Cover Sheet

Event: **2012 Formula One Grand Prix (F1 USGP)**

Date: **November 16 – 18, 2012**

Location: **Austin, Texas**

Report Date: **September 4, 2013**

Post Event Analysis

2012 Austin Formula One Grand Prix (F1 USGP)

I. Summary of Conclusion

This office concludes that the initial estimate of direct, indirect, and induced tax impact of $25,284,469 is reasonable based on the tax increases that occurred in the market area during the period in which the **2012 Austin Formula One Grand Prix (F1 USGP)** event occurred.

II. Introduction

This post-event analysis of the F1 USGP is intended to evaluate the short-term tax benefits to the state through review of tax revenue data to determine the level of incremental tax impact from the event. A primary purpose of this analysis is to determine the reasonableness of the initial incremental tax estimate made by the Comptroller's office prior to the event, in support of a request for a Major Events Trust Fund (METF). The initial estimate is included in Appendix A. Long term tax benefits due to the construction and ongoing operations of the venue are not considered in this analysis, but are significant[1].

Large events, particularly "premier events" such as this one, with heavy promotion, corporate sponsorship and spending, and "luxury" spending by visitors, will tend to create significant ripples in the local economy, and in fact, even the regional economy outside the immediate area considered in this report. The purpose of this report is to analyze the changes in tax collections during the period in which the event occurred. An analysis of tax data will shed some light on tax impact, however, several outside factors must be considered when looking at tax collections data during the time of the event. While these events might bring in a significant number of out-of-state visitors, they might also entice many in-state residents to travel and spend their dollars in this area. Additionally, by the event dates, Texas had emerged from the recession and regained many of the jobs that were lost, which boosted consumer confidence and fueled even more endogenous (local) spending, particularly when compared to the lackluster spending during the depths of the recession[2].   In fact, the agency's analysis show that the sales and use tax increase in the market area was higher than the statistical model would have predicted, as well as higher than the percentage increase statewide. While some of this increase may be affected by other factors, much of it was certainly due to the event.

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[1] It has been estimated that construction of the track would have employed 1,500 workers, plus another 1,200 temporary workers would be hired over Formula One race weekends. Forty employees would also work year-round at the track.

[2] For a more in-depth analysis of economic conditions in the event market area and the state, see Appendix C.

It is not possible to determine the precise amount of tax revenue generated by the event, but information compiled from a variety of sources indicates that the initial estimate was reasonable, and likely conservative. Consider the following:

- Of the more than 110,000 tickets sold, **60** percent of the buyers were from outside of Texas. That amounts to **66,000** out-of-state ticket holders.— Circuit of the Americas (COTA) track spokeswoman
- F1 USGP attracted **117,429** fans on Sunday's race day, which surpassed the largest sports crowd for an Austin event (UT football record crowd of 101,851).—Austin American Statesman
- On the Saturday before the race (November 17, 2012), **94.4** percent of the rooms in the Austin Market Service Area were occupied by people paying an average of **$300.44** per night. On a similar Saturday in November 2011, 89.9 percent of hotel rooms were occupied at a rate of $111.40 per night—Smith Travel Research
- While occupancy rates increased by **19** percent from 4th Quarter 2011 to 2012, room revenue went up by **28** percent. This indicates that not only were more people staying in the Austin-Round Rock Market Area, they were paying higher room rates during the period that F1 USGP occurred.—Source Strategies
- During Formula One week, COTA's hotel partner booked more than 27,000 room nights at central Texas hotels with an average length of stay being **4.18** nights at an average daily rate of **$364.68**. By multiplying 27,000 room nights by the average daily rate, this would mean that $9,846,360 would be spent on lodging by those that booked with COTA's hotel partner.—Hotels for Hope and the Austin American Statesman
- More than **300** private and charter planes registered to land at Austin/Bergstrom International Airport (ABIA), and other airports in the region also experienced increased traffic. Helicopters ferried passengers from these other airports to COTA, which had about **2,100** takeoffs and landings at six helicopter landing areas throughout the weekend.—Austin American Statesman
- During the month of November 2012, mixed beverage gross receipts in the event area were up by **27.3** percent from the previous November. –Texas Comptroller of Public Accounts
- From 4Q 2011 to 2012 in the event market area, those industries most affected by out-of-state visitors experienced a nearly $200 million increase in sales subject to state sales and use tax. –Texas Comptroller of Public Accounts

III.   **Methodology**

The METF statute requires the Comptroller's office to estimate the incremental increase in taxes for a specific time period due to an event. For the purposes of this analysis, the agency analyzed

the measurable change in state taxes due to the event. This presents challenges for two primary reasons: the size and population of the state and the fact that taxes are remitted to the state based on receipts from 30 to 90 day periods, depending on the tax type.   The incremental tax increase in the state due to an event in a large and dynamic tax system is difficult to distinguish from incremental changes due to other factors.

The incremental taxes attributable to the out-of-state visitors to the event make up the majority of the estimate (approximately 65 to 75 percent of the total estimated incremental taxes). The remainder of the incremental tax estimate is typically made up of taxes attributable to other expenditures that would not have occurred without the event. These include expenditures by the event organizers, sponsors and other entities that are directly related to the event.

Measuring the actual incremental tax increase produced as a result of a particular event with accuracy requires certain information that is not readily available.   The primary determinants that would be required to accurately measure the incremental increase in taxes are:

- The actual number of out-of-state visitors;
- The length of stay for those visitors; and
- The expenditures per day for those visitors.

Since the exact number of out-of-state visitors, length of stay, and expenditures per day are not known with certainty, our analysis relies on overall changes in tax collections to make an informed judgment as to whether the initial estimate was reasonable.

It is assumed that all attendees have limited disposable income for entertainment, and that Texas residents would likely have chosen to spend their entertainment dollars at another Texas venue or event in the absence of the event in question. While it is impossible to track all out-of-state visitors and their spending habits, **a noticeable increase in taxable sales points to a positive economic impact due to a major event.**

This analysis uses two methods for examining tax data:

Method 1 looks at the past 11 years of quarterly (or monthly) tax data to determine average collections for any given quarter (or month). Standard deviations are calculated and if collections for the period when the event occurred are beyond the average and standard deviation, it is assumed that the event must have pushed sales upward. The more the sales deviate from the average plus the standard deviation or are outside the normal distribution, the stronger the indication of the magnitude of the event impact.

Method 2 looks at only the quarter (or month) in question for the past 11 years (2002 to 2012). Based on sales subject to tax, average collections and standard deviations are calculated. Like Method 1, if collections for the period when the event occurred are beyond the average and standard deviation, it is assumed that the event must have pushed sales upward. The magnitude

of the impact can be gauged by measuring the amount of state taxes collected over the average plus the standard deviation.

Method 2 resulted in more conservative sales tax estimates, and was the primary method relied on for this analysis. The methodology used for this analysis focuses on direct taxes, since indirect and induced impacts are calculated using a dynamic modeling software package, and are dependent on the direct taxes.

The Comptroller's Office also ran statistical tests (Appendix B) on the three tax types that generated the most revenue that could be verified (Sales and Use, Hotel Occupancy, and Mixed Beverage). The test indicated at the 99 percent confidence level that the sales subject to state tax were not normal during the period that the event occurred and is statistically different from similar collections from the same time period in previous years. This statistical difference implies that the event was at least partly responsible for the difference in tax collection levels for the period.

Analysis

The METF statute requires that the Comptroller estimate the incremental tax increase that is expected for an event for five specific tax types:

1. Sales and Use Tax
2. Hotel Occupancy Tax
3. Rental Car tax
4. Mixed Beverage Tax
5. Title 5, Alcoholic Beverage Code tax

Of these 5 taxes, the pre-event estimate of direct Sales and Use tax, Hotel Occupancy tax (HOT), and Mixed Beverage tax are the largest verifiable tax types. In the case of the event in question, the Sales and Use tax and the HOT tax made up roughly 61 and 25 percent respectively, while Mixed Beverage made up 8 percent. Based on figures used for initial estimates, the Rental Car tax made up 6 percent and the Title 5 Alcohol tax made up one-half of one percent.

Rental car taxes are paid by rental car companies at the state-wide level and are not attributable to specific geographic locations. Title 5 Alcohol taxes make up a small percentage of the overall estimate and due to the small amount, any change attributable to a specific event is difficult to calculate. Due to the challenges involved and relatively minor amounts of rental car tax and Title 5 Alcohol tax, this analysis uses initial estimates and does not attempt to quantify changes in these two tax types.

II A Analysis—All Tax Types

8.31%
0.50%
5.73%
24.58%
60.87%

Legend:
- Sales and Use
- HOT
- Mixed Beverage
- Title 5 ABC
- Rental Car
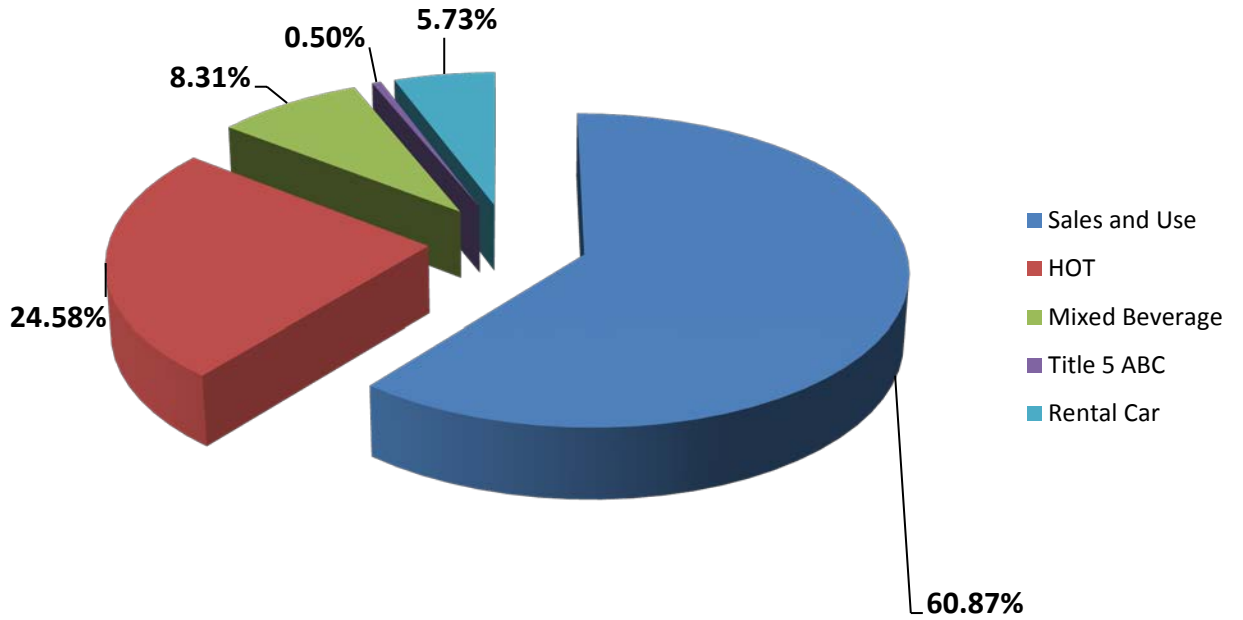
Source: Texas Comptroller of Public Accounts.

The above chart illustrates that sales tax makes up the majority of additional estimated revenue to the state from major events. **Taxes collected from sales tax, mixed beverage tax, and hotel occupancy tax make up approximately 94 percent of the funds generated by the event for the 5 specific tax types that are addressed in the statute.**

Quarterly Gross Sales Subject to State Tax in Bastrop, Caldwell, Hays, Travis and Williamson Counties

$2,201,267,735
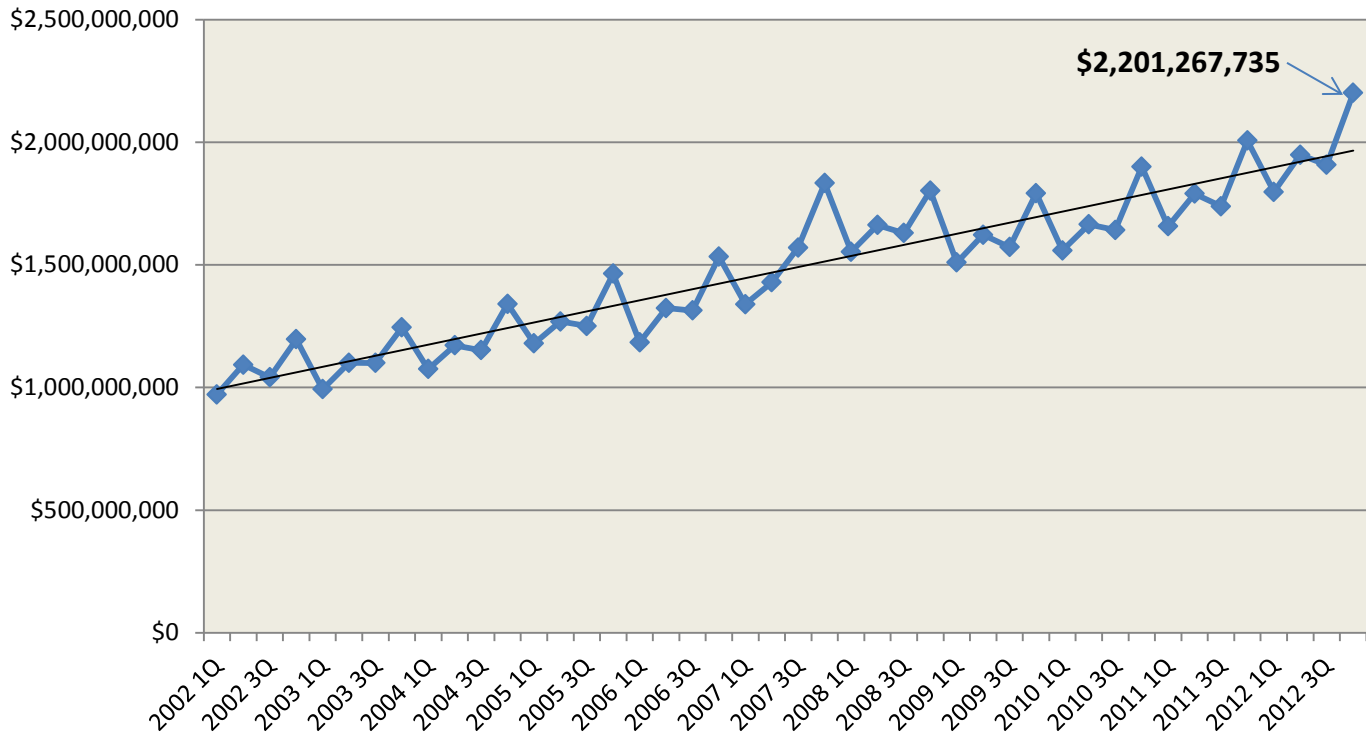
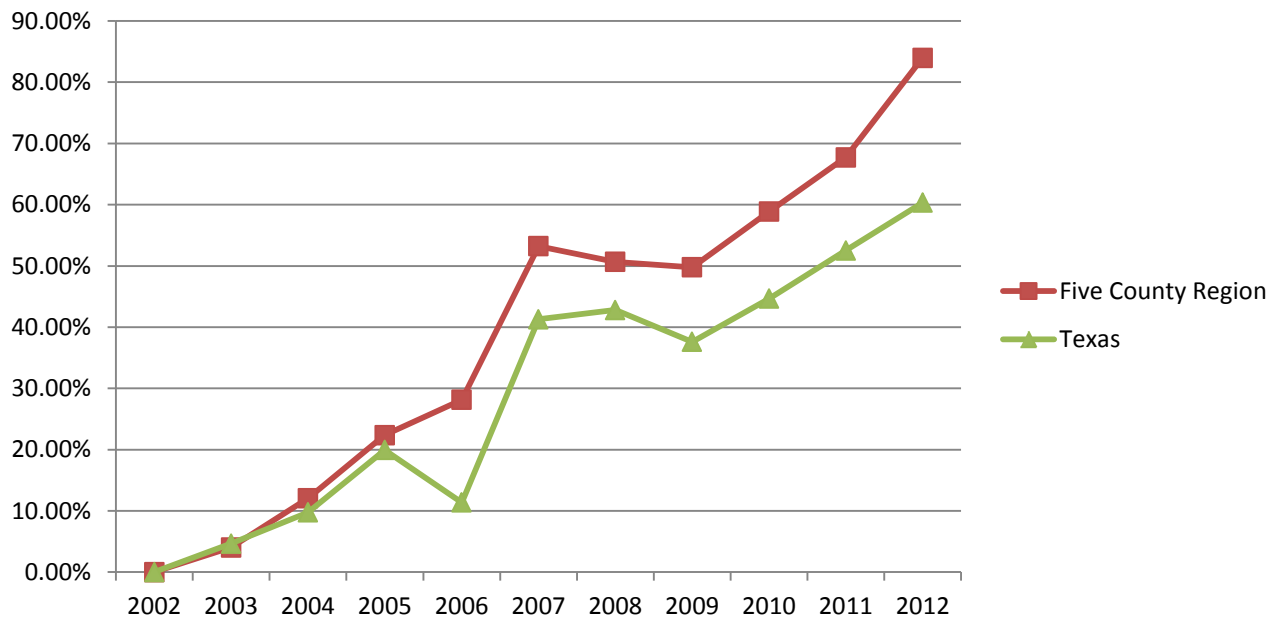*Source: Texas Comptroller of Public Accounts.*

The graph above is the sum of taxable sales for those industries most affected by out-of-state visitors for the event market area that fall within the following 2- and 3-digit North American Industry Classification System (NAICS) code categories: NAICS code 447 (Gasoline Stations); NAICS code 448 (Clothing and Clothing Accessories Stores); NAICS code 4521 (Department Stores); NAICS code 71 (Arts, Entertainment, and Recreation); NAICS code 721 (Accommodation); and NAICS code 722 (Food Service and Drinking Places). The graph includes data only from holders of sales tax permits; businesses that sell only goods that are outside the sales tax base are not covered by these reports.

The average amount subject to sales tax for this five-county area from 1Q 2002 to 4Q 2012 was $1,480,280,783 with a standard deviation of $311,195,662. The amount subject to sales tax during the quarter in which the event took place was $2,201,267,735, which is $409,791,290 more than the sum of the average and the standard deviation. By applying the state sales and use tax rate (6.25 percent) to the amount that actual receipts surpassed the average and

standard deviation, the state could have received an additional $25,611,956 beyond what might have been expected.

The second method of analysis of sales tax data looks at only the 4th quarter of each year and it illustrates a slightly different picture. Sales subject to sales taxes for the industries mentioned above for the 4th quarter (from 2002 to 2012) were averaged. Average sales subject to sales taxes for the fourth quarter were $1,665,001,823 with a standard deviation of $328,991,432. The average plus the standard deviation is $1,993,993,254. Sales subject to sales taxes for the 4th quarter of 2012 were $2,201,267,735, which is $207,274,481 more than the average plus the standard deviation. At the state sales tax rate (6.25 percent), this amounts to an additional $12,954,655 to the state as a result of increased sales.

Texas and the Five-County Region (Bastrop, Caldwell, Hays, Travis and Williamson) 4th Quarter Sales Subject to Tax Indexed
(2002 = 0)

Source: Texas Comptroller of Public Accounts.

Using 2002 as a base year, the graph above illustrates that 4th quarter taxable sales in the five-county event market area and the state as a whole where growing at comparable rates, until 2005. From 2006 on, the five-county region's sales subject to sales and use tax actually grew at a faster rate than Texas'. While the growth in taxable sales and the corresponding tax revenue might seem uncharacteristically large for the event market area in 2012, the industries that are included in this analysis are greatly affected by out-of-state visitors.
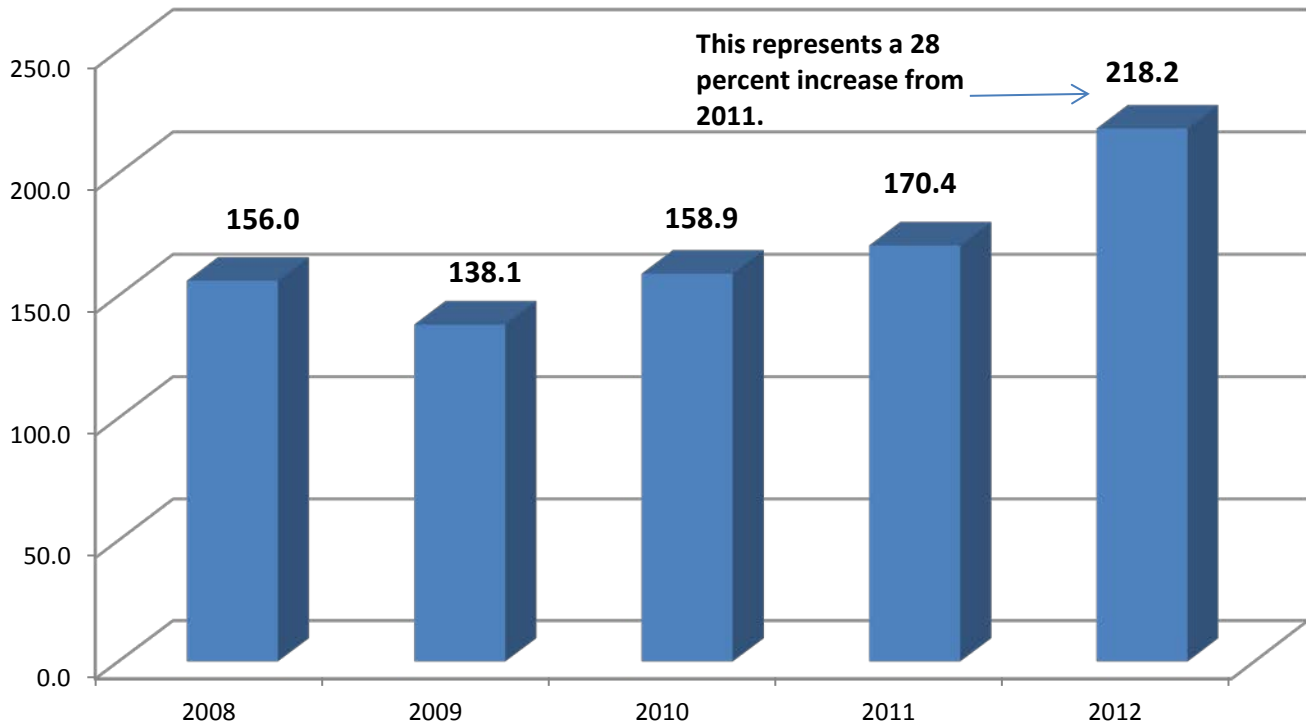
While there clearly was increased sales tax revenue collected during the same time the event occurred, the increase is almost certainly not all due to one major occurrence. Based on the rapid growth of the five-county area in comparison to the state at large, the agency estimates that as much as 25 percent of the calculated increase may have been due to the general economic growth and other events in the region, leading to an estimate of **$9,715,991** to the state as a result of increased sales. **This is over and above what would have been expected based on past performance.**

Tax Type	Initial Estimate	Post Event Estimate
Sales and Use	$8,899,695	$9,715,991

II C Analysis--Hotel Occupancy Tax:

Determining the tax impact from an event is dependent upon how many out-of-state participants and visitors attend the event. The tax type that is the largest contributor to the economy is the sales and use tax, but the Hotel Occupancy Tax (HOT) is one of the best indicators of how many out-of-market and out-of-state visitors an event may have attracted.

Austin-Round Rock Hotel Room Revenue, 4th Quarter (in Millions)

This represents a 28 percent increase from 2011.

| Year	Revenue
2008	156.0
2009	138.1
2010	158.9
2011	170.4
2012	218.2

Source: Source Strategies and the Texas Hotel & Lodging Association.

The chart above shows room revenue in the Austin-Round Rock area for the 4th Quarter. The chart illustrates that room revenue when the event in question took place (2012) saw an increase of 28 percent. While these figures only represent room revenue for a portion of the area affected by the event, it does provide yet another indicator that there were significantly higher room revenues in the Austin-Round Rock area during the quarter the event occurred, as compared to previous years. The room revenue increase from 2011 to 2012 would translate into a state HOT tax increase of nearly **$3 million** which is in line with other methods of calculating the impact.

Hotels for Hope, which served as the booking partner for the event venue, reported average hotel rates of approximately $365 per day, and an average stay of 4.18 days. Both figures are **higher** than the agency's initial estimates for hotel rates and stay lengths.

Monthly Hotel Occupancy Taxable Receipts for Bastrop, Caldwell, Hays, Travis and Williamson Counties

$81,330,407
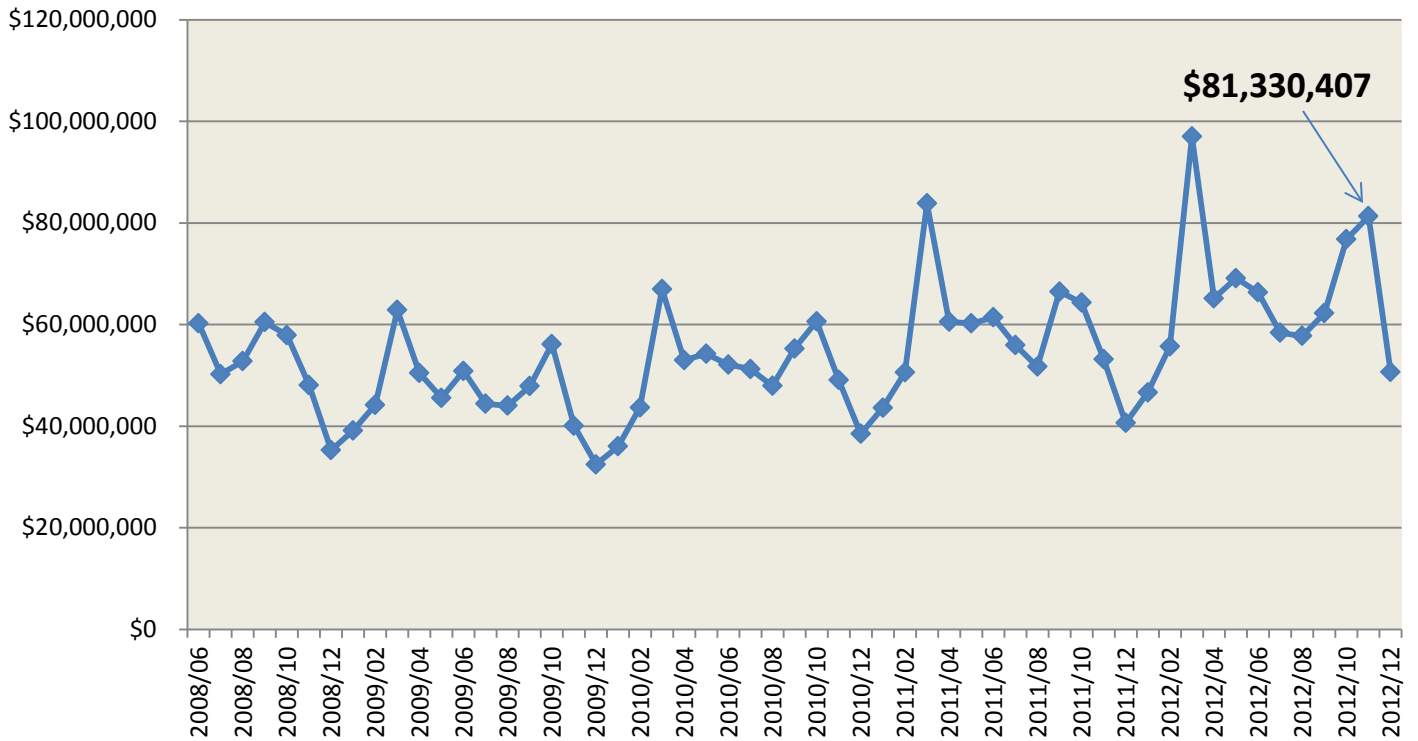
This graph above does not represent all monthly HOT receipts, but only those that are taxable. The dollar value that corresponds to any one month represents the HOT taxable receipts that are attributable to that month. This graph includes HOT taxable receipts for the event market area.

November HOT Taxable Sales, 2002-12

(Bastrop, Caldwell, Hays, Travis and Williamson Counties)
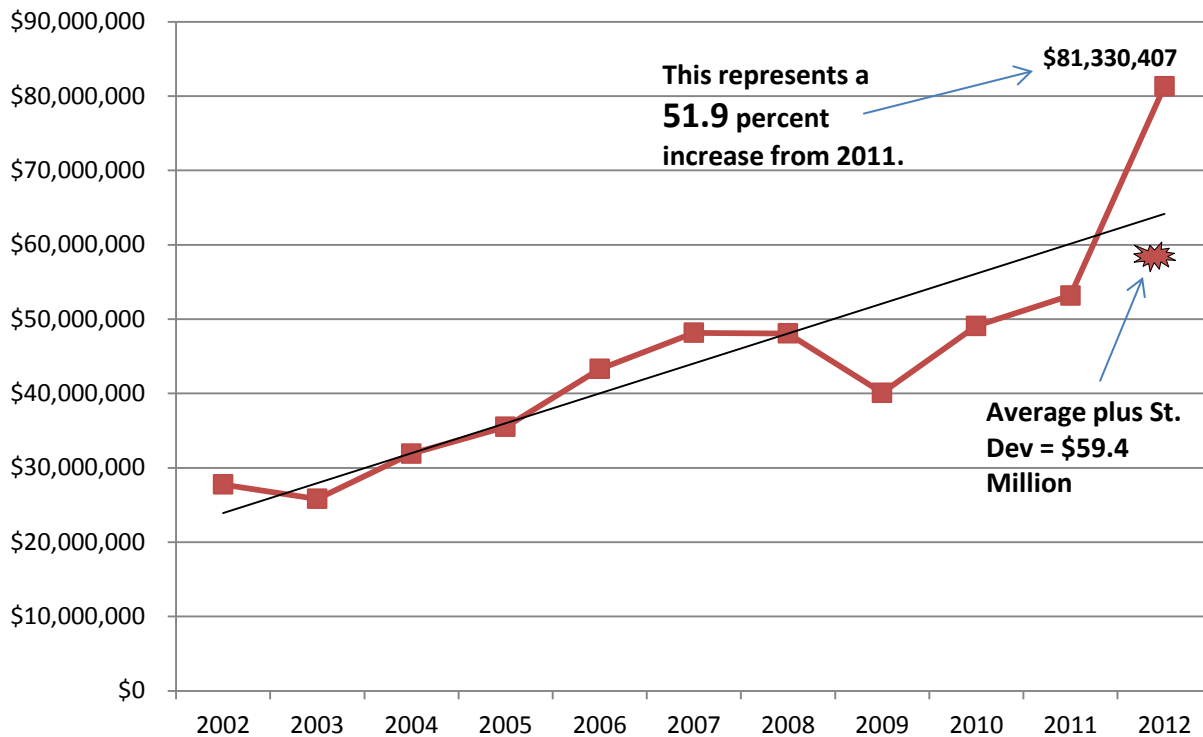
Source: Texas Comptroller of Public Accounts.

The graph above shows that HOT taxable receipts for the month of November have never been higher than they were in 2012. **Also, the over-the-year increase in taxable sales from 2011 to 2012, 51.9 percent, was more than twice as large as any other previous over-the-year increase in this time series.** The graph also illustrates the average taxable sales plus the observed variances from the average (standard deviation) are in line with the trend but far below actual taxable sales for November 2012.

The average monthly HOT taxable receipts for these counties from January 2002 to December 2012 were $45,342,157 with a standard deviation of $14,299,683. The average taxable receipts plus the standard deviation is $59,641,841, which is $21,688,566 less than the actual receipts for the month when the event occurred. When the state tax rate is applied, this would amount to $1,301,314 in additional HOT revenues to the state.

Considering only November HOT receipts for the five-county event market area from 2002 to 2012, the average amount subject to state tax was $44,021,949 with a standard deviation of $15,381,184. The average taxable receipts plus the standard deviation is $59,403,133, which is $21,927,274 less than actual receipts during the month when the event occurred. This would represent additional tax revenue of $1,315,636 during this period.

However, this methodology significantly undercounts the revenue due to the event, as these amounts represent the HOT tax over previous collections. Occupants for the event displaced other potential occupants who would have stayed in area hotels had the event not occurred (at lower rates, generating lower taxes). The majority of these potential visitors were likely displaced only temporarily, and will likely stay at an area hotel at some other time as a "replacement" stay.

To more reasonably estimate the HOT tax due to the event, this analysis estimated the HOT tax revenue due to the event by estimating the number of out of state attendees, and then arrive at a HOT revenue estimate based on rates, length of stay, and visitors per room. Based on 66,000 out-of-state visitors, with an average of 4.0 nights at $311 per night (using an assumption of 2.39 people/room), total room revenue due to out of state visitors equates to $34,353,137 million in taxable sales. These sales would lead to an additional $2,061,188 in state taxes due to ticketed fans. Teams, staff, media and non-ticketed attendees would increase this number by another $791,781, for a total of **$2,852,969**. This is lower than the initial estimate and is reasonable considering the fact that out-of-state attendance was lower than originally estimated.

Tax Type	Initial Estimate	Post-Event Estimate
HOT	$3,593,588	$2,852,969

Monthly Mixed Beverage Taxable Receipts for Bastrop, Caldwell, Hays, Travis and Williamson Counties

$7,842,808
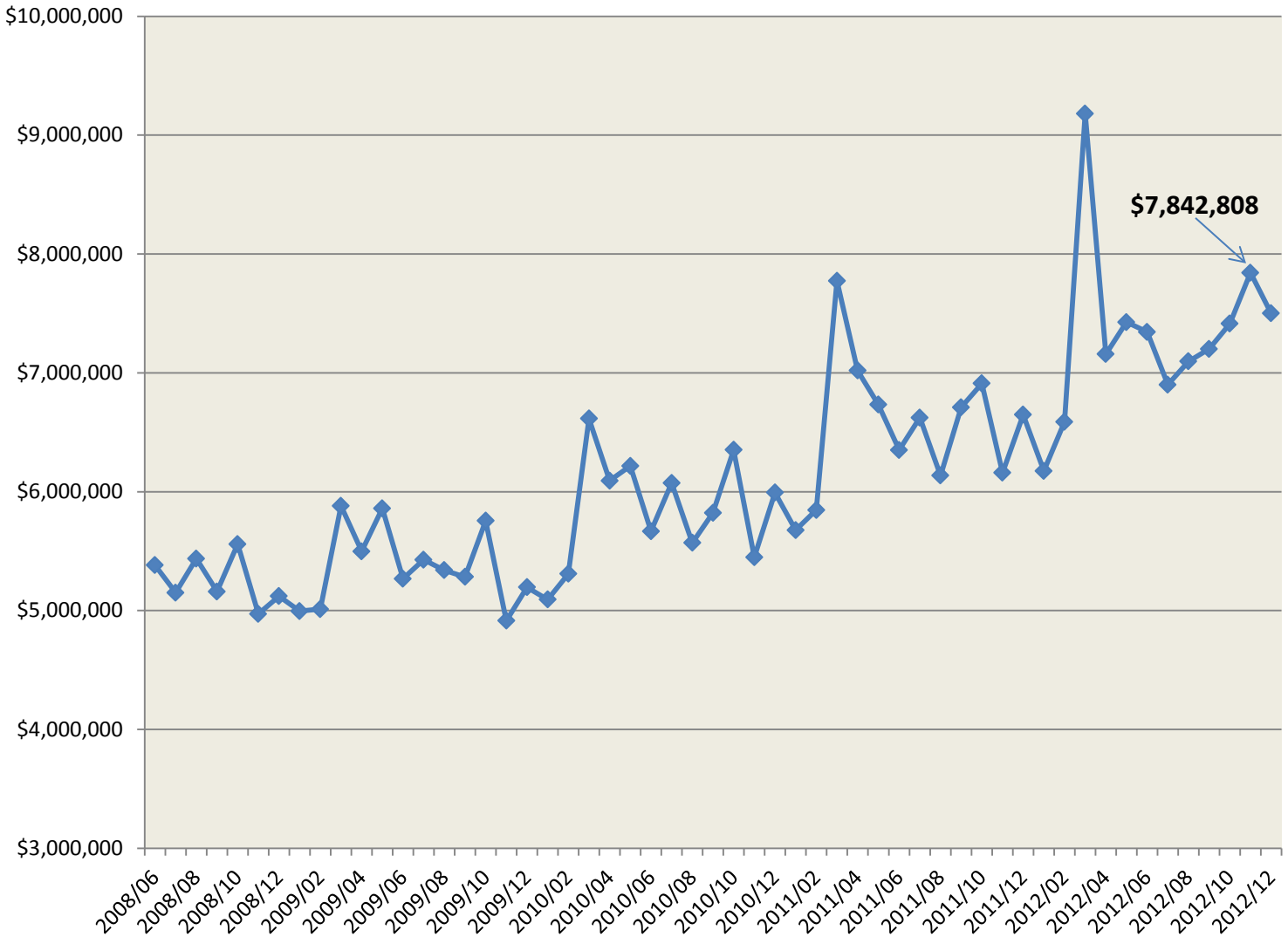
Source: Texas Comptroller of Public Accounts.

This graph includes historical mixed beverage taxable receipt amounts by calendar month. The monthly mixed beverage taxable amounts correspond to the month in which they were distributed.

By law, all mixed beverage and private club permit holders are required to remit to the State Comptroller a 14% gross receipts tax on their mixed beverage sales each month. Following the end of each calendar quarter, a portion of the tax paid is allocated to the county where each

business is located. For any business located within an incorporated city, an equal portion of the tax paid is allocated to the city where it is located. The remaining tax is distributed to the State's General Revenue Fund. Prior to the October 2011 allocation 10.7143% of the tax paid was allocated to the counties and cities as indicated above. Beginning October 2011 the allocation was reduced to 8.3065%. While this change impacts the analysis, it was not deemed to be a material amount based on the percentage of the estimate that was attributed to the mixed beverage tax.

The average mixed beverage taxable receipts for this area, from January 2002 to December 2012, were $4,917,613 with a standard deviation of $1,317,409. The average taxable receipts plus the standard deviation is $6,235,021, which is $1,607,786 less than receipts during the month when the event occurred. By applying the state tax rate, it could be estimated that the state could have received an additional $1,286,229 in tax revenues.

The second method of analysis considered mixed beverage receipts for the event market area for the month of November from 2002 to 2012. The average receipts subject to tax, which are 14 percent of gross receipts, were $4,735,351 with a standard deviation of $1,398,566. The average taxable receipts plus the standard deviation is $6,133,917 which is $1,708,890 less than receipts during the month when the event occurred ($7,842,808). The state gets roughly between 79 percent (prior to October 2011) and 83 percent (after October 2011) of taxable receipts, or roughly $6,509,530. This represents additional revenue of $1,516,323 during the time of the event.

From 2002 to 2012, mixed beverage receipts typically decreased from October to November and then grew again in December. The average decrease in mixed beverage receipts from October to November from 2002 to 2011 was nine percent. Conversely, from November to December, the increase in receipts was an average of seven percent. In 2012, this trend was reversed and November receipts grew by six percent over-the-month, and then declined in December by four percent. **This trend is a strong indicator that there were significantly higher mixed beverage taxable receipts in the event area during November 2012 than what might have been expected.**

Tax Type	Initial Estimate	Post-Event Estimate
Mixed Beverage	$1,214,714	$1,516,323

II E Analysis--Rental Car Tax:

The state of Texas imposes a tax on motor vehicle rentals, but the rate is based on the length of the rental contract. For contracts of 1-30 days, the state rate is 10 percent of gross receipts less discount and separately stated fees for insurance, fuel, and damage assessments.

Unlike the other tax types, rental car tax is not reported to the Comptroller by location address. For example, if a corporate taxpayer has multiple locations in the state, they file one return for all gross rental tax without details by rental location. For this reason, an examination of this tax type by location provides no useful data for these analyses.

In order to provide a complete estimate of direct-spending tax revenue from this tax type, the CPA initial estimate number was used for this post-event analysis.

Tax Type	Initial Estimate
Rental Car	$838,309

II F Analysis--Title V Alcoholic Beverage Code Tax:

The state of Texas also imposes a tax on the amount of alcohol that manufacturers or wholesale distributors sell to retail establishments. The tax rate varies by class of alcohol or rather on the amount of alcoholic content per gallon. Distilled spirits are taxed at the highest rate at $2.40 per gallon, while beer that is 4% and lower is taxed at $0.193548 per gallon.

While wholesalers are not reporting wholesale alcohol sales by location, they do submit how much volume they sold to retail establishments. Determining how much volume each retail establishment in the event market area purchased for each class of alcohol, then deriving how much tax was paid based on the volume and class would be extensive. Therefore, given the amount of state revenue that is derived from this tax type (about one-half of one-percent of the total of all taxes collected for this analysis) comparative to the other tax types, for the purpose of this analysis, the initial estimate was used.

Tax Type	Initial Estimate
Title V ABC Tax	$73,619

IV.   **Conclusion**

The Comptroller estimate prior to the event was **$25,284,469**, including $**14,619,925** in direct taxes, and $**10,664,544** in non-direct.

Comptroller data suggest that the event market area experienced increased economic activity during the event. The precise state share of this increased economic activity due to out-of-state consumption is unknown given the inability of available data to identify the amount contributed directly from out-of-state visitors, but this analysis of post event tax data compares favorably with the pre-event estimate. For the period in question in 2012, figures for all measureable tax types went up significantly. **This office concludes that the initial estimate of direct, indirect, and induced tax impact of $25,284,469 is reasonable based on the tax increases that occurred in the market area during the period in which the 2012 F1 USGP event occurred.**

APPENDIX A

The tables below show the various tax types and the additional revenue amount estimates.

Initial Analysis (Pre-event) (direct only)		
Tax Type	**State Share of Tax**	**Percent of Total**
1. Sales and Use Tax	$8,899,695	60.87%
2. Hotel Occupancy Tax	$3,593,588	24.58%
3. Rental Car tax	$838,309	5.73%
4. Mixed Beverage Tax	$ 1,214,714	8.31%
5. Title 5, Alcoholic Beverage Code tax	$ 73,619	0.50%
Total	$ **14,619,925**	100%

Post Event Analysis (2002-12)(direct only)		
Tax Type	**State Share of Tax**	**Percent of Total**
1. Sales and Use Tax	$9,715,991	64.79%
2. Hotel Occupancy Tax	$2,852,969	19.02%
3. Rental Car tax*	$838,309	5.59%
4. Mixed Beverage Tax	$1,516,323	10.11%
5. Title 5, Alcoholic Beverage Code tax*	$73,619	0.49%
Total	**$14,997,211**	100%

*Initial estimate used due to how this tax is reported. See "Analysis" section (II E and II F) for further explanation.

Historical averages and standard deviations were calculated and subtracted from 2012 actual figures. The tax rate was then applied to the difference to arrive at the "State Share of Tax" figure.

APPENDIX B

Given the historical amount subject to state tax, is it statistically feasible that the event caused the observed increase in taxable sales? A single sample test of hypothesis was conducted to answer this question. The steps used in conducting these tests for each tax type are as follows:

Sales and Use Tax:

1. Stating the hypothesis:
    a. Null Hypothesis (Ho): The increase in the amount subject to state tax in the event market area during the time of the event is equal to what would have been expected.
    b. Alternative Hypothesis (Ha): The increase in the amount subject to state tax in the event market area during the time of the event is not equal to what would have been expected.

2. Level of Significance (probability of rejecting Ho when it is true): According to Lind, Marchal and Wathen[3], it is traditional to use the following levels of significance for the following types of studies:
    a. 0.1 (10%) for political polling;
    b. 0.05 (5%) for consumer research projects; and
    c. 0.01 (1%) for quality assurance.

   For the purpose of this analysis, we use the 0.01 (1% level) of significance. This means that we want to be 99% confident that the Ho would not be rejected if it is true.

3. Test Statistic: 2-tailed, t-test is used to test for a population mean when the sample size is small.
4. Decision Rule: Reject Ho if the estimated t value (t*) is less than -3.169 or greater than 3.169.
5. Test

Sales and Use Tax	Are observed tax collections statistically probable?	Using Nominal Values
Hypothesis	Null (Ho)	u = $2.2 Billion
	Alternative (Ha)	u not = $2.2 Billion
Level of Significance (Confidence Interval)		0.01 (99%)
Statistical Test = 2-tailed t-test		
Decision Rule	Reject Ho if	t* < -3.169
		t* > 3.169
Estimated t =	t*	5.4062

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[3] Basic Statistics for Business and Economics (5th Edition), McGraw-Hill Irwin.

Action (result)	Reject Ho
Based on the test, the actual collections subject to state tax for the period in question is not statistically probable. This means that the sales and use tax collected for the period is not normally seen given historical data.	

Hotel Occupancy Tax (HOT):

1. Stating the hypothesis:
   a. Null Hypothesis (Ho): The increase in the amount subject to state tax in the event market area during the time of the event is equal to what would have been expected.
   b. Alternative Hypothesis (Ha): The increase in the amount subject to state tax in the event market area during the time of the event is not equal to what would have been expected.

2. Level of Significance (probability of rejecting Ho when it is true): According to Lind, Marchal and Wathen[4], it is traditional to use the following levels of significance for the following types of studies:
   a. 0.1 (10%) for political polling;
   b. 0.05 (5%) for consumer research projects; and
   c. 0.01 (1%) for quality assurance.

   For the purpose of this analysis, we use the 0.01 (1% level) of significance. This means that we want to be 99% confident that the Ho would not be rejected if it is true.

3. Test Statistic: 2-tailed, t-test is used to test for a population mean when the sample size is small.
4. Decision Rule: Reject Ho if the estimated t value (t*) is less than -3.169 or greater than 3.169.
5. Test

Hotel Occupancy Tax (HOT)	Are observed tax collections statistically probable?	Using Nominal Values
Hypothesis	Null (Ho)	u = $81.3 Million
	Alternative (Ha)	u not = $81.3 Million
Level of Significance (Confidence Interval)		0.01 (99%)
Statistical Test = 2-tailed t-test		
Decision Rule	Reject Ho if	t* < -3.169

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[4] Basic Statistics for Business and Economics (5th Edition), McGraw-Hill Irwin.

		t* > 3.169
Estimated t =	t*	8.0448
Action (result)		Reject Ho
Based on the test, the actual collections subject to state tax for the period in question is not statistically probable. This means that the hotel occupancy tax collected for the period is not normally seen given historical data.		

Mixed Beverage Tax:

1. Stating the hypothesis:
    a. Null Hypothesis (Ho): The increase in the state share of gross receipts in the event market area during the time of the event is equal to what would have been expected.
    b. Alternative Hypothesis (Ha): The increase in the state share of gross receipts in the event market area during the time of the event is not equal to what would have been expected.

2. Level of Significance (probability of rejecting Ho when it is true): According to Lind, Marchal and Wathen[5], it is traditional to use the following levels of significance for the following types of studies:
    a. 0.1 (10%) for political polling;
    b. 0.05 (5%) for consumer research projects; and
    c. 0.01 (1%) for quality assurance.

    For the purpose of this analysis, we use the 0.01 (1% level) of significance. This means that we want to be 99% confident that the Ho would not be rejected if it is true.

3. Test Statistic: 2-tailed, t-test is used to test for a population mean when the sample size is small.
4. Decision Rule: Reject Ho if the estimated t value (t*) is less than -3.169 or greater than 3.169.
5. Test

Mixed Beverage Tax	Are observed tax collections statistically probable?	Using Nominal Values
Hypothesis	Null (Ho)	u = $6.5 Million
	Alternative (Ha)	u not = $6.5 Million
Level of Significance (Confidence Interval)		0.01 (99%)

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[5] Basic Statistics for Business and Economics (5th Edition), McGraw-Hill Irwin.

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Statistical Test = 2-tailed t-test			
Decision Rule		Reject Ho if	t* < -3.169
			t* > 3.169
Estimated t =		t*	7.5028
Action (result)			Reject Ho
Based on the test, the state share of gross receipts for the period in question is not statistically probable. This means that the state share of gross receipts for the mixed beverage tax for the period is not normally seen given historical data.			

Overview of the Local Economy

While the rest of the United States was falling into a recession, the state of Texas was weathering the economic downturn better than most. Buoyed by the oil and gas industry and avoiding the housing crisis made Texas more economically viable than other states. Due in part to these and other factors, Texas experienced solid population growth over the past decade.

From 2000 to 2012, the Texas population grew at an average of roughly two percent per year. By 2012, the Texas and five-county event market area (Bastrop, Caldwell, Hays, Travis and Williamson counties) populations had grown by 24.42 and 45.01 percent, respectively, from their levels in 2000. The graph below illustrates the fact that the Texas and event area populations grew at a steady pace for the past twelve years, but the combined event area population grew 87.5 percent faster than the state as a whole. And, as the populations grew, more working state residents contributed to the Texas and the local economies.

Texas and Five-County Region Indexed Population Growth, 2000 = Base Year
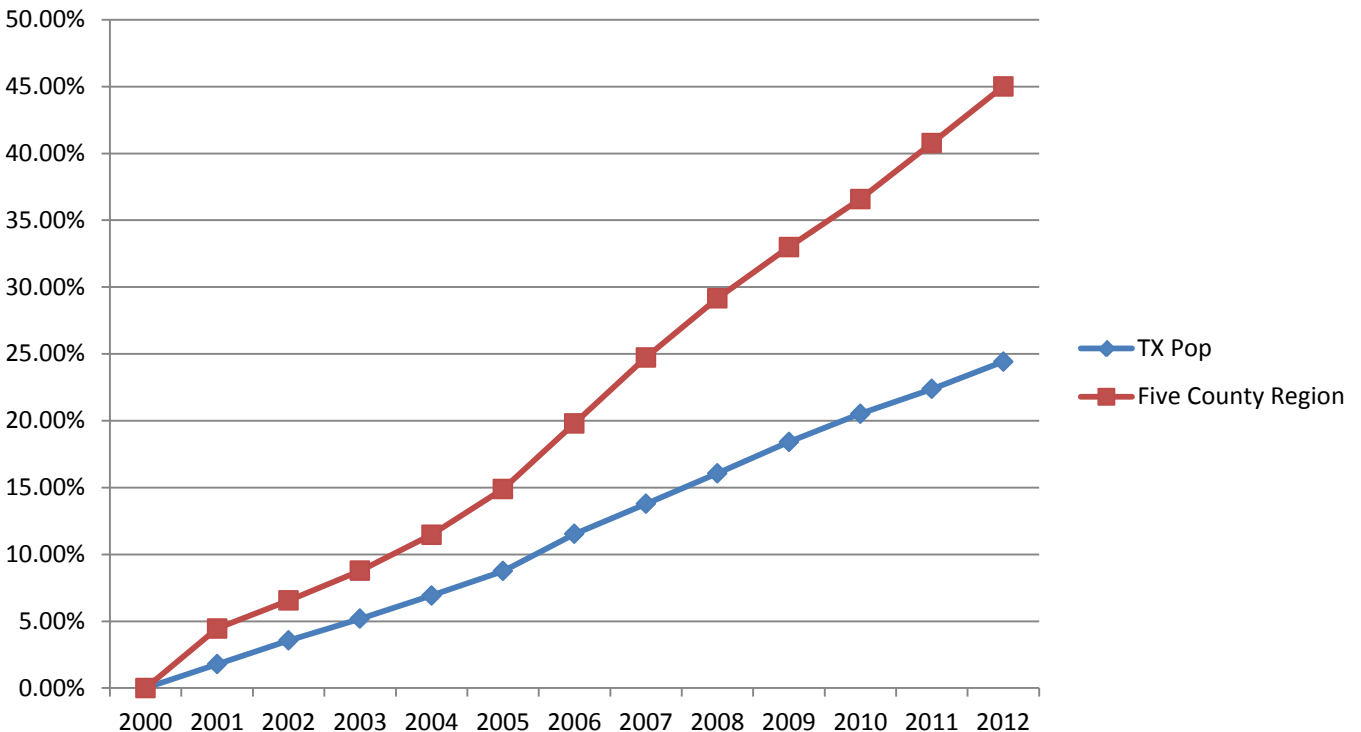

Source: U.S. Census Bureau.

The growing population created an expanding Civilian Labor Force (CLF) and more employed people in Texas and the combined five-county event market area. According to the Texas

Workforce Commission, from 2000 to 2012, the CLF in Texas and the combined event area had grown by 19.76 and 28.52 percent respectively.

The graph below illustrates that the CLF growth rates of Texas and the event market area track fairly close to each other with the CLF in the event market area growing at a faster rate from 2005 forward. From 2002 to 2004, the CLF grew faster statewide than in the combined five-county area, which is the only period during the twelve years after 2000 that this occurred. These growing populations and CLFs provided some additional fuel to the economic engine of Texas.

Texas and the Five-County Region's Civilian Labor Force (CLF) Growth Index, 2000 = Base Year
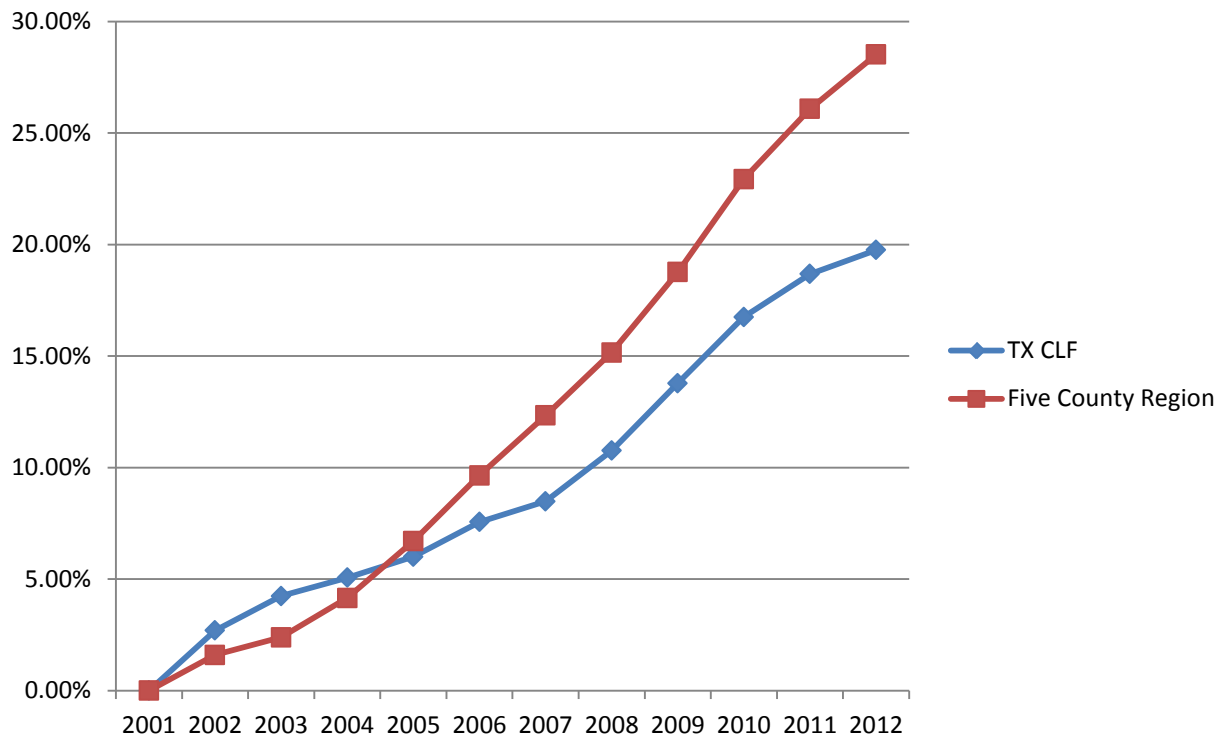

Source: Texas Workforce Commission

One measure of output for a state or local government area is Gross State Product (GSP) or Gross Regional Product (GRP). This is a measure of all of the value added by industries within the geographic area and is a counterpart to Gross Domestic Product (GDP)[6]. As the population increases and more people go to work for various industries, output grows and so does the corresponding measure of GDP.

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[6] For the purposes of this discussion, GSP and GRP will be referred to as GDP for the state and local area.

The graph below illustrates that industry output in Texas and the Austin-Round Rock-San Marcos Metropolitan Statistical Area (MSA)[7] has been on an upward trend for the past decade. While GDP for the state and local area have been tracking similarly, the Austin-Round Rock-San Marcos MSA GDP has been growing at a much faster rate. From 2001 to 2012, growth in this MSA's real GDP outgrew the statewide growth rate by 82 percent. While Texas and the Austin-Round Rock-San Marcos MSA experienced a few years of slower growth in output, overall growth in industrial output over this period has been steady and similar to growth in population and CLF.

Texas and Austin, Round Rock and San Marcos Metropolitan Statistical Area Real GDP (2005 Chained Dollars) Growth Index, 2001 = Base Year
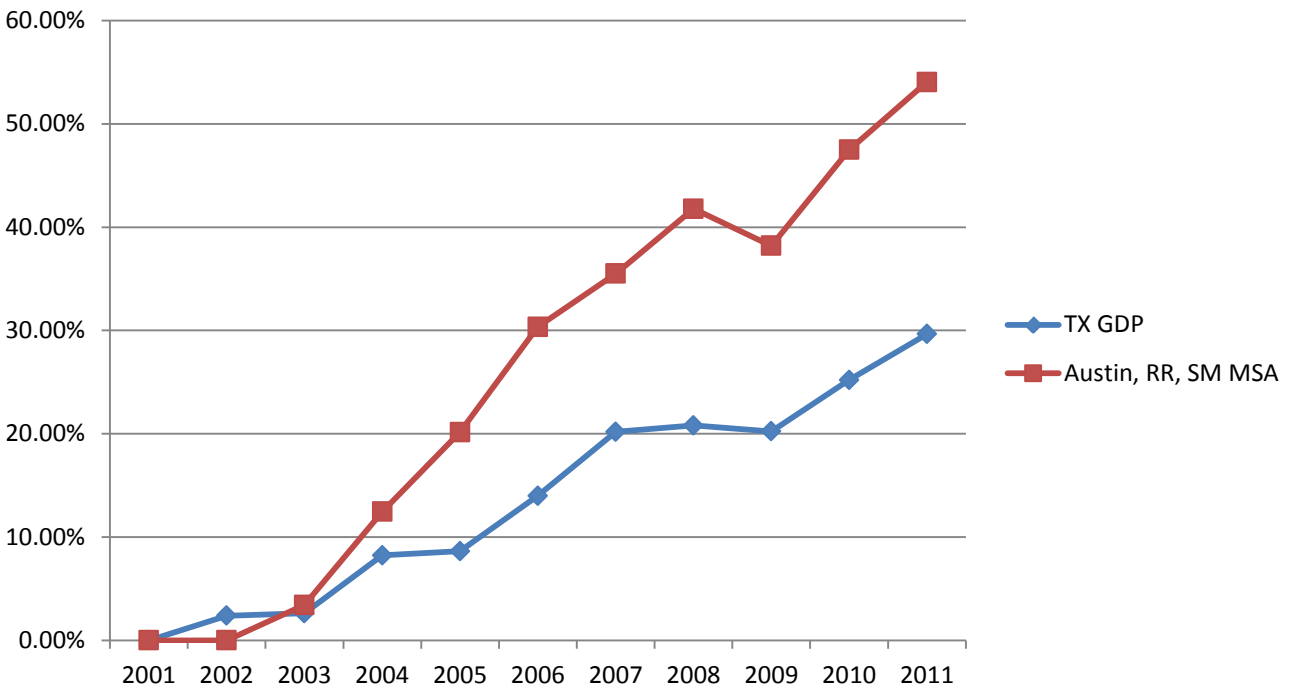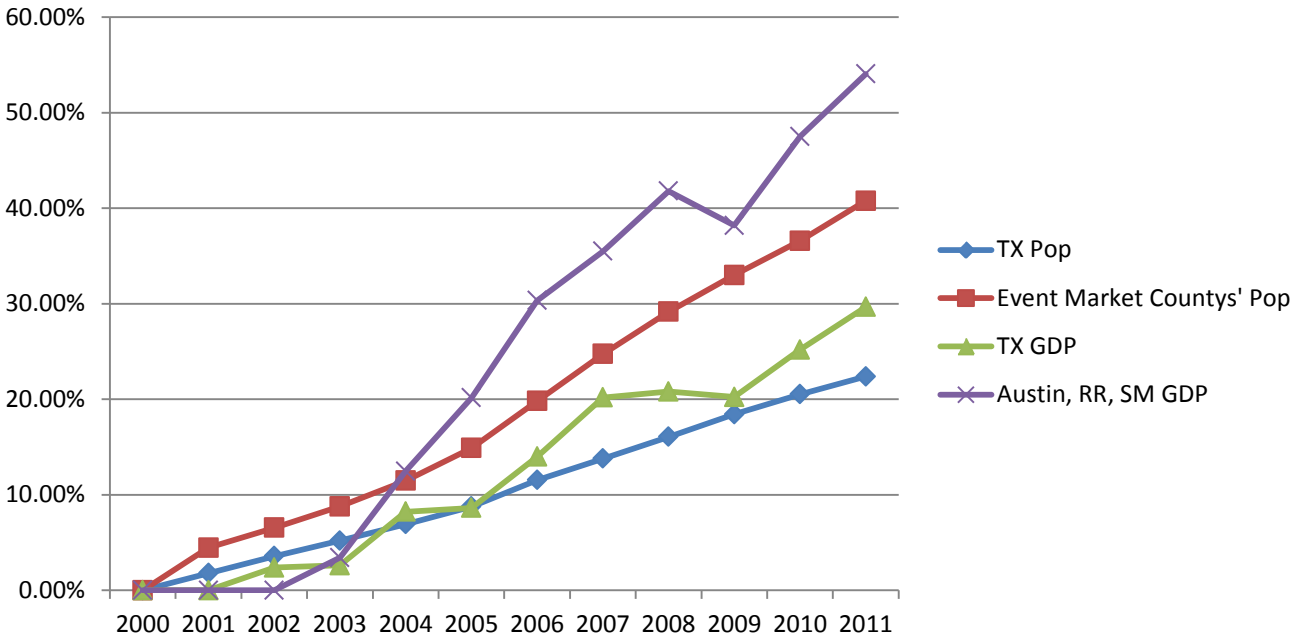

Source: U.S Department of Commerce Bureau of Economic Analysis.

The graph below illustrates that the Texas and the event market area population and GDP grew at similar rates over the past decade. While the population indices show a steady growth over time, the GDP indices reflect the changes that occur in the economy, which is more volatile and dynamic. Also, the diverse economy in Texas is able to weather shocks to one or a few industry

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[7] GDP data are not available by county, thus the closest representation to the event area available is the Austin-Round Rock-San Marcos MSA.

sectors and still remain viable. As one industry sheds workers and productivity, another is often able to employ some of those workers and recover some of the productivity that was lost.

Growth Index for Texas, Event Market Area Counties and Austin, Round Rock and San Marcos MSA for Population and Real GDP (Population base year = 2000; Real GDP base year = 2001

Source: U.S. Census Bureau and the U.S. Department of Commerce Bureau of Economic Analysis.