

2016

# Music Festivals: A Secondary Market Analysis

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## Recommended Citation

Perez, Julian, "Music Festivals: A Secondary Market Analysis" (2016). *CMC Senior Theses*. Paper 1338.  
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Claremont McKenna College

**Music Festivals:  
An Online Secondary Market Analysis**

Submitted to  
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and  
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by  
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for  
Senior Thesis  
Spring 2016  
April 25, 2016



## **Acknowledgments**

I want to thank Professor Richard Burdekin for his guidance throughout the process of writing this thesis. From brainstorming topic ideas over a year ago to helping me analyze data and improve my writing, he has consistently offered me valuable support and assistance. I would also like to thank Professor Yaron Raviv for helping me with my statistical analysis and for expressing so much interest in my topic. In addition, a thank you is also merited to Rachel Doehr for helping me with STATA.

I am also enormously grateful to TicketCity for supplying me with data as I would not have been able carry out this study without it. A special thank you goes to Whitney Roberts, who kindly responded to my initial request for information and ultimately facilitated the data collection process. Finally, my biggest thank you goes to my family for their unconditional support and love over the years in getting me to where I am today.

### Abstract

While the majority of the literature on secondary markets for tickets in the entertainment industry focuses on concerts and sporting events, this study aims to shed light specifically on the music festival resale market. Music festivals have risen in prominence in recent years, particularly among millennials, during the time that the internet has dramatically facilitated the resale of tickets through online marketplaces. With many of the top festivals selling out rapidly, a great deal of music fans turn to secondary markets for tickets. However, very little is known about the behavior of secondary markets for music festivals due to information not being readily available to the public. This study uses demand-side data including transaction prices and quantities acquired from one of the largest online secondary ticket marketplaces to examine market behavior. My findings show that on average, prices decline for music festivals as they approach, but that there are years for certain festivals where this isn't the case. Other results show that markets for festivals with multiple weekends operate differently and that special artist performances such as band reunions can have a significant positive effect on consumer demand. Lastly, the majority of all ticket sales are found to take place in the final 30 days before music festivals transpire.

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## **Introduction**

Rapid sellouts for music festivals are increasingly common. Some of the most well-known festivals like Lollapalooza sellout within hours of tickets going on sale, reflecting a massive demand for tickets that leaves many people empty handed (Marotti, 2015). The live music industry's expansion has been fueled in part by rising attendance at festivals, as 32 million Americans attended at least one of the United States' 800 music festivals in 2014 (Nielsen, 2015). Festivals are most frequented by millennials (age 18-34) which, according to a survey by the research firm Nielsen Music (2016), spend nearly twice as much money on music festivals as the overall population. Music fans are also highly dedicated to attending festivals, as the same report found that the average distance traveled to a festival was 903 miles (Nielsen, 2016).

The evolution of technology has played an instrumental role in contributing to the growth of live music events by allowing consumers to discover more artists. Streaming services are growing rapidly, as the number of streams increased by 93% from only 2014 to 2015 (Nielsen, 2015). Streaming shifts consumer spending away from purchasing albums and exposes them to upcoming bands because they can listen to unlimited amounts of music, which draws more interest to large festival lineups. Social media has also become a large component of festival popularity due to festival attendees eagerly sharing their experiences with friends through their social networks. The economic importance of festivals has also expanded as sponsors funnel millions into branding initiatives, local communities benefit from tourism revenue, artists receive larger

paychecks and fans receive good value for their money in terms of the number of artists they see and stage production quality (Reddy, 2014).

The growth in demand for popular music festivals has led to an active secondary market for tickets. The internet's largest contribution in this regard is that it has made it simple to connect buyers and sellers through digital marketplaces. Individuals resell festival tickets online for a myriad of reasons. Some purchase tickets in the initial sale craze to simply make quick arbitrage profits once tickets sell out, while others sell their tickets because they simply may no longer attend the festival. Regardless of the motives behind a sale, buyers in this market have very little information to go off of. Online marketplaces only display the prices for tickets at the moment customers log onto their websites. Some websites are more progressive, like the ticket aggregator "SeatGeek" that allows users to set price alerts for certain events, but it still is not open access to information that would be helpful when making purchasing decisions.

Due to the differing natures of concerts and music festivals, their resale markets may behave in different manners and this thesis will address this issue. I will first examine the underlying literature for secondary ticket markets in the entertainment industry in order to lay a theoretical framework from which to approach the festival ticket secondary market. Next, an overview of the data and discussion of price trends will follow. Finally, a regression analysis will test for variables that may be influencing prices in order to predict price trends we may expect in future years.



## Literature Review

### A. The Market

Before diving into the secondary market, it will be helpful to understand how concert tickets are sold in the music business. Artists are represented by agents, who negotiate with promoters and venues to coordinate performances. Artists oftentimes include ticket prices in their negotiation with promoters, who also handle marketing and general logistics for the events.<sup>1</sup> In the case of music festivals, tickets are priced solely by festival promoters and artists have no influence on prices. Tickets are then sold through online ticket agencies such as Ticketmaster, and this is what is officially known as the “primary market.” Sometimes, tickets are withheld for managers, news media, record companies or fan clubs for exclusive sales or giveaways. Ticket agencies merely act as mediums that facilitate a transaction and exert no influence on pricing decisions.

The “secondary market” refers to all transactions involving a ticket after its sale in the primary market and is supplied by consumers, brokers and scalpers. Brokers are a more sophisticated version of scalpers that operate as businesses, buying large amounts of tickets with the sole intent of reselling them for a profit. Before the widespread use of the internet, brokers would hire people with credit cards to buy tickets over the phone or have them stand in line to buy tickets at booths. Scalpers still operate without a license on a much smaller scale, usually selling tickets outside the events themselves on the day-of the performance. Lastly, consumers sell tickets because their circumstances change and they may no longer be able to attend an event. It’s possible for them to end up making a

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<sup>1</sup> See Courty (2000) and Krueger (2004) for a more thorough overview.

profit on the sale depending on the market conditions, but they do not make the initial purchase with aspirations for profit; otherwise, they would be scalpers.

More recently, the secondary market was revolutionized and grew dramatically in scale due to the internet (Bhave & Budish, 2014). Websites such as eBay, Vivid Seats and StubHub are leading online marketplaces where individuals can list their tickets for sale. These developments have made the secondary market extremely open to the public and easily accessible to anyone after a quick search. Online ticket marketplaces provide their services in exchange for a percentage of ticket sales. This evolution in the market has eliminated the need for brokers to spend money on marketing and has instead shifted this job to the marketplaces themselves.

Overall, the internet has decreased the costs of acquiring tickets in the primary market and selling them in the secondary market. The obvious benefit of resale is that it allows fans to easily sell tickets if a conflict prevents them from attending the event. The unintended effect is that resale has exacerbated rent seeking by speculators and brokers who now enjoy economies of scale and no longer face the geographical boundaries and labor requirements of resale in the pre-internet era (Bhave & Budish, 2014). Estimates in 2011 by Ticketmaster state that 20% of all tickets bought in the primary market are later sold in the secondary market. A report from an e-commerce research company named Forrester Research by Mulpuru, Hult and Johnson (2007) estimated the secondary market to be worth \$4.5bn by 2012, experiencing an annual average growth rate of 12% from 2008-2012.

While extensive literature on primary ticket markets currently exists, the same cannot be said for secondary markets. Most of the research focuses on tickets for sporting

events, with some looking at concerts and none so far, to the best of my knowledge, focusing solely on music festivals. A reason behind the lack of research stems from the difficulties of measuring the secondary market because of its informal nature. A last-minute ticket sale from one person to a friend, or by scalpers that stand outside of venues the day-of concerts, for example, would leave no trace anywhere. Before the rise of online ticket marketplaces, the only real way to attain information on the secondary market was to stand outside a concert and interview people about where they got their tickets. One study by Krueger (2004) in fact did this very thing. Yet this method would be too taxing and limited in amassing significant data, and fortunately, isn't necessary anymore.

Now that major online marketplaces sell thousands of tickets per day, electronic records of these transactions are created and stored, which can provide researchers with crucial data to analyze. This transaction information is not open to the public and consumers, but has been released to certain academics and government entities for research. But first, let us examine why secondary markets exist at all.

### **B. Underpricing**

The secondary market is a perplexing phenomenon to classical economists because it indicates that tickets are not being sold at the market clearing level. If promoters notice over time that shows for a certain performer consistently sell out quickly and many tickets are later resold above face-value, why don't they raise prices? After all, scalping in the secondary market does not benefit artists, promoters or venues; that extra money flows from fans to independent third parties. The CEO of Ticketmaster, Terry Barnes, recently stated that "we're in an industry that prices its product worse than

anybody else" (Smith & Silver, 2006). Yet, the literature shows that there may be other motives and long term strategies behind ticket prices other than single-event profit maximization by promoters and artists, which leads to ticket underpricing.

A social component is likely to play a significant role in the underpricing of tickets. When looking at the food industry, the Nobel Prize winner Gary Becker argued that popular restaurants don't raise prices even when lines are long because customers place a higher value on a good or service they feel is highly sought after. In addition, the very nature of eating at a restaurant is a social event, which in turn signifies that customer demand is positively correlated (Becker, 1991). These principles may well apply to music festivals and concerts, since a music event's experience and consequently value is enhanced by a fuller crowd, and decreased if the floor is empty (Courty, 2003).

Courty (2000) also notes that a common motive for underpricing is that it guarantees a sellout, which has an added positive value for marketing purposes. Other studies have found that the underpricing of IPO's leads to larger media attention, news coverage and website traffic, which is consistent with this theory (Demers & Lewellen, 2003; Bradley, Kim & Krigman, 2015). Most festivals offer "Early Bird" tickets which are sold ahead of the general sale at a discounted price. These tickets sell out close to a hundred percent of the time within hours of going on sale, and undoubtedly lead to media coverage they otherwise would not have received at that point in time. Lastly, Bernoulli's hypothesis implies that tickets will tend to be set below the market clearing price due to the higher value connected to avoiding a loss over attaining a gain (Europe Economics, 2009). The uncertainty over sales leads to an inclination to underprice rather than risk

overpricing and undergoing its potentially disastrous effects, since festivals need to cover a very high base of fixed costs (Courty, 2003).

The sale of complementary goods may also be factored into ticket prices as part of a profit maximization strategy, leading to the perception that they are mistakenly underpriced. Krueger (2004) hypothesizes that artists were incentivized to underprice tickets because a larger audience would translate into more record sales, leading to higher profits over time. However, he states that due to the internet, consumers can now gain access to music without purchasing records, diminishing the strength of this link. Without considering record sales though, the complement theory may still hold ground as it relates to the sale of food, beverages and merchandise. In an analysis of ticket pricing for the major American basketball, football, baseball, and hockey leagues, Krautmann and Berri (2007) found that owners routinely priced tickets in the inelastic range of demand. When marginal costs were close to zero, lower ticket prices, discounted by as much as 56% for baseball, were revenue-maximizing due to non-ticket revenues increasing significantly. This may be the case as well for major festivals, since the majority span across three days and profit largely off of sales of these types of complementary goods, justifying lower ticket prices. In addition, they have high fixed costs and very low marginal costs—factors which are consistent with this theory.

Although it may not be initially apparent, underpricing tickets may also achieve profit maximizing goals in the long-run. Krueger (2004) explains that for experience goods, the price of the goods is a key part of the experience and important for customer satisfaction. A music festival is concerned about the longevity of its business and aims to fulfill its audience by not exploiting them, in turn assuring that they will return for

subsequent years. This makes intuitive sense as charging market clearing prices may result in resentment by consumers and a deterring factor for future attendance. Europe Economics (2009) explains that underpricing is “optimal if it fosters customers’ loyalty and helps to guarantee a stream of future revenues” (p. 9). The long run view is especially important for music festivals because they occur on a yearly basis and foster a predictable, ongoing relationship with consumers, unlike individual artists that may not go on tour every year.

Following the theme of long term profits, perhaps the most important consideration of all surrounding underpricing is an underlying agreement of fairness between consumers and suppliers. Central to this is that fans of sports teams and music artists do not act like rational agents. In a free market, fairness should be a meaningless factor in determining prices, yet music fans hold suppliers up to their expectations of fairness (Krueger, 2001). In popular music, non-traditional economic concerns and emotion are large factors and these social elements must be taken into account (Krueger & Connolly, 2006). The emotional component causes consumers to view music festivals through the lens of a meaningful social event, not a simple economic transaction, which leads them to expect fairness on behalf of the supplier.

In a recent study exploring the effects of attending music festivals, Ballantyne & Packer (2014) found that engagement at festivals provides a medium for people to “connect with the arts and so discover a sense of identity, meaning and social integration” (p. 66). They also found that festivals provide an escape from everyday life which can make attendees view life differently and expand their openness to positive influences. Due to the highly personal, positive aspects of festivals and music’s inherent emotional

connection to people, it is understandable why consumers for music festivals do not behave as rational agents.

In terms of how fairness translates to prices, Kahneman, Knetsch, and Thaler (1986) found that customers place major importance on being treated fairly and the market clearing price may indeed feel unfair to many. Additionally, consumers only found it fair to raise prices when an increase in costs was incurred, but not because of excess demand or monopoly power. A prime example of these findings is the case of Ultra Music Festival (UMF), one of the leading electronic music festivals in North America.

In 2014, UMF suddenly raised its General Admission ticket price to an all-time high of \$399 (approx. \$500 after fees and shipping) from 2013's cost of \$299 (approx. \$375 after fees and shipping.) This price hike caused outrage in the electronic music community and even led to the launch of the Facebook campaign "Boycott Ultra Music Festival" by over 6,000 fans (Pajot, 2014). That year, tickets did not sell out until the last day before the festival began, an extremely rare occurrence, and the Ultra brand suffered heavy criticism from its longtime supporters. The following year, Ultra responded through an official statement announcing that "For the first time in its history, and as a thank you to its loyal legion of fans, Ultra Music Festival is reducing the price of General Admission tickets" (Sachs, 2014). Prices were reduced by approximately \$50 to a price of \$449.95 inclusive of fees. This example clearly demonstrates the influence consumers can exert on festival organizers and is consistent with the literature on the value placed on fairness.

It is also clear that fairness does not only exist because of expectations and enormous pressure from fans, but from artists' legitimate desires to be fair to their fans. One example is Bruce Springsteen, who consistently sells tickets for far below their market value as evidenced by rapid tour sellouts reflecting excess demand (Krueger, 2004). The massively popular folk rock band Mumford and Sons, in a recent outcry against ticket scalping, stated that "we've worked so hard over the years to keep our ticket prices reasonable – we want all of our fans to be able to come to our shows" and "we want fans of the band to be able to get into our shows for the right price, to feel that they've got value for money" (Marshall, Mumford, Dwayne, Lovett, & Tudhope, 2015). Although festival organizers do not represent specific artists, they undoubtedly have similar intentions aligned with treating fans fairly. One piece of evidence is the fact that festivals such as Coachella and Austin City Limits have recently grown their events to cover two weekends instead of just one in an effort to gain profits by increasing supply rather than by raising prices. There is no doubt that the underpricing of tickets is a complex matter and is an important element to incorporate in the analysis of the secondary market.

### **C. Social Welfare**

From a purely theoretical standpoint, the secondary market serves a positive function for society because it allows for a more efficient allocation of tickets from low to high value consumers (Leslie & Sorensen, 2013). Even if a ticket is sold for much more than face value, both parties' wellbeing must be improved as a transaction between two willing parties would not have taken place otherwise (Europe Economics, 2009). The secondary market corrects for inefficiencies in the primary market and in doing so, raises



the overall social welfare. Online intermediaries play a very important role because they greatly reduce the transaction costs of time spent searching for a buyer and determining the proper market value.

In practice, this theory may not necessarily be the whole story. Leslie & Sorensen's (2013) study matched ticket sale data they received from Ticketmaster to sales on the leading online marketplaces eBay and StubHub for 56 rock concerts. They created a model where consumers and brokers' expectations of the secondary market were reflected in their decisions in the primary market. They found that under conditions of frictionless resale, ticket resellers enjoyed a significant increase in surplus, whereas the average surplus of concertgoers decreased by 17%. The aggregate surplus did increase, which theoretically is a positive outcome, but "the biggest losers from resale are the consumers who actually attend the event" (p. 269). Surplus improved for primary market sellers because the presence of brokers led to more sales on average, but the question remains of whether promoters care more about this extra surplus for personal gain, or instead transferring it to consumers, which is being undermined by brokers.

A primary motive behind these findings may lie in the fixed price market design of tickets. Krueger (2001) characterizes it as inefficient because tickets don't go to the highest value customers, taxes can be evaded by sellers and the risk of counterfeit tickets is high. He suggests an open auction online as the solution to these problems, with the added benefit of establishing a market price for legitimate tickets. The auction would ensure that tickets go to those willing to pay the most, and therefore allowing for the most efficient distribution of tickets.

Several years later, Bhave & Budish (2014) conducted a study that looked at the effect of auction based ticket sale design for the music industry. Ticketmaster in fact offers its customers the option to sell tickets through auctions, but only a small percentage of the best seats tend to be chosen for auction sale by clients, if any at all. Bhave & Budish used data on tickets that were sold by auction for 22 concert tours and matched them to sales for nearly identical tickets on eBay. Their study had two major findings: performer revenue approximately doubled under auction sales and arbitrage profits from underpricing disappeared, leading to an almost entire reduction in resale profits for brokers. They concluded that “bad market design can induce socially wasteful rent-seeking behavior on the way to the ultimate allocation” (p. 19).

#### **D. Market Trends**

At the moment, there are not any significant data available for consumers to make informed decisions in the secondary market. When customers access online marketplaces such as StubHub or Viagogo, they can only see current prices and how many tickets are for sale. They have no way of seeing the recent movement in prices or what trends have been in previous years on similar dates. The only way they can track this information is by logging into these marketplaces every day and recording the listed prices, which is highly unlikely to be feasible for most consumers. Important questions, such as when is the best time to purchase tickets for an event is, remain largely unanswered. However, some of the literature may shed light on general trends we may expect in the market.

Sweeting (2008) analyzed the resale market for Major League Baseball games and found that prices fell substantially as games approached. He attributes this tendency to the fact that tickets are perishable goods and as theoretical models would predict,

sellers lower prices over time because future sale opportunities shrink. Sweeting also noted that a portion of buyers purchased tickets long before the event date even though they knew prices would fall, indicating a level of risk aversion or higher valuation for some. The tendency for prices to fall over time, the declining price anomaly, has also been found in studies on auctions for wine and art (Ashenfelter, 1989). Sweeting's (2008) findings differed from studies in other markets such as the airline industry, where prices tend to increase as the flight approaches. The key difference between these markets is that tickets for airlines can't be resold. Therefore, airline companies are able to capture the extra rent from consumers that become aware of their demand later on, unlike music festival promoters (Courty, 2003).

Courty (2003) presents a model for the market where there are two types of consumers. The first purchase tickets very early on, while the others have to wait until closer to the event to find out if they will be able to attend it. In equilibrium, brokers purchase tickets in the primary market early on and sell them later to the second type of customer. The second type of consumers realize their demand closer to the date, and therefore pay a higher price since they value the ticket more. However, when Krueger (2004) surveyed fans at a Bruce Springsteen concert, he found that the prices did not increase as the concert approached as Courty's model would've predicted—instead they fell. Another inconsistency with Courty's model was found by the consultancy firm Europe Economics (2009) when they surveyed a group of online ticket marketplaces. Multiple respondents indicated that secondary market sales close to the primary sale date were likely to be by professional resellers, while later sales were mostly consumer driven.

While Courty's model has not been consistent with other findings, it is possible that it may hold for the music festival market. Most major festivals span out over three days which requires a higher level of commitment, planning and likely time off work in comparison to attending a concert, for example. In addition, many festivals are not located in major cities, requiring attendees to find lodging nearby or camp on-site if available. Therefore, it is feasible that many people fall into Courty's classification of the second type of consumer because they cannot plan so far in advance, and end up paying more for tickets once they realize their demand. The following analysis in this paper aims to shed light on how these theories apply to the secondary market for festivals.

## **Empirical Analysis**

### **A. Data & Descriptive Statistics**

Data on the secondary market is difficult to come by and not openly accessible to the public. Approximately twenty online marketplaces were contacted with requests for data on music festival ticket sales and all but two declined or did not respond. The marketplace “TickPick” was able to provide data for three festivals, but it was an insufficient amount of data. Fortunately, “TicketCity” was generous enough to grant me access to their ticketing data website, which tracks all sales of tickets on one of the top five online ticket secondary marketplaces. Due to a non-disclosure agreement, the name of the marketplace from where the data originates cannot be disclosed. However, the marketplace can certainly provide a general overview of major trends due to its size and significant presence in the market.

Data for individual transactions were available for three years from 2013-2015, which included the sale date, section, price and quantity of tickets for each transaction. Data were extracted for all of the most popular American music festivals, defined as those having a total sales volume over the time period in excess of \$500,000. Fourteen unique festivals met this condition for being part of the data set and are displayed in Table 1 on the following page. The abbreviations column indicates the name with which festivals will be referred to for the rest of this paper. Table 1 clearly shows that there is a good variety in both locations around the United States and genres represented by these festivals.

Official Name	Abbreviation	Location	Music Genres
Coachella Valley Music and Arts Festival	Coachella	Indio, CA	Rock, Indie, Hip Hop, Electronic
Ultra Music Festival (Miami)	Ultra	Miami, FL	Electronic
Electric Daisy Carnival (Las Vegas)	EDC Vegas	Las Vegas, NV	Electronic
Lollapalooza (Chicago)	--	Chicago, IL	Rock, Pop, Hip Hop, Electronic
Bonnaroo Music and Arts Festival	Bonnaroo	Manchester, TN	Pop, Rock, R&B, Reggae, Hip Hop
Austin City Limits Music Festival	Austin City Limits	Austin, TX	Rock, Indie, Country, Folk, Electronic
Electric Forest Festival	Electric Forest	Rothbury, MI	Electronic
Firefly Music Festival	Firefly	Dover, DE	Rock, Hip Hop, Electronic
Outside Lands Music and Arts Festival	Outside Lands	San Francisco, CA	Indie, Rock, Hip Hop, Electronic
Burning Man	--	Black Rock Desert, NV	Electronic
Sasquatch! Music Festival	Sasquatch	George, WA	Rock, Experimental, Electronic, Hip Hop
Stagecoach Festival	Stagecoach	Indio, CA	Country
Budweiser Made in America Festival	Made in America	Philadelphia, PA	Hip Hop, Indie, Experimental, Pop, R&B
Governors Ball Music Festival	Governors Ball	New York City, NY	Hip Hop, Pop, Electronic, Experimental

Table 1: Description of the festivals in the data set.

## MUSIC FESTIVALS

Tickets for festivals tend to be sold in two categories, General Admission (GA) and the more expensive Very Important Person (VIP) category. While some festivals offer luxury tickets beyond the VIP level, the incidence of their resale was extremely low and they were excluded from the data set. In some cases, transactions took place after a festival began, either after the first or second day of performances. These transactions were also excluded as this study aims to understand the market trends leading up to the event, not during it. A fraction of the festivals sell tickets for individual days which were not included as the majority only offer “3-Day Passes” and will be the focus of this analysis. Note that the festivals Made in America and Burning Man do not offer VIP tickets, and VIP sales for Firefly were under ten in total and therefore not included.

Festival Year	Daily Avg. Price	Standard Deviation	# Tickets Sold	Sales Volume
<b>GA</b>				
2013	\$333	124.4	38,522	\$11,945,375
2014	\$390	178.8	27,684	\$10,333,654
2015	\$393	159.0	43,051	\$15,860,358
<b>GA Average</b>	<b>\$370</b>	<b>154.9</b>	<b>109,257</b>	<b>\$38,139,387</b>
<b>VIP</b>				
2013	\$879	312.1	2,067	\$1,753,089
2014	\$968	396.8	2,214	\$2,185,387
2015	\$909	311.8	2,890	\$2,738,455
<b>VIP Average</b>	<b>\$915</b>	<b>338.8</b>	<b>7,171</b>	<b>\$6,676,931</b>

Table 2: General overview of the by ticket type and year.

The mean of the daily average price for tickets was calculated for each festival by category, which is denoted as the “Daily Avg. Price” in Table 1 above. From this point onwards, the term daily average price refers to the mean of daily average prices. The total number of tickets were recorded and the “Sales Volume” represents the dollar value of all

sales in the given period. “Festival Year” indicates the year in which the festival took place, not necessarily the year in which all tickets were sold. For example, tickets for Coachella’s 2013 edition sold in 2012 would fall under Festival Year 2013, not 2012.

The daily average price rose each year for the GA tickets, peaking at \$393 in 2015. The quantity of GA tickets fell by 28.1% from 2013 to 27,684 in 2014, but then grew to a total of 43,051 tickets in 2015 surpassing 2013’s original quantity. VIP tickets saw growth in the number of ticket sales each year, but 2015 experienced decline in price after increasing from 2013 to 2014. Overall, it is clear that the incidence of VIP sales is significantly lower as they accounted for only 6.2% of all ticket sales, however, they comprised 15% of the total value of sales. This is to be expected as the supply of VIP tickets is significantly smaller than that of GA tickets. Additionally, VIP tickets cost more than twice as much as GA tickets on average, meaning that there is also a smaller consumer base able to afford them.

Philadelphia’s Made in America Festival, at two days in length, is the only one in the fourteen festival data set to not span at least three days. In the case of Coachella and Austin City Limits, both festivals have expanded in recent years to take place over two consecutive weekends. They are treated as separate festivals in the data and are differentiated by being either “Week 1” or “Week 2,” although the face value prices are the same for both weekends. Coachella’s lineup remains the same albeit for the two smallest stages, the Do Lab and Heineken Dome, which do not even have their artists listed on the official lineup. Austin City Limits changes some artists in earlier time slots as well as a few of its headliners between the weekends, but overall, both festivals mirror



each other in most regards between weekends. See Table 2 and Table 3 below for a general overview of GA and VIP tickets by festival.

GA Tickets Festival	Total Sales Volume	Daily Avg. Price	# Tickets Sold
Coachella Week 1	\$6,272,886	\$493	12,680
Lollapalooza	\$5,176,751	\$344	15,408
EDC Vegas	\$3,695,630	\$401	9,093
Outside Lands	\$2,941,904	\$351	8,385
Coachella Week 2	\$2,804,261	\$407	7,876
Burning Man	\$2,682,290	\$745	3,543
Austin City Limits Week 1	\$2,395,148	\$285	8,981
Ultra	\$2,383,911	\$421	5,429
Austin City Limits Week 2	\$2,106,606	\$258	8,356
Governor's Ball	\$1,329,464	\$259	5,245
Stagecoach	\$1,287,398	\$275	4,699
Bonnaroo	\$1,138,161	\$280	4,545
Electric Forest	\$1,129,938	\$373	2,765
Made in America	\$934,098	\$152	5,936
Firefly	\$930,800	\$274	3,815
Sasquatch	\$930,141	\$398	2,501
<b>Grand Total</b>	<b>\$38,139,387</b>	<b>\$357</b>	<b>109,254</b>

Table 3: GA ticket sales overview from 2013-2015 sorted in descending order of sales volume.

Chicago's Lollapalooza ranked first in terms of quantity of GA tickets sold at 15,408, while Coachella Week 1 had the highest total sales volume of \$6,272,886. The daily average price over the three years was highest for Burning Man at \$745, \$252 more than the next highest festival average. Burning Man had a constant face-value price of \$390 over the time period, and therefore its average price exhibits a substantial mark-up. A likely explanation for consumers' willingness to pay such an elevated price is that Burning Man is eight days long, which may lead them to feel that they are still receiving reasonable value for their money. Of the three and four day festivals, Coachella Week 1 had the highest average price at \$493. Without double counting for the festivals that have

two weekends, seven of the fourteen festivals surpassed the \$2,000,000 level for sales volume. The remaining festivals hovered around the \$1,000,000 mark, the highest and lowest being Governors Ball and Sasquatch with sales volumes of \$1,329,464 and \$930,141, respectively.

VIP Tickets Festival	Total Sales Volume	Daily Avg. Price	# Tickets Sold
Coachella Week 1	\$3,153,828	\$1,106	2,774
Coachella Week 2	\$769,221	\$858	1,004
EDC Vegas	\$586,777	\$681	879
Outside Lands	\$451,875	\$793	617
Lollapalooza	\$449,096	\$1,508	309
Ultra	\$407,238	\$1,319	321
Bonnaroo	\$207,824	\$715	286
Electric Forest	\$153,633	\$809	186
Governor's Ball	\$153,535	\$494	316
Stagecoach	\$151,286	\$746	198
Sasquatch	\$88,515	\$642	149
Austin City Limits Week 1	\$57,037	\$901	60
Austin City Limits Week 2	\$47,066	\$710	72
<b>Grand Total</b>	<b>\$6,676,931</b>	<b>\$868</b>	<b>7,171</b>

Table 4: VIP ticket sales overview from 2013-2015 sorted in descending order of sales volume.

In contrast to GA sales, VIP tickets had a substantial gap between the top two festivals with the highest sales volumes. Interestingly, these were the two Coachella weekends, with the first weekend's edition more than quadrupling the volume of the second. Coachella Week 1's total sales volume comprised 47% of the entire sales volume across all the festivals, showing that it dominates the VIP market to a much greater extent than the GA market. Lollapalooza had the highest daily average price at \$1,508, while Governor's Ball had the lowest at \$494. Ultra and Coachella Week 1 were the only other festivals to surpass the \$1,000 level for daily average price. The quantity of overall sales

was particularly low for Austin City Limits with a combined weekend total of 132 VIP tickets, less than the 149 tickets sold for Sasquatch, the next lowest selling festival.

### **B. Observed Trends**

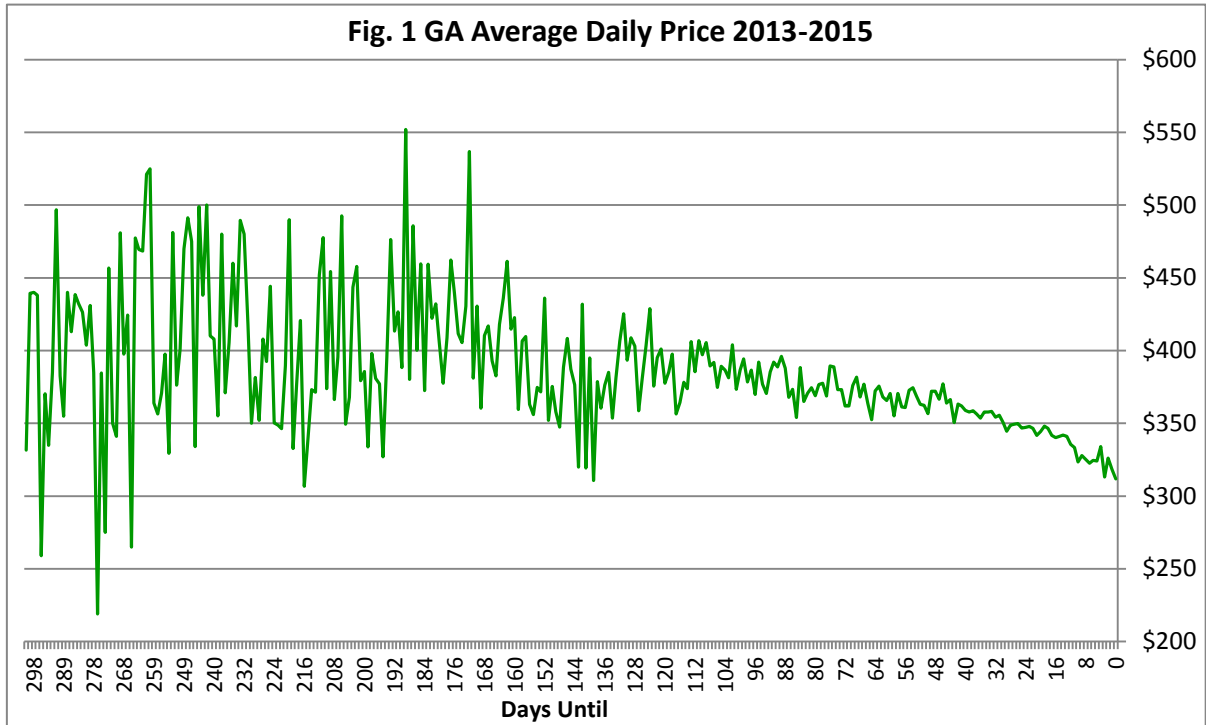
One of the major points of interest of this study is to examine how prices are moving over time. If prices rise for the most part until the day of the event, then it would make sense for consumers to purchase tickets as early as possible. Sweeting (2008) found that prices tended to fall as baseball games approached, whereas Courty's (2003) model would suggest that prices rise as consumers that realize their demand later on enter the market. Without previous access to sales data, consumers solely rely on their own experiences and hearsay in determining the optimal time to purchase tickets. Figure 1 below examines sales price movements across all festivals and years combined.<sup>2</sup> "Days until" is used to track time, which denotes the number of days remaining until the festival takes place. For example, a sale when days until is equal to seven would denote a transaction one week before the event.

A reason why the variation is much larger when days until is higher is because the sale frequency is lower and there are days for which no trades took place for some festivals. These gaps in the data cause the daily average to vary to a greater extent because it is being calculated for fewer average prices, which pulls the overall daily average in the direction of festivals that had sales those days. Additionally, not all festivals conduct their pre-sale and regular sales at the same number of days until their events, which means that there are fewer festivals' prices being averaged the further out we look. At approximately 130 days until, sale frequency starts to grow as most festivals

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<sup>2</sup> Extreme outliers for the last two Days Until for 2014's Coachella Week 1 were excluded in this analysis.

have already held their general sales (raising market supply) and more consumers begin to plan out their attendance, lessening the degree of variation.<sup>3</sup>



There is a slight upward trend in prices from about 300 to 175 days until, which may be due to risk averse consumers that were not able to buy a ticket in the general sale wanting to secure a ticket early on. They may also be willing to pay higher prices for tickets if they need to purchase airfare and hotel accommodations to attend the festival, which will usually be cheaper the earlier they book them. The maximum average price was \$552 at 189 days until, while the minimum was \$219 at 277 days until. At 31, 7 and 1 days until, the average price was \$356, \$323 and \$319, respectively. From about 120 to 30 days until, the average price fluctuated between the \$400 and \$350 range, and fell under \$350 for the remaining days after. One explanation for this movement is that people who were planning on attending the festival have a conflict arise in the one month

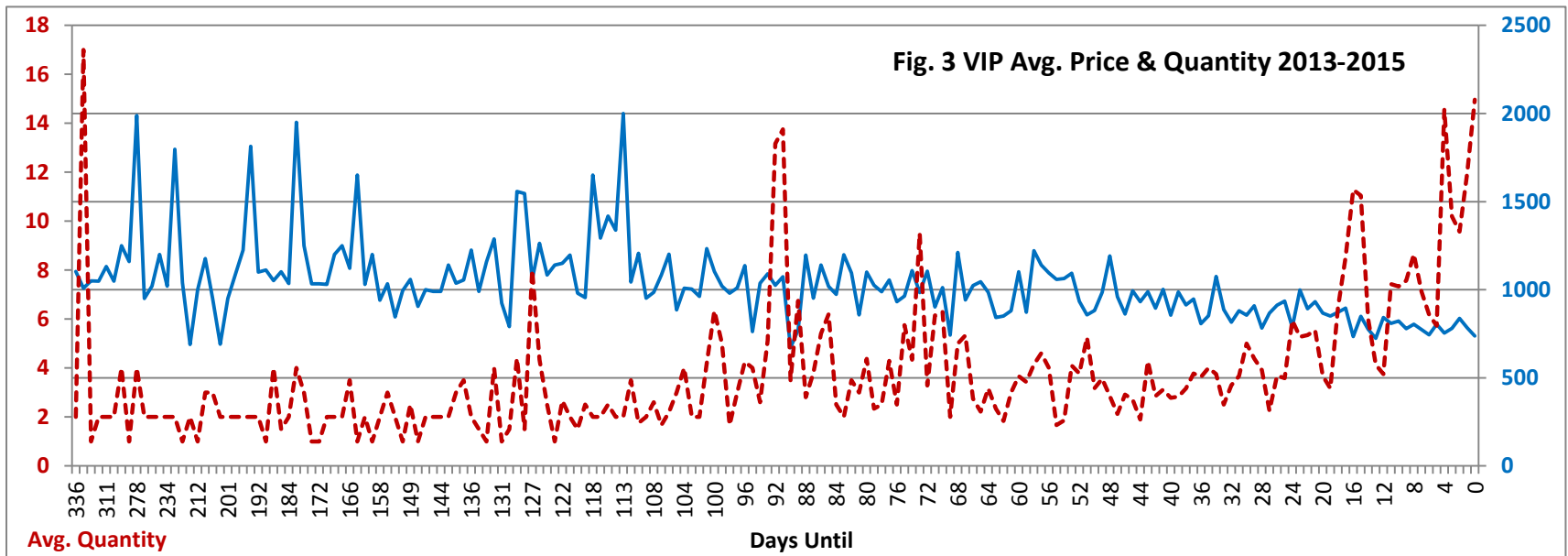
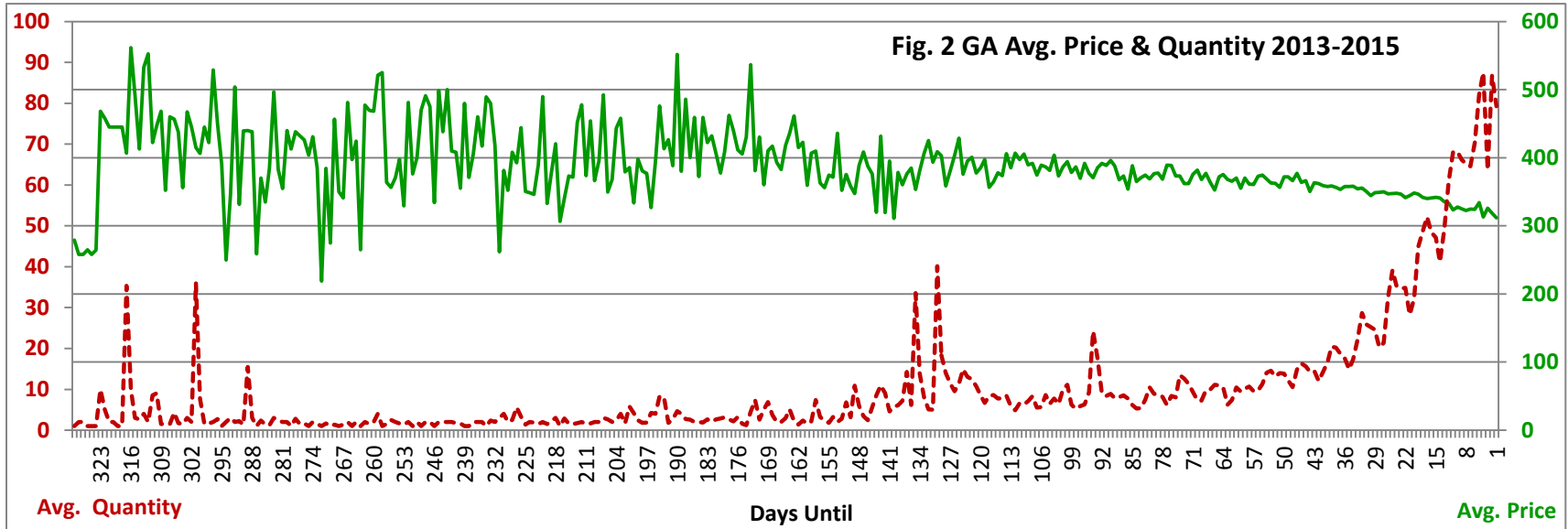
<sup>3</sup> See Figures 1-4 in the Appendix for a GA price trend for each individual festival.

window prior to the event. They end up needing to sell their tickets hastily, but because this occurs simultaneously for many other people, there is a surge in market supply and people are willing to accept lower prices in fear of losing the entire face value of the ticket. On top of this, brokers and individuals who purchased tickets with the sole intent of reselling them for a profit realize that their opportunity to make a sale is dwindling and that ticket prices are falling. Therefore, they also become willing to accept a lower price and decrease the prices of their tickets.

Online marketplaces list tickets on their websites in ascending order by price, and consumers will always purchase the cheapest ticket because there are only two homogenous categories to choose from—GA and VIP. Due to this, it is possible that anxious ticket vendors monitor the market closely in the the final days leading to the event and lower their prices to appear higher on the list of available tickets, creating a downward momentum effect. A major tour concert could possibly experience a different effect leading up to the performance because there are many seating categories which allow for more elaborate price discrimination. A person with a front-row ticket is likely to not be as worried about not selling their ticket for at least face value a week from the event as someone trying to sell the worst seat in the house.

Figure 2 and 3 on the next page plot the average price and quantity of tickets sold together for each type of ticket. Starting at about 60 days until, we see the beginning of a sharp rise in the average sales quantity per day for GA tickets, and it remains above twenty tickets per day for the last 30 days. This trend in sales quantity appears to be consistent with Courty's (2003) model where he states that many consumers realize their demand later on because they find out they can attend the event. The difference between

Figure 2 & 3: The scale for Quantity is on the left vertical axis, and on the right for Avg. Price



Courty's model and these results is that consumers who realize their demand later on do not appear to be paying a premium on average, as his model would have predicted.

Another possible explanation could be that some consumers were planning to attend all along and believed prices would fall as the date approached, which they did, and therefore purchase tickets then. An important caveat to this analysis is that these data reflect only ticket sales and transactions that took place. It does not represent what the average market price for all listed tickets at the time was. It could be that prices are in fact very high during these last few days for the most part, but because some people are nervous about not selling their tickets as mentioned previously, these few price their tickets cheaply relative to the market.

VIP tickets appear to follow a similar downward trend in price as the festivals approach, but the changes in price are much larger in magnitude due to the higher cost of the tickets. At 31, 7 and 1 days until, the prices for VIP tickets were \$880, \$775 and \$821, respectively. From about 15 to 0 days until, VIP prices steadily fluctuated around the \$800 price level. The issue of data gaps due to days with no sales for some festivals is also a likely factor of the larger variation in price when days until is greater, as it was with GA. Another possible factor could be that people who are purchasing VIP tickets have a significantly less elastic demand than those attempting to purchase GA tickets and are not as deterred by elevated ticket prices further from the event. It may not matter to them as much to wait for ticket prices to potentially drop, and they instead purchase them at the price listed at the given day they checked online. For example, GA passes to Coachella in 2015 were \$375, compared to \$899 for VIP. This stark price difference

suggests an important distinction between the GA and VIP demand pools’ disposable incomes and sensitivity to price levels.

**C. Weekend Comparisons**

Coachella and Austin City Limits’ dual weekends present an interesting opportunity for comparison to see if the secondary market acts similarly between the weekends. Because these festivals are almost identical across each weekend aside from a few changes in performers and their dates, we are able to hold most factors constant and make inferences about consumer behavior. If a rational, surplus maximizing consumer is able to attend either weekend, they should attend whichever one is cheaper because they are almost the same good in theory.

An examination of both weekends of Coachella revealed that 2014 was an irregular year for the secondary market. Prices in the last 20 days for Week 1 were extremely high compared to 2013 and 2015, while sales in general were practically non-existent for Week 2 in the last 100 days. Figure 4 below undoubtedly shows how there was an enormous surge in price in the last few days of 2014. A potential explanation for

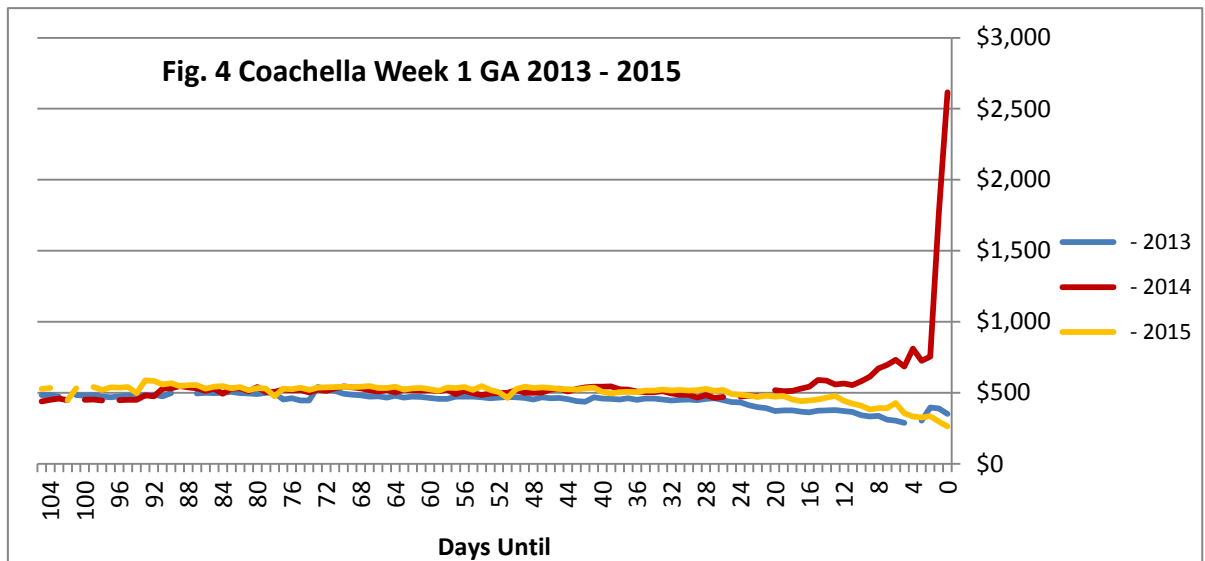


Figure 4: Vertical axis denotes the daily average price.



the elevated price could be that the hip hop duo OutKast was reuniting to perform live for the first time in nearly a decade. Fans may have been willing to pay much higher prices than usual to be the first to see OutKast’s first reunion show. What remains clear is that 2014 was not an ordinary year for Coachella and may not reflect ordinary trends for the festival, which can distort any form of analysis. Therefore, the 2014 edition of both weekends of Coachella were excluded from analysis for the remainder of this section.

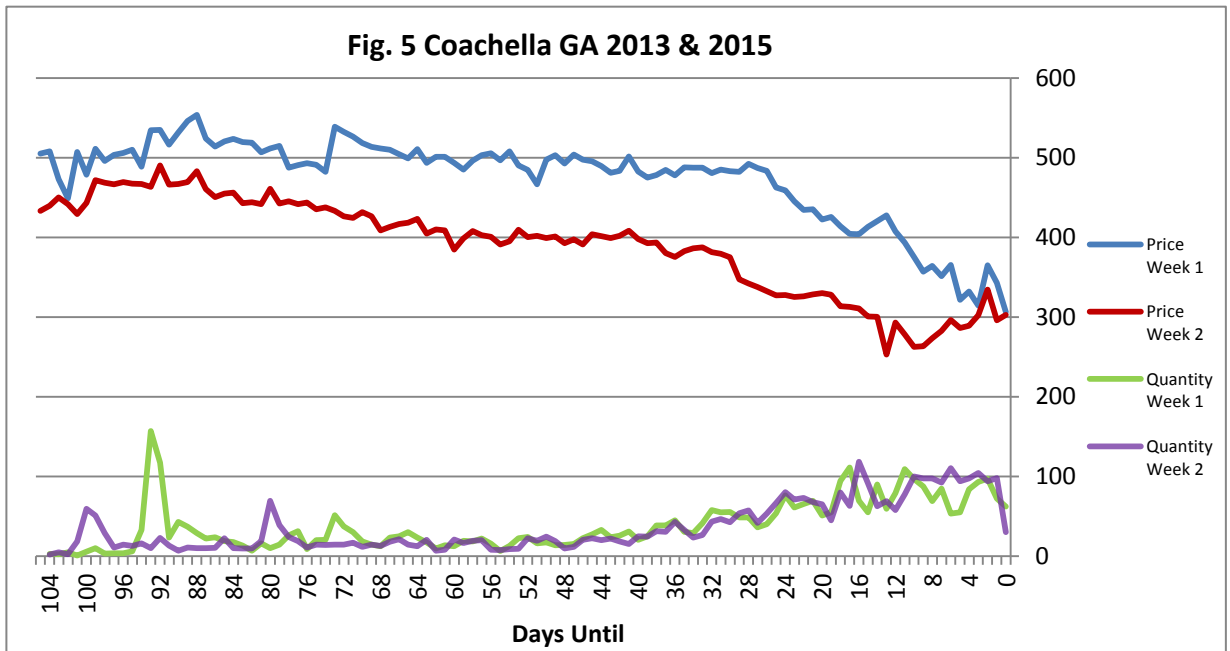


Figure 5: All values denote daily averages.

Figure 5 above plots the average prices and quantities of tickets sold for both weekends of Coachella in the last 105 days. From approximately 90 days until, the average price for Week 1 and Week 2 began to diverge. The average quantity sold for both festivals was mostly uniform throughout and shows that, unless for some reason it happens to be that more people can only attend Week 1, consumers are generally willing to pay a higher price for Week 1. At 3 days until, the prices for both festivals almost converge, which may due to consumers realizing that their window of opportunity to

attend is closing and are forced to purchase a ticket if they really want to go. When looking at Weekend 1, they may feel that they still have the opportunity to go the next week if prices don't fall to the levels they desired, and therefore decide to wait—a luxury not afforded to them in the second week.

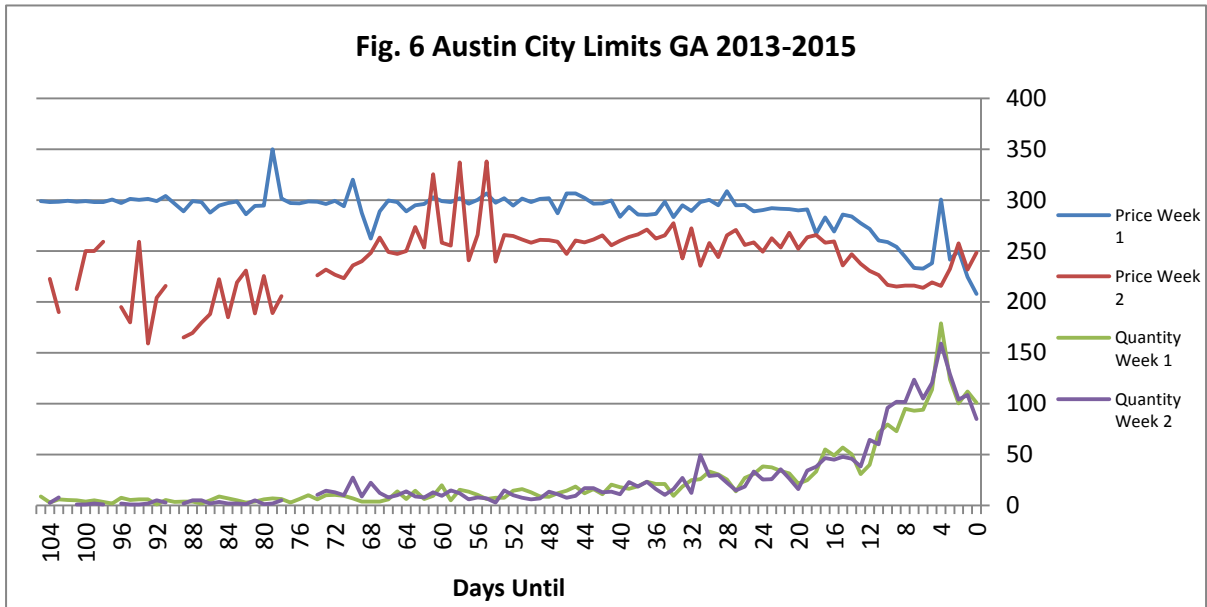


Figure 6: All values denote daily averages. Gaps indicate days where there were no sales.

In general, Week 1 for Austin City Limits had a higher average price than Week 2, but to a much smaller extent than Coachella. Also, there were many instances where Week 2 surpassed the price of Week 1, which did not occur with Coachella. Quantity also remained rather uniform throughout, with both weeks experiencing a spike in quantity in roughly the last ten days. There may be three possible explanations for seeing such a large difference in price between both weekends of Coachella, and to a lesser extent, Austin City Limits. The first is that there is higher demand simply because more people are able to attend Week 1 owing to other conflicts, although this is likely to only apply to a fraction of attendees. The second reason for higher prices may be due to the perceived

notion by consumers that demand is higher for Week 1 because it is better. Like Becker's (1991) explanation of consumers valuing a restaurant meal more if it is highly sought after, festival-goers may believe that Week 1 is intrinsically better than Week 2 because of the higher overall demand—if not, why would people pay more for it? The fact that Week 1 for Coachella sells out before Week 2 lends support to this explanation and reflects elements of self-reinforcing expectations.

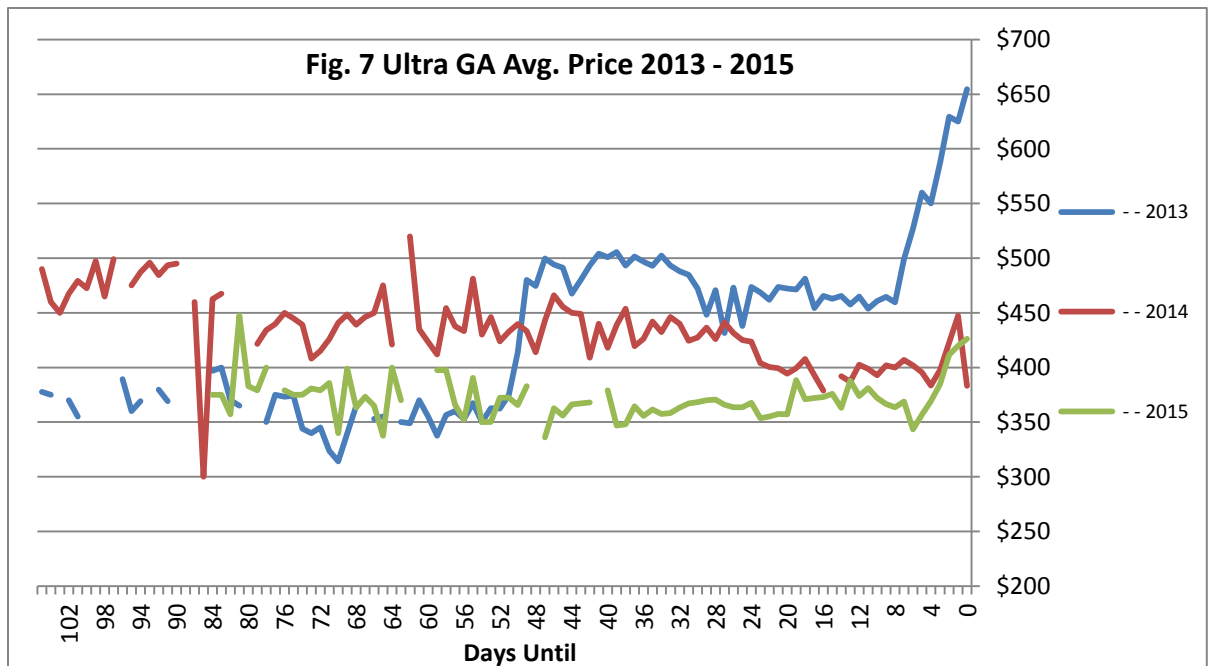
Perhaps the most likely factor behind the price difference is a basic “novelty” principle. People may value Week 1 more because it occurs first and they are able to experience the festival before other people are able to. Similar to this is how people will wait overnight for the opportunity to purchase the new iPhone model first or previously, the next Harry Potter book, even though they could wait a few days to purchase the same good, at the same price, without the wait. Another component to this explanation is the role played by social media. Music festivals push for social media involvement heavily and usually embed it into their festival phone applications. Consumers who attend Week 1 earn “bragging rights” by being the first to share their experience at the festival with friends and family through their social media networks (Zhang, 2014). By the time Week 2 comes along, people may not be as impressed or interested in social media posts from festival-goers because they have already seen many of them from the previous week.

#### **D. Year Comparisons**

While it may be tempting to make generalizations about when the best time to buy tickets is, there is always the possibility that other factors will disrupt the price trends we may expect. Two such instances will be explored next with Ultra Music Festival and Austin City Limits Week 2. In Figure 7 below, the average daily price for Ultra Music

Festival over the three years is plotted. Even though 2013 had the lowest face value price of \$375 after fees relative to 2014 and 2015’s respective prices of \$500 and \$450, its prices were the highest for the last 50 days leading up to the event. While it is not possible to explain all of the factors behind 2013’s high prices, a large component surely was Swedish House Mafia’s (SHM) final performance as a trio.

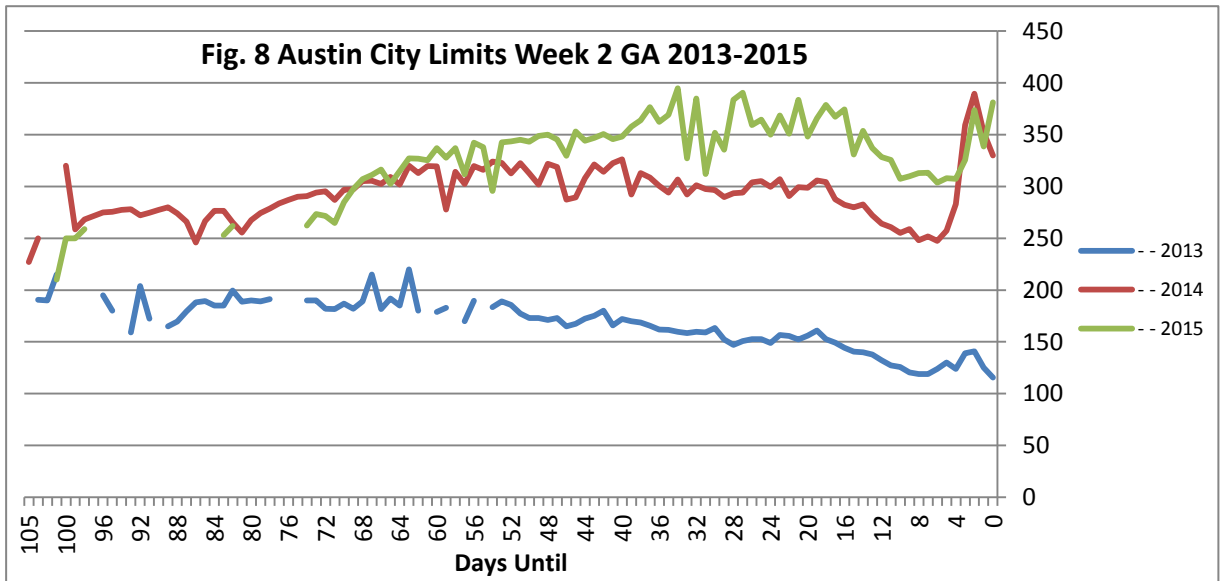
SHM were one of the most, if not most, popular artists in the electronic music genre at the time and in 2012, the three members decided they would part ways the following year. “One Last Tour” was their last tour ever together which was scheduled to have its final show in Los Angeles on March 9<sup>th</sup>, 2013. On January 7<sup>th</sup>, 2013, Ultra Music Festival released its lineup which contained a surprise appearance by SHM. This announcement was made about 65 days before the festival took place, and in Figure 6 above we can see that the prices jumped upwards at about 50 days until the show. This time gap could be reflective of time taken for this information to reach fans, as well as fans who wanted to attend, but needed some time to figure out if attending would be feasible or not, resulting in an overall increase in demand. The rise in price may also be



attributed to a decrease in supply, resulting from people who intended to sell their tickets, but then decided to attend because of SHM's last performance ever.

The lineups were not entirely the same each year, so the overall quality of the lineup could also be an important reason why 2013 had an elevated price. However, this was likely not the case as prices for 2013 were lower than the other years up until 50 days before the festival. Furthermore, the 2013 prices were practically equal to those of the other years if we adjust for the difference in face value price, since 2014 and 2015 were more expensive. What remains clear is that 2013 was special in that it offered a unique opportunity to see SHM's last performance together and may have driven prices upward due to higher demand and a contracted supply.

Figure 8 on the following page displays the average price for Austin City Limits Week 2, and the opposite effect was witnessed for prices in 2013. At a face value of \$225, GA tickets did not even surpass \$200 in any of the 100 days leading up to the festival. 2013 was also a special year for Austin City Limits in that it was the first year that it expanded to two consecutive weekends, hence, doubling supply. While it isn't possible to determine with absolute certainty that this drop in average price was a supply side phenomena without information on how many tickets were listed for sale online, it is extremely likely that this was the case. If demand were to have been very low, it does not make much sense why the festival sold out, unless many people purchased tickets with the intent of reselling them for a profit. However, in 2014 and 2015, prices remained at or above face value throughout, indicating that this steep price drop in 2013 had something to do with how the public perceived the festival's first year of expansion.



### E. Statistical Analysis

An OLS multi-variable regression with Average Daily Price as the dependent variable is utilized in my statistical analysis. The purpose is to determine to what extent different observable variables may be influencing the price of tickets in online marketplaces, which include:

- **Days Until:** The number of days remaining until the event which aims to expose the relationship between the proximity of the event and movements in the market's price levels. This variable can help identify when the ideal time to purchase a ticket is if a significant relationship is found.
- **Days<sup>2</sup>:** Simply the Days Until variable multiplied by itself. This is used to capture any non-linear relationship between price and the days leading to the events. For example, prices may not fall or increase at a consistent rate as the events approach.
- **Daily Quantity:** The average daily quantity of tickets sold which will test how prices are affected by different amounts of ticket sales. If Daily Quantity is high, it could mean a significant reduction in supply because consumers have purchased many of the available tickets, which may be reflected by an increase in price.

- **VIP:** Binary variable indicating whether or not the ticket is of the VIP category. Without it, all tickets would be equivalent in the data set and average resale prices would be distorted as GA and VIP tickets differ substantially in face value prices.
- **VIP Days Until:** Interactive variable of VIP and Days Until to capture if the price for VIP passes behaves differently from GA tickets as the event approaches. This variable reflects differences in consumer behavior and suppliers between both ticket markets. For example, it may be the case that prices fall as the event approaches for GA tickets, but rise for VIP tickets, which this variable will pick up on.
- **VIP Quantity:** Interactive variable of VIP and Daily Quantity. The same as Daily Quantity above, except this solely captures the effect of the quantity of tickets sold on VIP ticket prices. If this variable is not significant, then we may expect VIP and GA tickets to react similarly to varying amounts of tickets sold.
- **Camping:** Binary variable indicating if the festival offers camping to attendees. Camping may draw more people to want to attend the festival, raising overall demand and prices accordingly, or it could potentially discourage some depending on their preferences. Another possible way it may raise demand is if many consumers must travel to attend the festival and camping is the only way they can afford to do so if the alternative means booking a hotel room.
- **VIP Camping:** Interactive variable of VIP and Camping which captures how the price for VIP tickets varies between festivals that do and do not offer camping. It may be the case that GA attendees enjoy camping more than VIP consumers, and therefore VIP demand is lower for festivals that offer camping, resulting in lower prices.
- **Camping Days Until:** Interactive variable of Days Until and Camping to measure if the average prices for festivals with camping behave differently as the festivals approach than for those without camping. Having camping as an option may make it easier for consumers to make the decision to attend a festival closer to its date, which could cause an increase in demand as the event nears. Camping could

also have the opposite effect, as it requires a larger degree of planning out supplies and gear than simply booking a hotel room.

All regressions were run with festival fixed effects and festival year fixed effects. These measures were taken to control for differences such as face value price, capacity and location between festivals, as well any differences in the overall live music market and economy over the three year time period. As previously mentioned, there were gaps in the data when Days Until was very large due to low sale frequency and the fact that festivals sell their tickets at different numbers of days ahead of their events. These gaps may lead to a non-synchronous trading problem which can bias beta estimates, as Fowler and Rorke (1983) have found with infrequently traded stocks. Shorter time periods with fewer Days Until will be considered to mitigate some of the non-synchronous trading bias, as sales are more consistently observed as the event date gets closer.

Table 5 on the next page displays the correlation between the variables included in my regressions. The correlation matrix showed no gleaming issues of multicollinearity as there were no unusually large correlations present. While the correlation between Days Until and Days<sup>2</sup> was rather high at 0.9286, it was not surprising to find given that Days<sup>2</sup> is merely Days Until squared and is exponentially proportional to its values. Two other variables with relatively large correlations included VIP and VIP Days Until as well as Camping and Days Camping. These two correlations are understandable as well given that the correlation is between an interactive variable and one of its components, which means they are likely to be related to each other. Overall, multicollinearity does not appear to be an issue as it would bias my regressions against finding significant coefficients which, as will be shown briefly, was not the case.



	Avg. Price	Days Until	Days <sup>2</sup>	Daily Quantity	VIP	VIP Days Until
Avg. Price	1					
Days Until	-0.0552	1				
Days <sup>2</sup>	-0.038	0.9286	1			
Daily Quantity	-0.176	-0.3363	-0.2212	1		
VIP	0.7314	-0.2254	-0.1567	-0.1847	1	
VIP Days Until	0.5887	0.1034	0.0902	-0.1365	0.6377	1

	VIP Quantity	VIP Camping	Camping	Days Camping
VIP Quantity	1			
VIP Camping	0.435	1		
Camping	0.086	0.3659	1	
Days Camping	-0.0548	0.1159	0.6773	1

Table 5: Correlation matrix of all regression variables.

Table 6 on the following page displays the results of the various regressions using Average Daily Price as the dependent variable. Columns 1 and 2 include all days for which sales took place, with Column 1 being the simpler version of the two without interactive variables and Camping. The R-squared value of the regression in Column 2 indicates that 78% of the variation in the Average Daily Price is explained by my model. Columns 3, 4 and 5 are restricted to 160, 100 and 30 Days Until to examine different blocks of time leading up to the festivals. Note that Governors Ball was omitted in the regressions because of collinearity and robust standard errors were used throughout to account for potential heteroskedasticity. Lastly, the last two Days Until from the 2014 edition of Coachella Week 1 were excluded from the data set for being extreme outliers.<sup>4</sup>

Days Until was significant at the 1% level in Column 2 with a coefficient of 0.653. In fact, all variables were significant at the 1% level except Daily Quantity. Since the coefficient of Days Until is positive, it means that prices are falling as the number of

<sup>4</sup> See Appendix Table 1 for regression results without the exclusion of outliers.

Dependent Variable: Average Daily Price	(1) Full Sample	(2) Full Sample	(3) Days Until < 160	(4) Days Until < 100	(5) Days Until < 30
<b>Days Until</b>	1.030*** (0.0929)	0.653*** (0.0781)	0.598*** (0.177)	0.796** (0.373)	-1.952 (1.639)
<b>Days<sup>2</sup></b>	-0.00284*** (0.000279)	-0.00186*** (0.000277)	-0.00272** (0.00112)	-0.00751** (0.00340)	0.0458 (0.0540)
<b>Daily Quantity</b>	0.118 (0.0794)	-0.0862 (0.0532)	-0.136** (0.0603)	-0.184** (0.0844)	-0.553*** (0.127)
<b>VIP</b>	552.1*** (8.725)	498.8*** (13.10)	468.4*** (13.67)	464.0*** (14.37)	382.4*** (22.41)
<b>VIP Days Until</b>		1.784*** (0.204)	2.462*** (0.276)	2.202*** (0.344)	5.896*** (1.256)
<b>VIP Quantity</b>		1.596** (0.774)	2.041*** (0.759)	1.552** (0.736)	2.337*** (0.833)
<b>VIP Camping</b>		-112.6*** (17.35)	-107.6*** (17.02)	-80.99*** (17.42)	-59.79*** (22.00)
<b>Camping</b>		323.3*** (10.47)	316.5*** (11.26)	319.2*** (13.36)	389.3*** (23.12)
<b>Days Camping</b>		-0.165*** (0.0554)	0.0389 (0.0931)	0.411** (0.168)	-0.448 (0.948)
<b>Constant</b>	414.0*** (8.692)	142.5*** (9.332)	152.7*** (9.867)	151.7*** (12.37)	154.4*** (19.36)
<b>Observations</b>	6,914	6,914	6,189	4,953	1,970
<b>R-squared</b>	0.778	0.792	0.791	0.786	0.753

Table 6: Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

days to the festival decreases by \$0.65 per day. This finding appears to be consistent with the downward trend in average prices previously seen in Figure 1 and confirms that the best time to purchase tickets is as late as possible. The statistical significance of Days<sup>2</sup> tells us that the relationship between Average Daily Price and Days Until is not entirely linear and has some concavity to it. In the last regression in Column 5 looking at only the last thirty days, both of these variables became insignificant which may be due in part to the reduced sample size of 1,970 observations.

The hypothesis behind Daily Quantity was that as the amount of tickets sold increased, overall supply would be lower and hence prices would rise. The variable was not significant when looking at the entire sample of days, but became significant when the regression was restricted to fewer days in Columns 3 – 5. Its negative coefficient implies that the average price got lower as the quantity of tickets sold increased. The explanation behind this may be entirely the opposite of the original hypothesis in terms of the direction of causality. It is likely the case that the quantity of tickets sold was rising because the prices set by sellers were lower, which in turn led more consumers to decide to purchase tickets. Regarding the insignificance of the coefficient in Column 2, we must remember that in the days further away from the festivals in the full sample, sales were not as frequent and price variation was much larger. Therefore, it would make sense that there wasn't as strong of a relationship between price and quantity.

It was expected that the VIP variable would be significant as the face value prices between GA and VIP tickets were very large in the first place. The three VIP interactive variables were significant at least at the 5% level across all regressions and provide insights to the market for VIP tickets relative to GA ones. VIP Days Until also had

positive coefficients like Days Until, albeit of larger magnitude which can be explained by the higher overall prices of VIP tickets. In the full sample, we find that VIP tickets decrease by \$1.78 for each day the festival approaches, and by \$5.89 per day when restricting the data to the last 30 days before the festivals. This large change in the magnitude of VIP Days Until's coefficient may result from a less liquid market due to there being a smaller pool of individuals able to afford the tickets in general. Sellers may feel even more pressured than GA ticket owners to lower prices when few days remain because they are competing for fewer customers.

The GA and VIP prices differ in regards to how they are affected by the quantities of tickets sold and availability of camping. VIP Quantity has a positive coefficient of 1.59 in the full sample, as opposed to the negative coefficient of Daily Quantity. This means that prices for VIP tickets increase as the number of sales escalates and is consistent with the hypothesis that more sales lead to higher prices by reducing supply. However, it cannot be said with certainty that this is the case. The alternate causality direction of the relationship would suggest that consumers purchased more tickets because prices were getting higher. This would be reasonable if consumers noticed at times that prices were rising and decided to purchase the more expensive tickets because they feared having to pay an even higher price later on.

The idea behind the Camping variable was to examine how the availability of camping might affect prices. Festivals that take place within cities, like Ultra and Lollapalooza in downtown Miami and Chicago, respectively, do not offer camping because of obvious reasons. Festivals that do offer camping tend to be in large, open spaces that may be somewhat far from major cities, or at least far enough for it to be

inconvenient to travel back and forth each day. When there isn't camping available, attendance is relatively easy for people that happen to live nearby the festival, and more difficult and costly for those who don't as they need to book hotel rooms.

Festivals in the sample that did offer camping were Coachella, Electric Forest, Firefly, Burning Man and Sasquatch. VIP Camping was significant at the 1% level in all regressions, and its coefficient decreased in magnitude with each restriction from -112.6 in the full sample to -59.79 in the 30 day sample. In contrast, Camping was positive with a coefficient of 323.3 in the full sample and 389.3 in the 30 day sample, all significant at the 1% level. There are so many potential factors behind these results that it is impossible to determine the exact causes behind them, but a few potential ones will be mentioned next.

The negative coefficient of VIP Camping could be due to VIP consumers preferring to stay in hotels in general, and therefore feeling inclined to pay less for tickets because of having to cover hotel costs. It may also be the case that wealthier people are clustered closer around city centers where festivals without camping take place, and are willing to pay higher prices for these festivals because they don't have to pay for lodging. GA consumers may be willing to pay higher prices for festivals with camping because they provide an alternative option to expensive hotels. Camping passes tend to cost about \$100 and can usually accommodate at least four people, which means that over the course of three days, the camping cost per person is minimal. Finally, camping may provide an added social bonus element to the overall festival experience by allowing them to become part of a community for a few days and have more opportunities to meet new people.

The purpose of the Days Camping variable was to expose differences in average prices as the festivals approached for those that do and do not offer camping. It could be the case that as the festival date nears, most hotel rooms are booked or extremely expensive at that point. Consumers might end up saving money from having the option to camp and consequently be willing to pay higher ticket prices. It could also be that prices fall for festivals with camping if camping passes sell out and would-be attendees need to cover hotel costs, reducing their willingness to pay for the tickets themselves. The regression results for Days Camping are hard to interpret because they were only significant in Columns 2 and 4, and the coefficients switched from negative to positive. Column 2 suggests that prices increase by \$0.65 each day the event approaches, while Column 4 proposes that prices will decrease by \$0.41 each day. Due to this mixture of results, no compelling conclusions should be drawn from this variable.

### **Limitations**

The primary limitation of this study is the lack of information on the supply of tickets. Data are for transactions that took place and accordingly reflect the demand side of the market. Without information on supply, it is difficult to definitively understand why prices move in certain directions. For example, we cannot tell if tickets got more expensive in a certain time period because a lot of people wanted them, few people were selling them, or a combination of the two. Additionally, this study was carried out with data from a sole online marketplace. If future studies are able to compile data from multiple marketplaces that include the number of tickets for sale and their prices, as well as transactions that went through, they will gain a more accurate understanding of the market and better grasp of its magnitude.

A major problem in examining the secondary market is that there isn't any way to capture information on informal transactions that take place, which inevitably reduces the accuracy of any analysis. The website Craigslist is immensely popular for the sale of tickets, but doesn't leave any records behind as it merely connects buyers and sellers through ad postings. Online marketplaces charge a percentage fee of sales for their services, so whenever a ticket holder is able to sell their ticket in person with relative ease, they will opt to do so. Finally, fraudulent tickets are also part of the information problem, as their sale is consumer demand that never gets reflected in the market. These factors add a level of complexity to research of the secondary market and are a limitation any future studies must consider.

## **Conclusion**

The future of online secondary marketplaces for live music events holds a lot of potential for growth as music festivals continue to rise in popularity among millennials. Sales volumes for the ticket resale industry as a whole have consistently grown in recent years while the internet has facilitated further consumption of music and ticket resale. Social media's increasing presence in everyday life through smartphones is also a leading factor in growing the popularity of live music events as fans are extremely active on social media while attending festivals.

Regression analysis has found that prices tend to decrease over time as festival dates approach and hence consumers should wait as long as they can until purchasing tickets from resellers. However, this trend does not apply for festivals in years when special performances take place as was seen with Ultra 2013 and Coachella Week 1

2014. Prices tend to fall more rapidly for VIP tickets than for GA tickets as the festivals approach, and it appears as though VIP customers are less attracted to festivals with camping than those without.

Overall, this paper lays a foundation for the further study of the resale market for music festivals. Their complex nature compared to regular concerts provides many different facets to analyze and factors to consider when attempting to understand the market. Without supply-side data, it is difficult to explain the underlying motives for price movements, and incorporating this data should be the main goal of future studies. Further studies may also decide to focus on music festivals of a single genre as they may be more easily compared and can potentially reveal how consumer behavior differs depending on individual music tastes. Another interesting avenue for research would be to examine how market demand evolves as consumers gain more information. If it becomes widespread knowledge that prices tend to fall as events approach, consumers may collectively refrain from purchasing tickets until the last moment possible, altering current market dynamics.



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## Appendix

Dependent Variable:	(1)	(2)	(3)	(4)	(5)
Average Daily Price	Full Sample	Full Sample	Days Until < 160	Days Until < 100	Days Until < 30
<b>Days Until</b>	0.955*** (0.100)	0.600*** (0.0828)	0.410** (0.205)	0.333 (0.449)	-5.188** (2.351)
<b>Days<sup>2</sup></b>	-0.00264*** (0.000296)	-0.00160*** (0.000307)	-0.00137 (0.00132)	-0.00287 (0.00416)	0.159** (0.0784)
<b>Daily Quantity</b>	0.105 (0.0780)	-0.100* (0.0539)	-0.172*** (0.0645)	-0.260*** (0.0976)	-0.652*** (0.153)
<b>VIP</b>	551.8*** (8.952)	497.4*** (13.13)	466.4*** (13.88)	460.7*** (14.97)	386.0*** (26.26)
<b>VIP Days Until</b>		1.748*** (0.208)	2.422*** (0.285)	2.153*** (0.366)	5.338*** (1.545)
<b>VIP Quantity</b>		1.901** (0.857)	2.279*** (0.837)	1.684** (0.798)	1.872** (0.908)
<b>VIP Camping</b>		-109.4*** (18.26)	-104.6*** (18.04)	-77.90*** (18.85)	-54.10** (26.85)
<b>Camping</b>		336.7*** (12.75)	334.4*** (14.69)	344.2*** (18.65)	466.8*** (44.83)
<b>Days Camping</b>		-0.228*** (0.0646)	-0.0756 (0.110)	0.187 (0.202)	-2.662* (1.445)
<b>Constant</b>	426.2*** (10.68)	143.3*** (9.383)	156.4*** (10.21)	160.0*** (13.51)	170.9*** (23.15)
<b>Observations</b>	6,918	6,918	6,193	4,957	1,974
<b>R-squared</b>	0.761	0.774	0.771	0.763	0.711

Table 1: Regression results including the outliers from 2014's Coachella Week 1. Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figure 1 & 2: GA Average Daily Prices from 2013-2015 for multiple festivals.

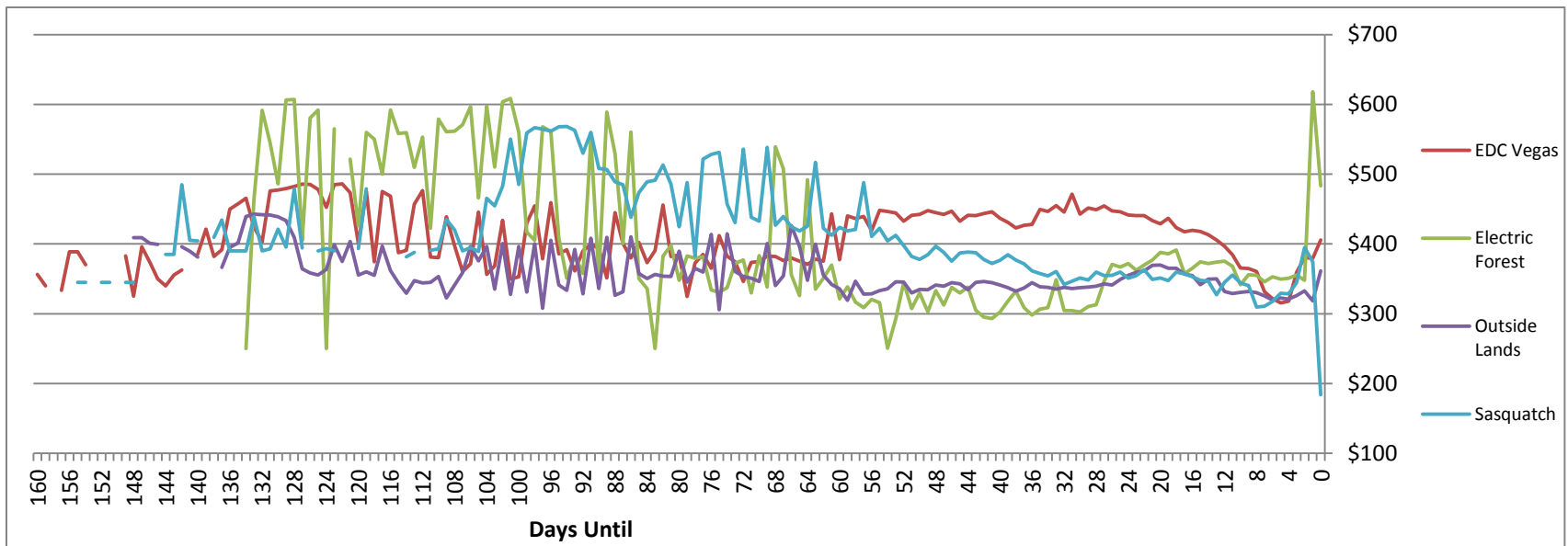
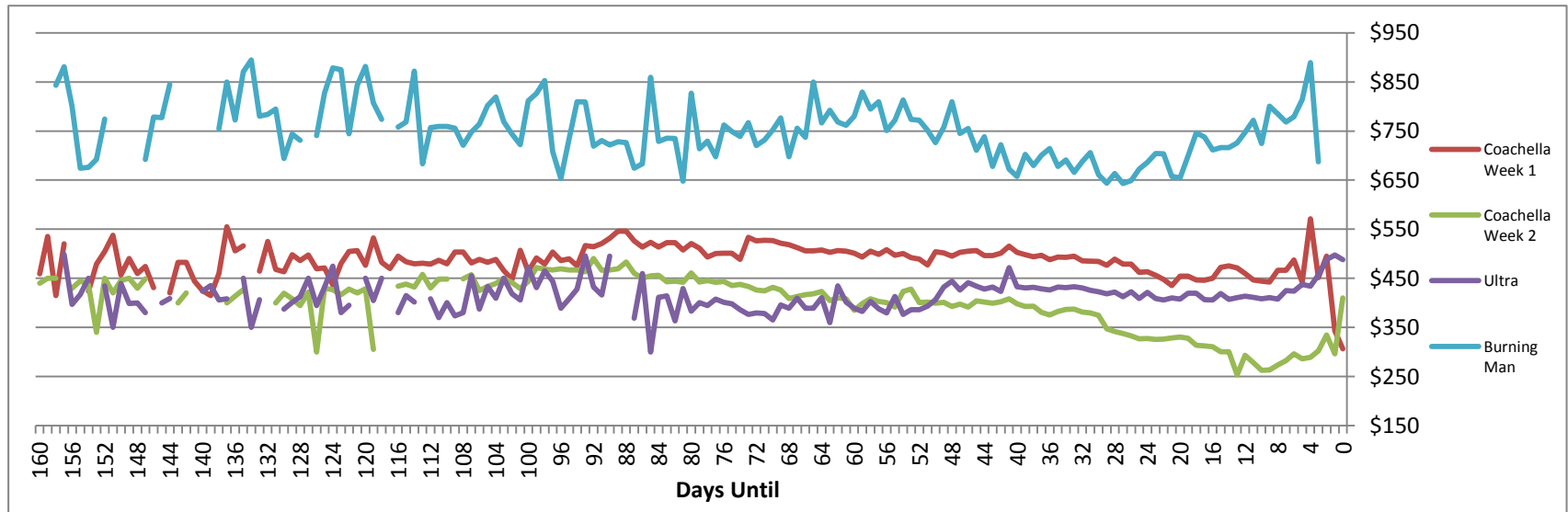


Figure 3 & 4: GA Average Daily Prices from 2013-2015 for multiple festivals.

