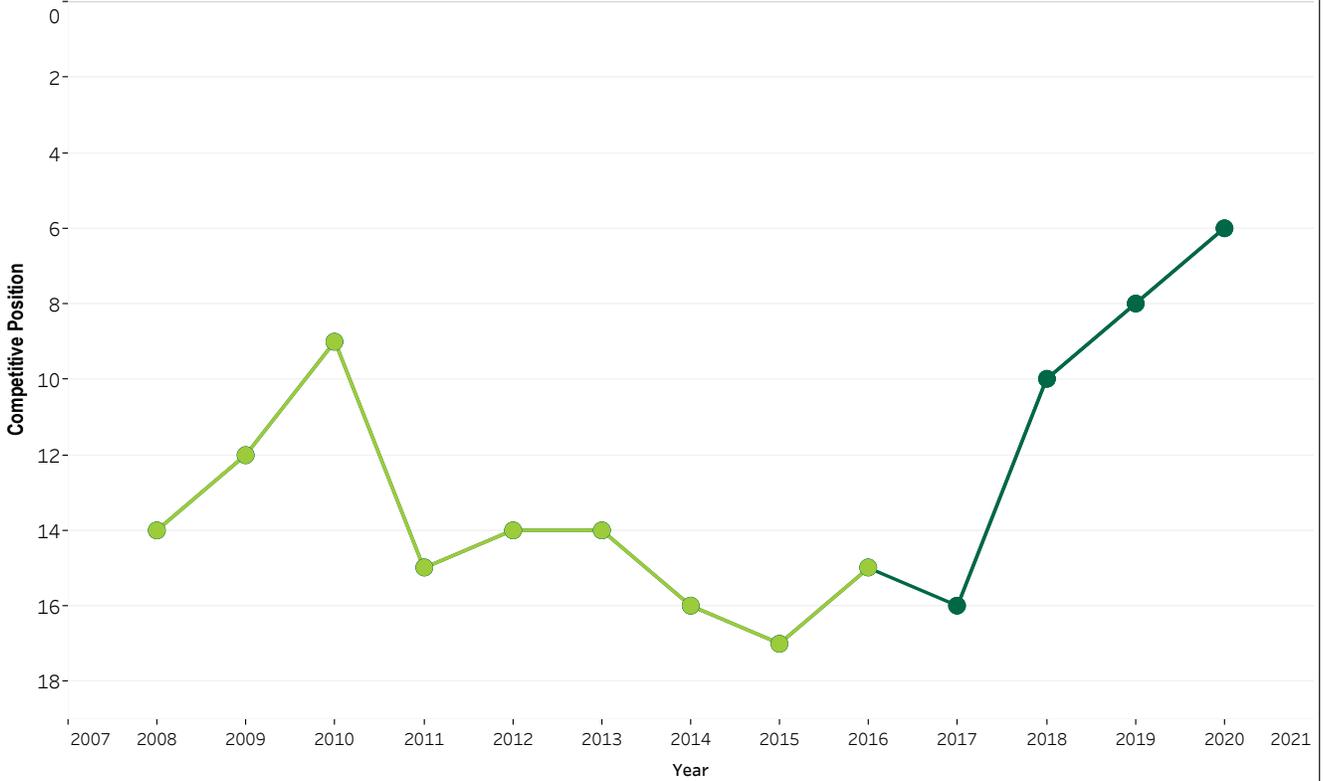### Unemployment Rate - Competitive Position Trend With Policy Initiative

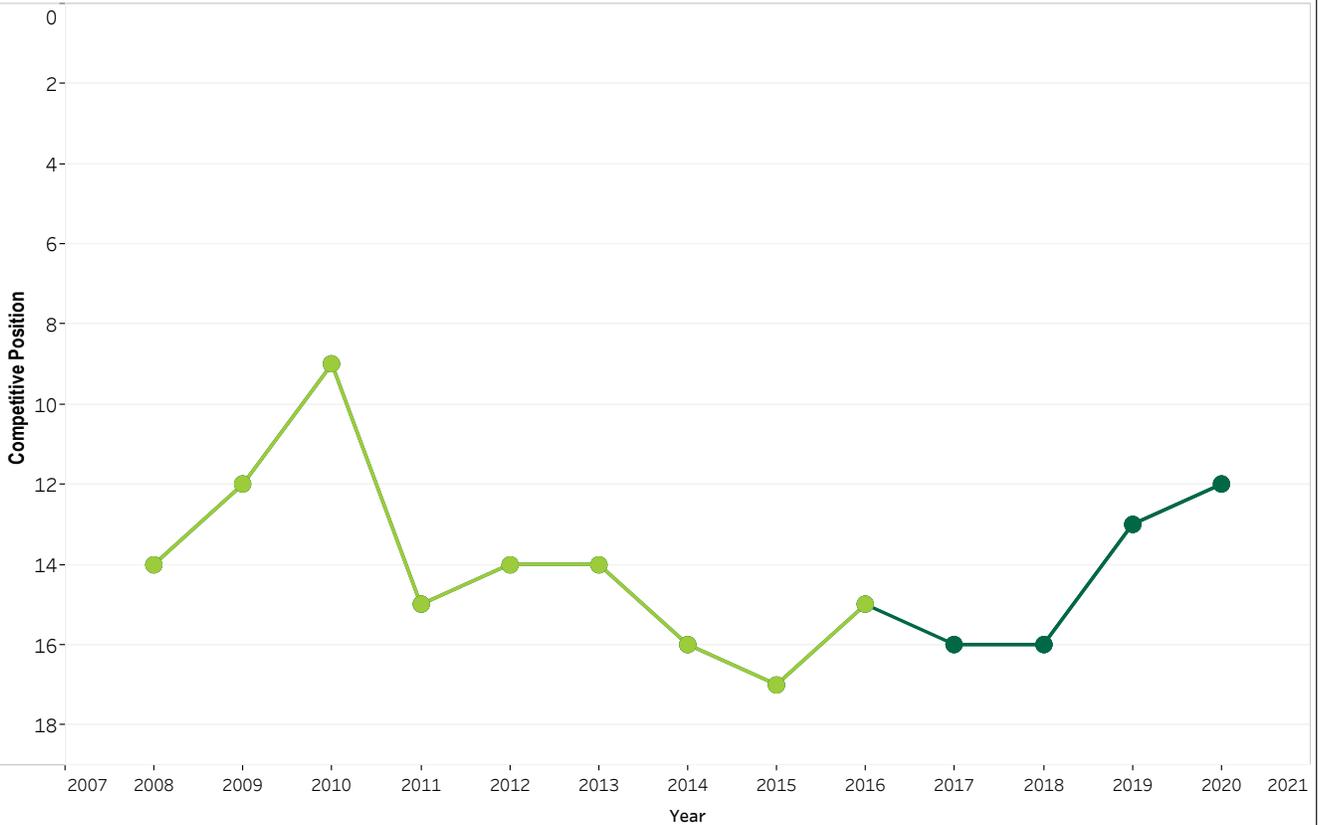### Unemployment Rate - Competitive Position Trend Without Policy Initiative

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Policy initiative:
Increase in transit availability by 10 revenue miles per capita for 2018,2019 and 2020.

Poverty Rate - Competitive Position Trend With Policy Initiative

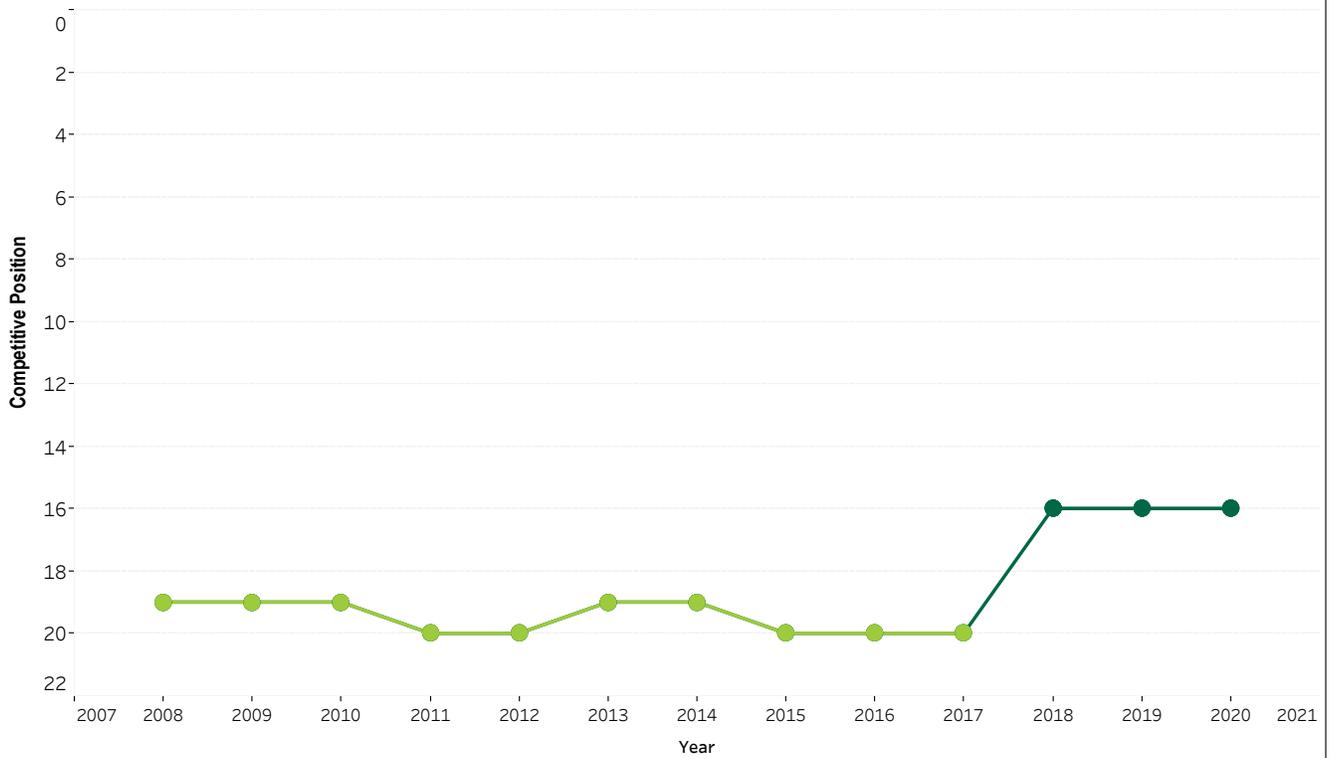### Poverty Rate - Competitive Position Trend Without Policy Initiative

Policy initiatives:
-Increase in transit availability by 10 revenue miles per capita for 2018, 2019 and 2020.
-Increase in business establishment start rate by 10% for 2018, 2019 and 2020.

GRP Per Capita - Competitive Position Trend With Policy Initiative

GRP Per Capita - Competitive Position Trend Without Policy Initiative

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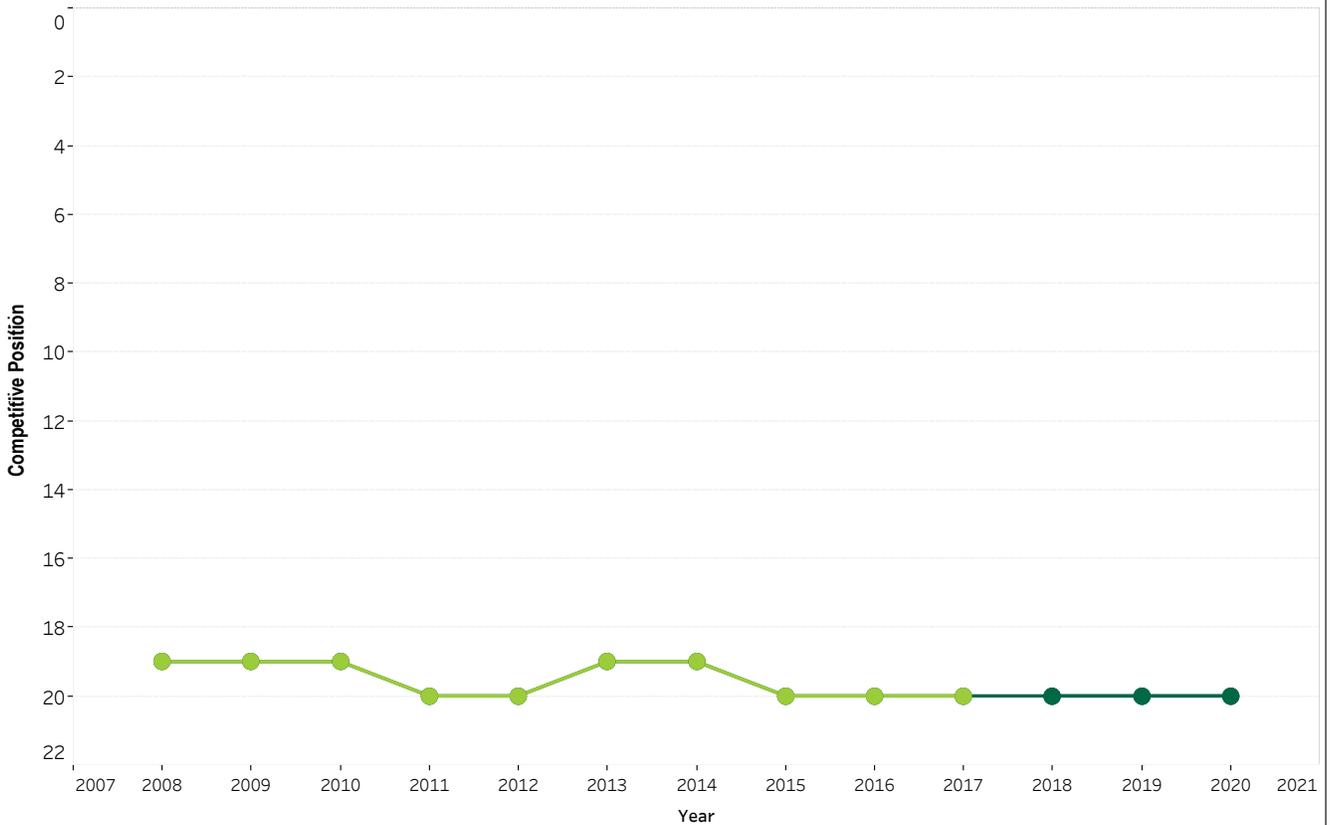
KEY TAKEAWAYS AND NEXT STEPS

In this report, we studied the economic competitiveness of the Tampa Bay region from real-time as well as traditional economic perspectives. From a real-time perspective, we considered signals from Google, LinkedIn, Indeed, Twitter, Airbnb and Zillow. From the traditional perspective, we examined trends of economic outcomes such as unemployment rate, GRP per capita, poverty rate and net migration rate.

We found that, at a high level, the trends in the real-time signals match with those of the traditional indicators in terms of relative rankings for the region. This points to the potential for using real-time signals as proxies to traditional indicators in assessing the economic competitiveness of a region. This is important because we can then perhaps use the real-time signals, which reflect the current economic status of the region, rather than the traditional indicators, whose data often comes with a significant lag. This approach can potentially help us in making better and more accurate policy decisions. One positive insight from the real-time signals is that the public sentiment towards Tampa Bay on Twitter is very high.

We also conducted econometric analysis to identify impactful drivers for each of the four economic outcomes. We found that educational attainment (graduate/professional), business establishment start rate, transit availability and mean income lowest quintile are the most significant drivers for unemployment rate, GRP per capita, poverty rate and net migration rate, respectively.

NEXT STEPS

1. We plan to continue expanding the kinds of real time big-data signals we study. For example, we are exploring real-time sources on traffic patterns and retail purchase behavior across MSAs.

2. Most of the real-time big data signals we obtained were trough APIs and scraping. We are exploring the possibility of building direct and deeper partnership with the source companies. We encourage the community to reach out to us if they can connect us to local or regional providers of such real-time big data signals.

3. We are also exploring deeper study of whether any of the big-data signal can serve as reliable proxy of standard economic indicators. The value is that the proxy can be used to assess the economic health of the region on a real-time basis and will help faster policy decision making.

4. We are building an index of real-time big data signals which can gauge economic prosperity real time. Such an index will be a single number that can provide a composite measure of health.

5. We look forward to directly partnering with the business community to help them potentially leverage real-time big data signals to position themselves for long term growth.

6. We are working on deeper integration of real-time signals with the traditional indicators in the econometric analysis for better forecasting and policy experimentation.

7. Finally, we look forward to community ideas and feedback! Feel free to reach out to any of the authors of this report listed.

NOTES

NOTES

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