

**SECOND HOME REAL ESTATE MARKET:
ECONOMIC ANALYSIS OF RESIDENTIAL PRICING BEHAVIOR
NEAR HEAVENLY SKI RESORT, CA**

by

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B.A. Architecture
University of California at Berkeley, 2002

Submitted to the Department of Urban Studies and Planning
in Partial Fulfillment of the Requirements for the Degree of
Master of Science in Real Estate Development

at the

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Abstract

This paper examines a second home market near Heavenly Ski Resort in South Lake Tahoe, CA to understand historical pricing behaviors and to forecast future prices using an econometric model derived from economic, demographic, and climate data.

In order to do this study, we gathered historical residential sales data from 1988 to 2008 for the study area, which is limited to residential houses located within a one-mile radius of the resort. Moreover, other external variables, such as Tahoe skier visits, natural snowfall, San Francisco Bay Area income and employment, and mortgage interest rates, were collected for the same time period to determine how these variables influenced the prices. First, using approximately 550 residential sales data, a price index was created and subsequently historical residential home pricing behaviors were analyzed. Typically, evaluation of house prices is difficult since each residential property is a composite of goods that contain varying amounts of attributes. Therefore, the hedonic house price model was applied to recognize and remove effects of the housing-specific attributes on pricing. As a result, the real price index tracks only real prices as a function of time. Over the 20 years of study period, two distinct trends were observed. The real prices remained flat for the first 10 years and increased substantially in the second 10 years. Overall, the real price index linearly trended upwards. Employing the real price index and the external variables, a series of equations was developed as the foundation of an econometric model. The econometric model utilizes the following equation: New Permits (a measure of supply) and Tahoe Skier Visits (a measure of demand), to forecast future supply and demand. The future projections with relevant economic variables then were put into Stock and Real Price (a measure of residential prices) equations to establish future prices. Using the econometric model, we employed three scenarios portraying future economic conditions to examine the pricing behaviors: *realistic*, *optimistic*, and *pessimistic*. In reaction to moderate snowfall and economic growth in the realistic scenario, the real prices slope downward immediately and then upward. With a higher economic growth and a phenomenal snowfall, the optimistic scenario predicts the highest price appreciation through increase in demand. The pessimistic scenario is the only one in which the significant price decline is predicted.

This study concludes that residential home prices will continue to increase in all cases except for the pessimistic scenario, in which there are poor economic conditions and a light snowfall. Another conclusion is that the existing housing stock is confined and outdated due to the maturity of this market as well as new development restrictions imposed by the local authority.

Thesis Supervisor: William C. Wheaton
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1.0 Introduction

Until 2007, when the US economy finally came to a halt from a record expansion, a growing number of American and foreign investors purchased and built second homes¹. Since the early 1990, the second home market has emerged as a dominant force in determining and influencing urban and regional development as a result of its seasonal redistribution of the population.

Furthermore, second home development, due to the solid growth of the upper income market, near resort areas has created a thriving niche in the real estate industry. According to Renshaw, in 1967 there were only 1,547,000 second homes in the United States for about 59 million households². Since then, the size of the second home market has grown significantly. By 2007 approximately 7.5 million second homes were located throughout this country, a figure expected to increase by 125,000 a year over the next decade³.

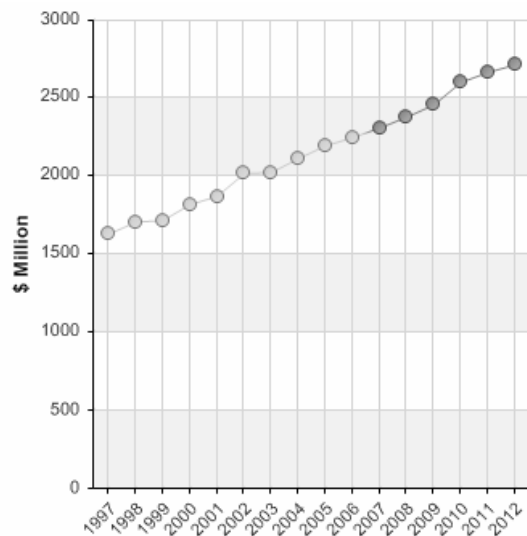


Figure 1.1 US Ski Industry Revenue

The U.S. ski resort industry has also expanded over the past decades. Although the number of ski resorts has decreased from 622 in 1988 to 431 in 2007, as a result of a period of consolidation and attrition, the industry's revenue has increased for the last 10 years from \$1.6 billion in 1997 to \$2.4 billion in 2008⁴. In addition, the number of skier visits has grown from 46 million during the 1982-1983 season to a record

¹ The term "second home" is defined as a dwelling unit that is not one's principal residence. It refers to an occasional-use property for households whose primary residence is located elsewhere. Second homes are mostly found in rural or resort areas, such as lakes, beaches, and mountains, where they are used for leisure, recreation, and vacation purposes. They are often rented out to others when not in use by current owners.

² Edward F. Renshaw, "The Demand for Housing in the Mid-1970's", *Land Economics*, Vol. 47, No. 3, (Aug., 1971), pp. 249-255

³ "Talking Points: Second Homes", *National Association of Realtors*, May 08, 2008

⁴ "Ski Resorts in the US", *IBIS World Industry Report*, Nov. 27, 2007

high of 60 million during 2007-2008 the season⁵. The growth in winter destinations will likely continue strong, leading to optimism about the following years.

This paper is the case study of a real estate market near Heavenly Ski Resort in South Lake Tahoe, CA to examine historical pricing behaviors and to forecast future prices using an econometric model derived from economic, demographic, and climate data.

1.1 Approach

We focus on one particular real estate market, because of its location and resort characteristics, near Heavenly Ski Resort in South Lake Tahoe, CA. Located in the valley of the Sierra Nevada Mountain Range at Monument Peak, straddling the state line between California and Nevada, Heavenly Ski Resort is the only bi-state ski resort in the United States, and is one of North America's largest ski areas with 4,800 acres of terrain. Its close proximity to Lake Tahoe and casinos, as well as its four-season activities, have made Heavenly Ski Resort an attractive vacation place. Also, as one of many alpine ski resorts around Lake Tahoe, it is the only isolated one located in South Lake Tahoe. Because of its isolation, we can minimize the influence of other resort markets. In addition, the Heavenly resort area displays typical ski resort characteristics, offering a variety of activities, ranging from water skiing to golf, that can be enjoyed by people of all ages. For this reason, the second home market is considered to be a significant component of the residential development in this region.

⁵ "US Ski Industry Sets of New Record", The Aspen Times, June 4, 2008

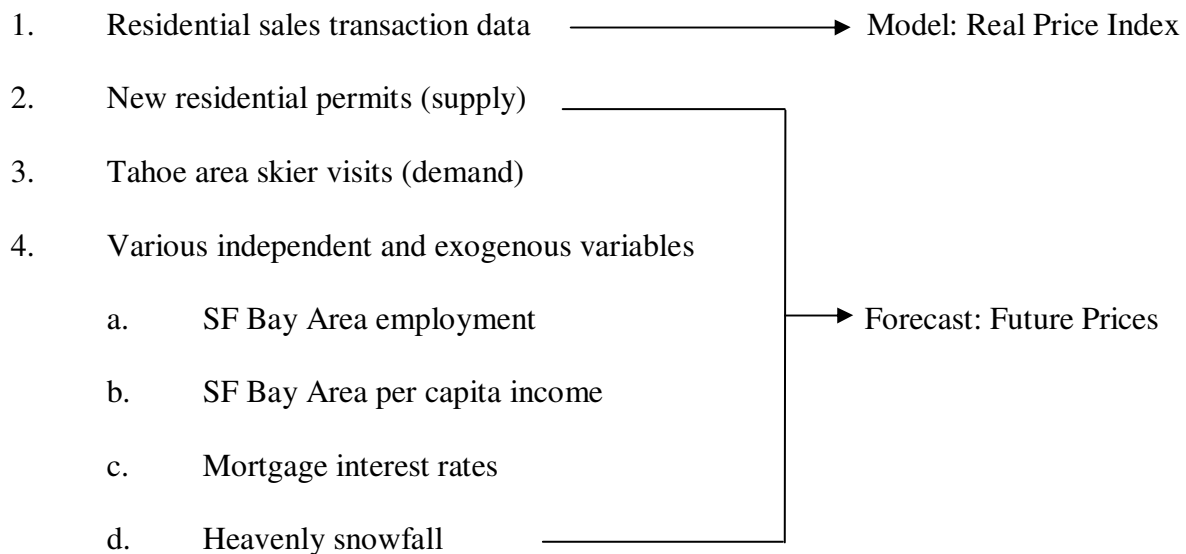
1.2 Data and Modeling

The research will be based primarily on quantitative analysis of historical resort home prices and divided into two main sections. First, utilizing a hedonic house price model, a real price index for Heavenly Ski Resort will be created. Evaluation of house prices is difficult because each residential property is a composite of goods that contain varying amounts of attributes.

Therefore, by applying regression analysis to the sales data, the hedonic house price model will be created in order to recognize and account for the independent variables that influence prices⁶.

This method allows us to make apple-to-apple comparisons of those houses. From this model, a real price index will be developed to trace real property prices as a function of time. Secondly, using a real price index and other economic variables pertaining to this market, we will create a series of equations to develop an econometric model that helps forecast the future real estate prices based on three economic conditions: *realistic*, *optimistic*, and *pessimistic* scenarios.

In order to perform this research, we gathered the following data.



⁶ Miller, Norman G. " Residential Property Hedonic Pricing Models: A Review", Research in Real Estate (1982, Volume 2), pp. 20-23.

2.0 Background Information



Figure 2.1 Location of Lake Tahoe in relation to San Francisco Bay Area

Located approximately 200 miles from San Francisco and 100 miles from Sacramento, the capital of California, Lake Tahoe, which lies along the border between California and Nevada, was discovered by explorers, John Fremont and Kit Carson, in 1844. Lake Tahoe was once a summer gathering place for three bands of peaceful Washoe Indians. By the turn of the century, wealthy citizens of San Francisco began to recognize the beauty of the lake and terrain, which became a haven for the well-to-do.

Tahoe's first resort was built in 1863 at Glenbrook to provide the leisured aristocracy of the booming Comstock with a vacation spot conveniently located at the head of the new turnpike to Carson City, Nevada. The first privately owned vacation "cottage" was built that same year at Emerald Bay. Additionally, the popular hotels of the era- including Tallac House, Tahoe Tavern and Glenbrook Inn- were built around this period. During the 1920's and 1930's, as the roads

through the mountains became paved, it attracted a greater number of people, leading to a rapid growth of smaller, middle class lodges.

At the end of World War II, Tahoe still had only about a thousand permanent residents in the villages. By the late 1940's, Tahoe vacation resorts were turning away customers, and new ones were being built to accommodate the overflow. After the War, thus, the 20th century began to arrive at Tahoe with such rapid growth in population, and the impact resulting from this, that conditions at the lake went rapidly out of control

However, the development around Lake Tahoe did not start until the late 1950's. Roads to the Basin began to be plowed year-round, enabling permanent residence. Skiing, which had not yet become popular on the West Coast, became the fashionable wintertime equivalent of tennis. In the early 1950's, Tahoe's recreational potential had caught the attention of everyone on the Pacific Coast, including Nevada gamblers. As a result, many casinos were built. At about the same time, ski resorts began to multiply. Eventually, this development on Lake Tahoe transformed from a busy summer vacation spot to a brawling year-round affair. Finally, Lake Tahoe became recognized as skiing Mecca of the Western United States soon after the 1960 Winter Olympic at Squaw Valley.

2.1 The Study Area: Heavenly Ski Resort

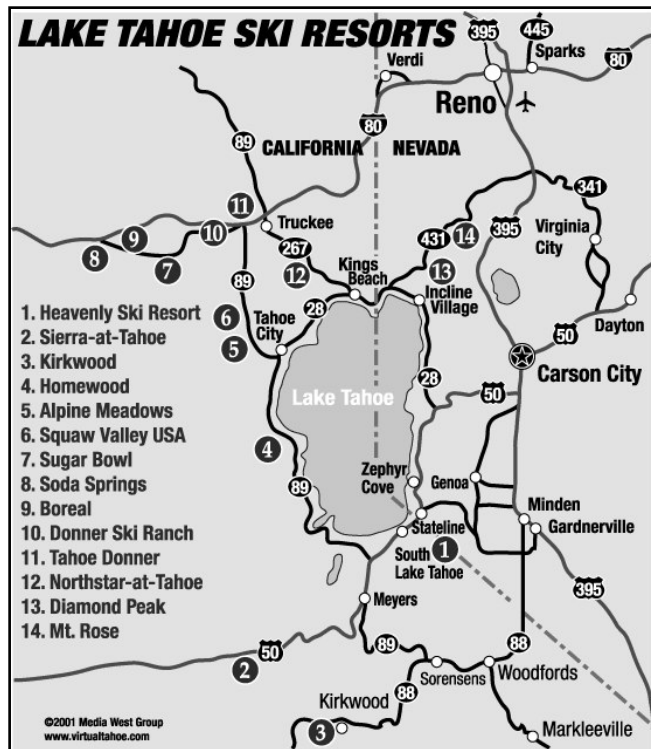


Figure 2.2 Lake Tahoe Ski Resorts

Located in the south eastern corner of Lake Tahoe, Heavenly Ski Resort is one of 14 ski resorts clustered around the lake. It is recognized as one of the largest in North America, attracting more than one million ski visitors a year. Opened as a relatively small ski area in the late 1940's, Heavenly Ski Resort ushered in a new era beginning in 1964, with the success of the 1960 Winter Olympics and an ownership change to Hugh Killebrew, a successful attorney from San

Francisco. As new owner, Killebrew

envisioned expanding Heavenly into Nevada, the adjoining state. In 1967, his vision became a reality when Heavenly became America's largest ski area.

After going through a series of ownership changes, the resort was purchased by Vail Resorts in 2002 from American Skiing Company. Offering 30 lifts and 95 runs distributed between California and Nevada, the resort had a 4,800 acre permit, with approximately 33 percent of the area developed for skiing. Heavenly offers Lake Tahoe's highest summit elevation: a peak elevation of 10,067 feet, a peak lift-service elevation of 10,040 feet, and a vertical rise of 3,500 feet.

Differentiating itself from other ski resorts around Lake Tahoe in terms of size and proximity to other activities, Heavenly Ski Resort has truly become a popular year-around vacation destination for people of all ages. Heavenly continues to attract more people to this area annually, where the population has grown at an annual rate of 5.6 percent in the past decade⁷.

2.2 South Lake Tahoe Real Estate Market Condition

As the economy of the U.S. expanded, there was a huge increase in the number of people with more money to disperse. Aided by subprime mortgages as well as by solid growth in the higher income individual, the U.S. real estate market has experienced a dramatic increase in prices. As seen in Figure 2.3, the average U.S. median home prices rose from \$112,500 in 1988 to \$246,500 in 2006 with an average growth rate of 6.6 percent. The median home prices began to decrease after 2006 due to unusual disruptions in the mortgage market. According to the National Association of Realtors, the median prices fell 7.7 percent to \$196,300 in Q1 2008 down

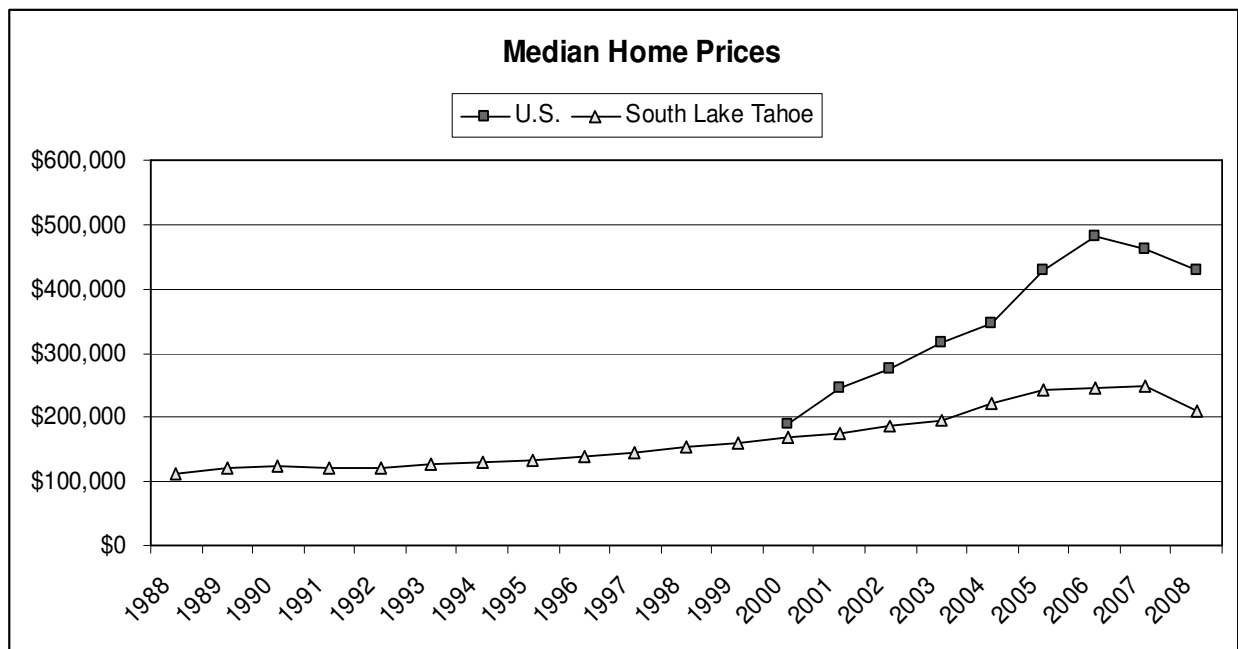


Figure 2.3 Median Home Prices; US vs. South Lake Tahoe (source: US Census & City-Data)

⁷ Claritas Report., 2007

from \$212,600 for the same period a year ago. It was the largest year-over-year decline since the NAR started keeping comprehensive records of median home prices in 1979⁸. Similar trend has been observed in South Lake Tahoe, though with much higher prices.

Generally speaking, South Lake Tahoe had been under priced for many years. Lots purchased in the 1970s for \$ 6,500 had stayed close to that price for decades. Although the prices remained fairly static until 1988, from 1988 to 1990, they rose by more than 20 percent. During the “Dot Com” bubble in late 1999 to 2000, the people in the entire San Francisco Bay Area, as well as Silicon, Valley had abundance of cash and recognized the affordable resort area of Tahoe. Tahoe had fallen behind in valuations compared to other resort areas like Colorado, whose popularity as a resort was much higher. Hence, as a vacation place, the Tahoe area has been attractive to the affluent San Francisco Bay area population for many years, and a high percentage of the residential sales during that period went to second home owners. Due to the fact that the local economy did not generate high income job for the local population, many skiers who lived in Tahoe could not possibly compete for the available homes with prices driven by outside buyers.

As the outsiders’ interests in second home ownership increased, multiple offers and bidding wars ensued. As a result, the residential real estate market exploded, and the prices began to rise 20 to 30 percent a year until August 2005. It was not unusual that houses previously listed at \$300,000 were selling at over \$400,000. In extreme cases, if one had bought a house worth \$200,000 in 2000, one probably could have sold it for around \$700,000 in 2005⁹. The entire Lake Tahoe regions, including South Lake Tahoe, experienced nearly similar increases in prices between 1999 and 2005.

⁸ “NAR”, Realtor Real Estate News, *REALTORS Magazine Online*, May 13, 2008

⁹ Jim Stahl, Personal Interview, June 19, 2008

There are several reasons that led to the big run-up in pricing behaviors. First, the trends were observed nationally. Most major cities in the US were experiencing the same phenomenon over the same course of years. Second, the mortgage interest rates were relatively low. They made available for people borrow more cheaply. Additionally, the liberal mortgage lending practices led people to borrow more money than they could afford, causing a higher housing demand. Furthermore, interest in vacation homes at Tahoe by non-residents was keen. Lastly, when the stock market crashed in 2000, many were looking for alternative venues for investments and recognizing the investment returns in real estate.

Another plausible cause for the price appreciation is that the Lake Tahoe area has been under building restrictions imposed by the Tahoe Regional Planning Agency (or TRPA). TRPA was established in 1969 through a bi-state compact between California and Nevada, which was approved by the U.S. Congress. The agency is assigned to coordinate and regulate development and to protect the environment of the Lake Tahoe Basin through land-use regulations and is one of only a few watershed-based regulatory agencies in the United States.

In the last 40 years the lake had deteriorated rapidly due to increased land development in the Lake Tahoe Basin. In 1968, problems associated with burgeoning development around the lake prompted California and Nevada to create TPRA. In 1972, TPRA adopted a land use ordinance, but numerous exceptions failed to sufficiently limit development and preserve the environmental integrity of the lake. In 1980, TPRA was directed to develop regional "environmental threshold carrying capacities" and adopt an amended regional plan that achieved and maintained those carrying capacities. As a result, prior to May 1983, TPRA prohibited the development of new

subdivisions, condominiums, and apartment buildings. Moreover, building permits were limited to the number granted in 1978.

Despite its good faith efforts, TPRA concluded that it was unable to adopt a permanent plan by the May 1983 deadline. TPRA, therefore, enacted an ordinance and a resolution "which completely suspended all project reviews and approvals, including the acceptance of new proposals," and which remained in effect until a new regional plan was adopted on April 26, 1984. In combination, these land use measures effectively banned all construction on areas near streams and wetlands in the Basin for almost 3 years. Furthermore, private landowners in the Basin contended that the mere enactment of these temporary land use regulations denied them of all economic use of their property for the period these measures were in effect. As a result, the landowners claimed TPRA had an unqualified constitutional obligation to offer compensation for the value of a parcel's use during the period development was prohibited¹⁰.

The market is currently in a re-adjustment phase following the establishment of thorough TRPA regulations covering most types of developments in the Lake Tahoe Basin. Even with the lifting of the total building moratorium, land development in the area is, at best, time consuming and extremely costly. This organization has control of all development in the area relating specifically to uses allowed, and to the amount of land coverage by structural or other man-made improvements to be allowed on individual sites. Additionally, approval must be granted by jurisdiction of the county in which a proposed development is planned.

¹⁰ Frank A. Shepherd, "The Supreme Courts Latest Word on Regulatory Taking", <www.vsb.org>

Typically, government regulations play a major role in controlling the housing supply. Some governmental regulations make it difficult and expensive for builders to obtain permits to start building in an area, hence creating a barrier of entry for construction companies. This acts as a deterrent for the builders because their profit margin will not be as large as they would like, and therefore they will relocate their construction where they will receive a greater profit margin. However, it is very difficult to conclude that the building regulations are related to the price appreciation in this market, since the new permits (new construction) data we gathered did not indicate any signs of limitation in residential construction.

3.0 The Real Estate Prices

There are approximately 14,500 residential units, excluding rentable apartments, in South Lake Tahoe. Out of 14,500 homes, approximately 300 residential units, located within the one mile radius of the resort, were selected for the study. These selected houses will act as a real estate indicator and represent the real estate market of the entire resort area.

In order to examine what has influenced the real estate prices in the study area, a real price index is constructed using the actual sales data. The sales data contains the following information; multiple sales dates, locations, ages of house, and their physical attributes, such as size, number of bedrooms and baths. The sales data of those selected homes was obtained through primarily two sources: El Dorado County Assessor's Office and Real Estate Research Firm, which specializes in Northern California Market. Unfortunately, the earliest data available is after 1988. Therefore, the time frame of historical price analysis is 20 years, from 1988 to 2008. Some of the data has missing information and some has the transaction dates prior to the construction date. Those were identified as lot sales and excluded from the analysis, totaling 537 observations.

3.1 Data Analysis

Typical House (Average)	
Observations	537
Bath	2.1
Bed	2.8
Size (sqft)	1644
Age (years)	23.4

Table 3.1

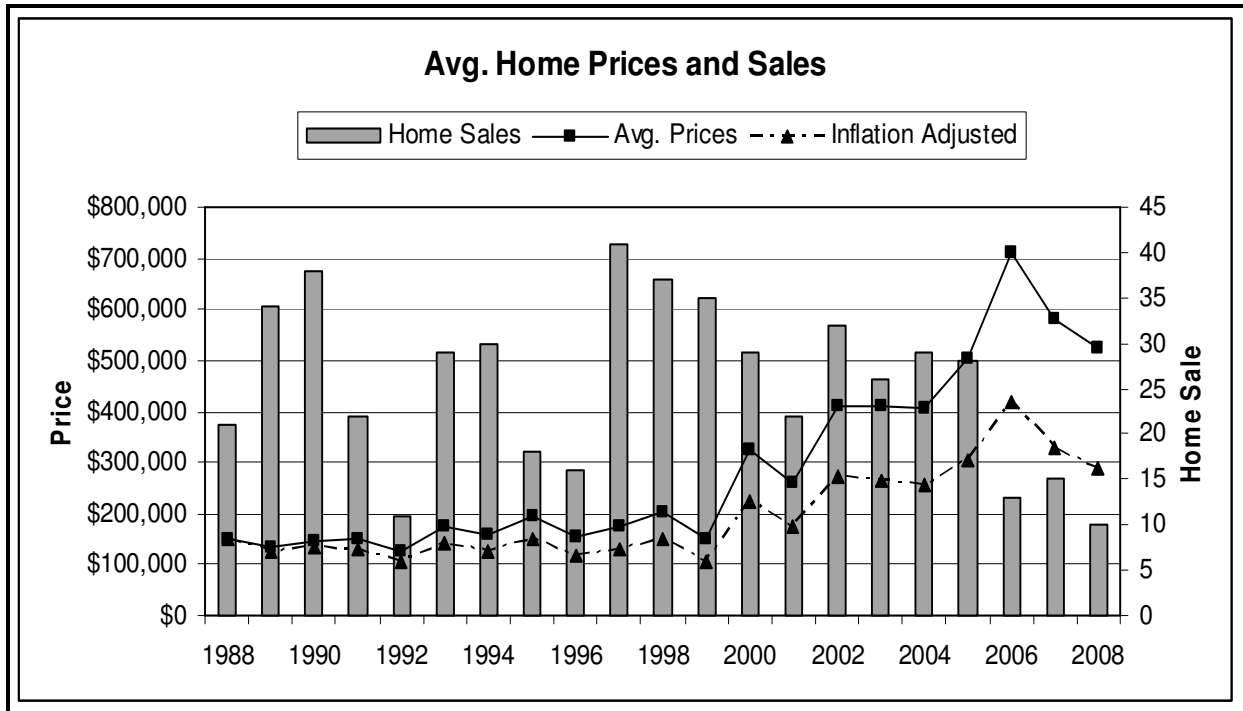


Figure 3.1 Average Home Prices and Home Sales Occurred in the Study Area

As seen in Figure 3.1, it is evident that the average home prices in the study area have escalated from \$151,262 in 1988 to \$522.25 in 2008, a 245 percent price appreciation in 20 years.

However, there would have been a higher price appreciation if we had excluded last three years from this analysis. A Similar trend is observed when adjusted for inflation, but less in magnitude.

The prices remained relatively steady from 1988 to 1998. However, prices began to increase rapidly from 1999 until 2006, with sudden spikes in 2000, 2002 and 2006. During this period, the nominal prices escalated more than 380 percent, which equates to an annual growth rate of 32 percent. Thereafter, the prices dropped 27%, from \$711,804 in 2006 to \$522,250 in 2008. In a comparison between prices and home sales, it is difficult to understand how the prices are correlated to the home sales. For example, a number of the home sales were increasing from 1988 to 1990, but the prices were not influenced by this increase. From 1997 to 2001, the average home prices increased while the home sales began to fall during the same period. As

mentioned previously, the ascending trends in prices have mainly been caused by the following: low interest rate, solid regional economy growth, and investment in real estate as alternative investing venue after the stock market's crash in 2000. Additionally, the discovery of Tahoe area as an affordable resort area drove demand higher, causing these price appreciations.

3.2 Price Index

In order to construct a price index, the sales data was regressed against to the natural log of price per square feet. Time dummy variables were inserted to estimate the coefficients of years that are related to the logarithm of price. Using only home specific physical characteristic and time dummy variables, the regression analysis was performed.

Before constructing a price index, it is important to examine the regression results to better understand which independent variables had significant impact on prices. When examining the result, there are a few variables with a negative coefficient. These variables will have negative effects on prices, meaning home buyers tend to pay less for the next incremental bedrooms and ages of the building. In contrast, ones with positive coefficients, such as baths and size of building, are recognized as more valuable than those with a negative sign, and buyers will pay much higher prices for houses with those specific amenities. Utilizing on the regression result, the following equation is used to construct a price index for a typical house near Heavenly Ski Resort.

Typical House (Average)			
Bath	Bed	Size(sqft)	Age (years)
2.1	2.8	1644	23.4

$\text{Price/sf} = e^{[4.3 + 0.048 \times \text{Baths} - 0.017 \times \text{Beds} + 0.00002 \times \text{Size} - 0.005 \times \text{Ages} + Y1989+\dots+Y2008]}$
--

Heavenly Price Index Regression: Natural Log of (Price / sf) :

Goodness of fit statistics:

Observations	536.000
Sum of weights	536.000
DF	511.000
R ²	0.678
Adjusted R ²	0.663
MSE	0.132
RMSE	0.363
MAPE	4.957
DW	1.779
Cp	25.000
AIC	-1061.979
SBC	-954.875
PC	0.353

Analysis of variance:

Source	DF	Sum of squares	Mean squares	F	Pr > F
Model	24	141.772	5.907	44.835	< 0.0001
Error	511	67.326	0.132		
Corrected Total	535	209.098			

Model parameters:

Source	Value	Standard error	t Stat	P-value	Lower bound (95%)	Upper bound (95%)
Intercept	4.348	0.110	39.362	< 0.0001	4.131	4.566
Baths	0.048	0.033	1.448	0.148	-0.017	0.112
Beds	-0.017	0.025	-0.686	0.493	-0.066	0.032
SqFt	0.000	0.000	-0.613	0.540	0.000	0.000
Ages	-0.005	0.002	-2.261	0.024	-0.009	-0.001
Y1989	-0.014	0.102	-0.137	0.891	-0.213	0.186
Y1990	0.148	0.099	1.498	0.135	-0.046	0.343
Y1991	0.238	0.111	2.146	0.032	0.020	0.457
Y1992	0.178	0.136	1.314	0.189	-0.088	0.445
Y1993	0.310	0.105	2.967	0.003	0.105	0.516
Y1994	0.244	0.104	2.353	0.019	0.040	0.447
Y1995	0.346	0.117	2.952	0.003	0.116	0.576
Y1996	0.277	0.122	2.279	0.023	0.038	0.516
Y1997	0.299	0.099	3.021	0.003	0.105	0.493
Y1998	0.416	0.101	4.123	< 0.0001	0.218	0.615
Y1999	0.315	0.103	3.060	0.002	0.113	0.518
Y2000	0.770	0.106	7.255	< 0.0001	0.562	0.979
Y2001	0.915	0.113	8.073	< 0.0001	0.692	1.138
Y2002	1.103	0.106	10.370	< 0.0001	0.894	1.312
Y2003	1.302	0.110	11.781	< 0.0001	1.085	1.519
Y2004	1.369	0.109	12.619	< 0.0001	1.156	1.582
Y2005	1.562	0.110	14.185	< 0.0001	1.346	1.778
Y2006	1.691	0.132	12.781	< 0.0001	1.431	1.951
Y2007	1.486	0.127	11.692	< 0.0001	1.237	1.736
Y2008	1.536	0.143	10.743	< 0.0001	1.255	1.816

Table 3.2

From the “price per square foot” equation and the typical home chart above, a nominal price index is constructed. Then, selecting year 1988 as a base year, the CPI Index is applied to remove inflation out of the prices and to create a real price index.

Year	ln(price/sf) of Typical Home	Nominal Price Index(p/sf)	Yearly CPI	Real Price Index (p/sf) ('88 dollars)
1988	4.25726862	\$70.62	118.3	\$70.62
1989	4.24341357	\$69.65	124.0	\$66.44
1990	4.40554018	\$81.90	130.7	\$74.13
1991	4.49575538	\$89.64	136.2	\$77.86
1992	4.43569433	\$84.41	140.3	\$71.17
1993	4.56775814	\$96.33	144.5	\$78.86
1994	4.50113323	\$90.12	148.2	\$71.94
1995	4.60335015	\$99.82	152.4	\$77.48
1996	4.53462287	\$93.19	156.9	\$70.26
1997	4.55624821	\$95.23	160.5	\$70.19
1998	4.67376576	\$107.10	163.0	\$77.73
1999	4.57270328	\$96.81	166.6	\$68.74
2000	5.02731428	\$152.52	172.2	\$104.78
2001	5.17236580	\$176.33	177.1	\$117.79
2002	5.36000056	\$212.73	179.9	\$139.90
2003	5.55905616	\$259.58	184.0	\$166.93
2004	5.62640998	\$277.66	188.9	\$173.89
2005	5.81916126	\$336.69	195.3	\$203.94
2006	5.94874113	\$383.27	201.6	\$224.91
2007	5.74374715	\$312.23	207.3	\$178.15
2008	5.79293608	\$327.97	215.6	\$179.96

Table 3.3 Nominal Price Index vs. Real Price Index

Adjusted for inflation, the real price index reveals a several things about the real estate market in South Lake Tahoe for the last 20 years. As described earlier in this chapter, the median house prices had a steady increase from 1998 to 2006, and it has been falling thereafter. The similar pricing behaviors are found in the South Lake Tahoe market. The real price index shows that the prices escalated from \$70.62/SF in 1988 to \$179.96/SF in 2008, approximately a 155 percent increase in 20 years. To identify pricing trends, the analysis is broken down to two phases: one from 1988 to 1999 and the other from 2000 to 2008. First, during the first period, the real prices

remained fairly static; \$70.62 in 1988 to \$68.74 in 1999. When inflation is added, however, the nominal price index exhibits a steady climb until 1998, from \$70.62 in 1988 to \$96.81 in 1999.

The average inflation during this phase was 3.25 percent, which was much higher than that of the later period. On the other hand, the price appreciation from 1999 to 2006 communicates a completely different story. The nominal prices escalated by nearly 300% during this 7 year time period. Adjusted for inflation, the real prices increased 227%, beginning in 1999 at \$68.74 to ending in 2006 at \$224.91. The prices have been falling since 2006.

It is very interesting to observe the result, which clearly showed two different rates of price appreciation in the same market: steady growth vs. rapid growth. During the study timeframe, the overall real estate market in South Lake Tahoe has been on an upward trend and clearly profitable, an increase of 7.57% a year until 2006. Certainly, it would have been a sagacious investment, if anyone had purchased a house in this market during 1990s and sold it before 2006

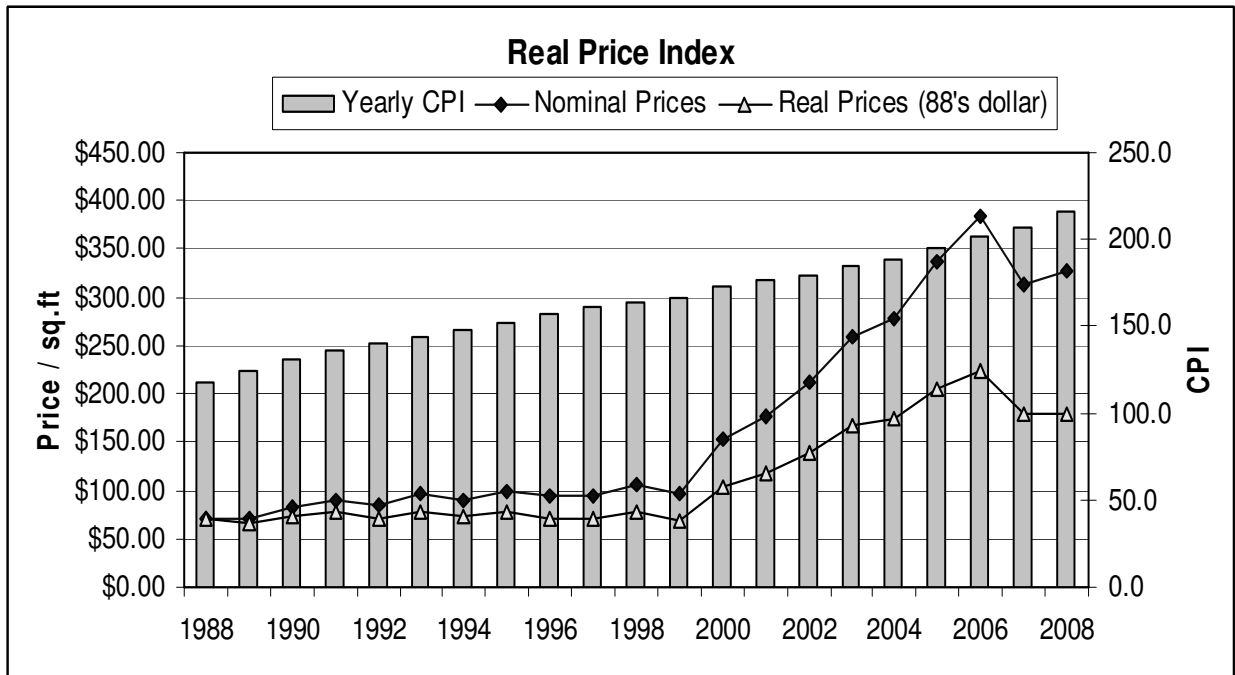


Figure 3.2 Price Index: Nominal vs. Real (inflation adjusted)

4.0 Supply and Demand

In order to predict the future prices and study their behaviors, a thorough study of supply and demand must be performed to identify determinants that strongly influence the prices in this market. As one understands this relationship, one can make sound forecasts about the future behaviors of these determinants as well as how they impact the future prices. Supply is usually measured by the amount of new residential construction. However, we collected annual building permits to represent supply market, which is limited to houses within South Lake Tahoe, reasoning that if a building permit is issued for residential construction in certain year, this permit will lead to a new construction for that year. Demand is measured by Tahoe skier visits based on an assumption that, as more people come to Tahoe for skiing, there will be a higher demand for housing.

Supply and demand is a fundamental economic principle in which a unit price is either positively or negatively affected by the availability of the product. Consequently, if there is a high demand for a product with low supply, the deficit of product will cause the price to rise. Similarly, low demand with high supply in a product will result in decrease in price.

This principle of supply and demand is applied to the real estate market, and explains how the housing prices are set to the price equilibrium. Although the real estate market is considered to be one of the most stable industries in the US with a strong growth tendency, as highlighted in monotonic increase in national housing prices in every single year since World War II, certain events will influence the supply and demand in the national as well as the local real estate markets.

During a period of low stock availability as well as high demand, the home prices will soar. This is particularly seen if we compare the asking prices of homes to a time when local real estate market conditions have high supply of homes for sale but low demand of people who want to live in this area. However, one cannot fill a real estate supply shortage by immediate manufacturing of identical units. This is not only a matter of replicating the stock, but also the time required in the process. It is not a manufactured commodity. Though one might be able to create more condos in a given space, the space itself is unique and cannot grow to accommodate a shortage of supply. Therefore, the different points of supply and demand in an area will have a great influence on prices.

4.1 Supply

Measured by the total housing stock, supply is typically one of the most important factors to determine real estate prices. In order to see how the availability of housing stock plays a role in the pricing, annual building permit data of South Lake Tahoe was gathered. The annual building permit data will be measured as annual new construction occurrence. Available only for the period after 1988, the annual permit data was obtained through El Dorado County's Building Department. Utilizing this annual permit data, coupled with the current stock figure, we computed how many stocks were existed in each year during the timeframe of this study.

To help readers understand how the real estate cycle works, a brief explanation follows.

Conventionally, a new housing stock is mostly created when residential prices exceeds the cost of new construction by a considerable amount, giving incentives to the developers to build new homes. Once developers recognize that there is an opportunity, new construction boom will ensue, building which an excessive amount of housing units are built, which will be more than

enough for the demand of buyers. This will cause the housing prices to fall. As the prices fall, fewer developments will follow, eventually causing the prices to trend upward again.

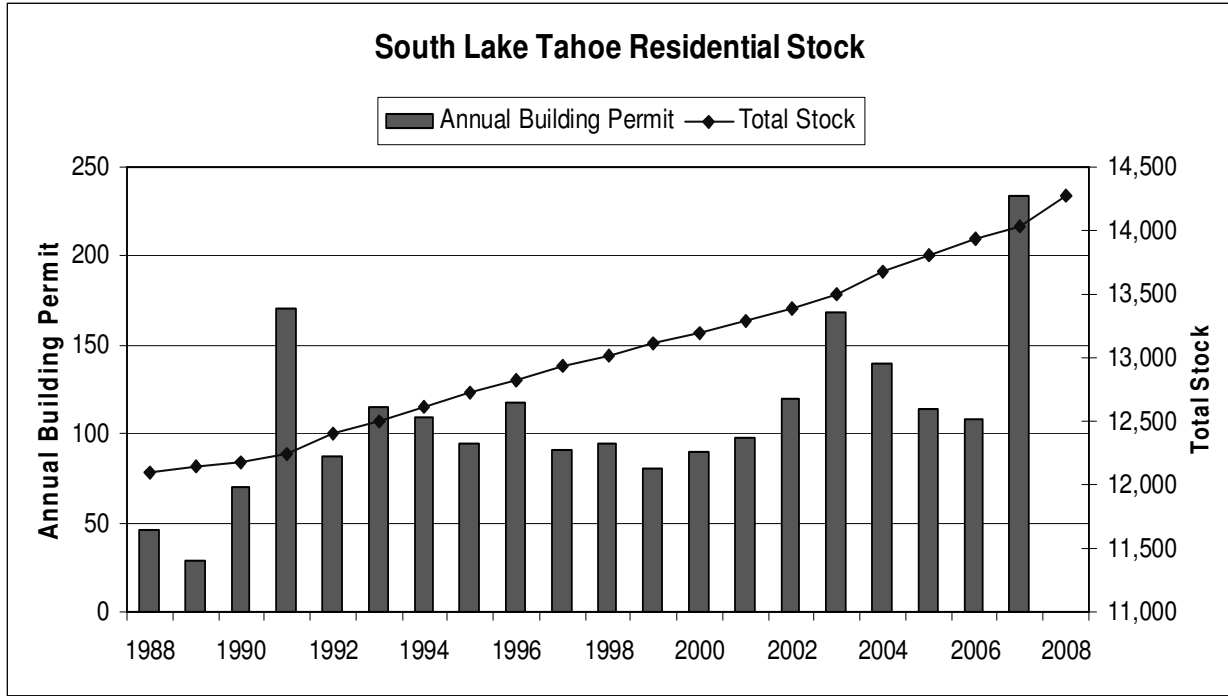


Figure 4.1 Historical building permits issued each year vs. total stock

The Figure 4.1 reveals an important characteristic about the market, distinguished from the newly developed resort market. First, one would find that the real estate market in South Lake Tahoe is a relatively mature market compare to other ski resorts. Having its first residential development that dates to the late 19th century, this market continued to expand and already had a significant amount of housing stock in the late 1980s. During this period, other ski resort areas were being discovered and recognized by vacationers. Therefore, new constructions proceeded after 1988 accounted for 15 percent of the total stock, a relatively small portion.

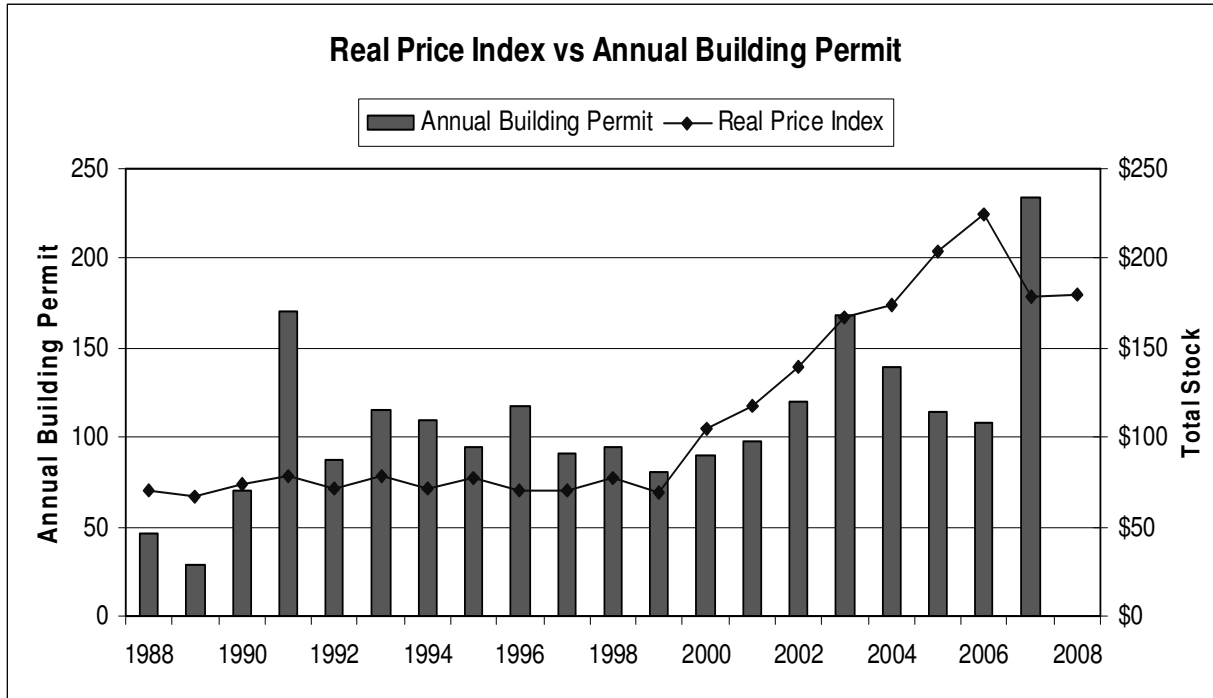


Figure 4.2

In Figure 4.2, the real price index shows that the prices escalated from \$70.62/SF in 1988 to \$179.97/SF in 2008, approximately a 155 percent increase in 20 years. Comparing real prices and annual building permit, there are a few interesting points that can be observed. In 1991, there was a sudden spike in construction, but strangely enough, it did not have any impact on prices. From 2000 to 2003, as the price increased, the number of new permits (new construction) also increased. An increase in stock provides buyers a greater range of options to purchase a house, which seemingly should cause the price of real estate price to drop. However, the graph shows that this is not the case. As mentioned previously, a 75 percent of total stock today was already built prior to 1988. Since the number of new permits issued after 1988, regardless of changes in price, is relatively small, their influences on prices are in fact negligible. However, newly developed ski resorts, located on the other side of the continent, tell a different story. Unlike Heavenly, Loon Mountain Ski Resort, New Hampshire had its first condo development

begin in the late 1970s and had approximately 2,100 condos by 2005. What is interesting for this market is that supply responded very promptly and sensitively to the changes in price. As prices escalated above construction costs, new constructions immediately followed, leading to a development boom. This caused a rapid increase in the housing stock, since there was not much existing stock to begin with. In turn, it led to an oversupply of housing units and depressed these prices back to pre-boom level. Thus, often fluctuated by demand shocks, condo prices in Loon Mountain have remained flat over the years.¹¹

4.2 Annual Permit Equation

Taking the historical permit information as a dependent variable, a series of regression was performed to determine other economic variables that had a significant effect on annual residential permit. By analyzing the results of the regression, one with the most reasonable result and with correct signs was selected. Based on this result, a stock equation is created to predict the amount of future stock by applying future assumptions of these independent variables. As the dependant variable, the annual residential permit t is highly dependent on the following variables: number of permit $t-1$, real price index $t-2$, and current interest rate t . Using coefficient of these independent variables, the following equation is created.

$ \begin{aligned} \text{Permits } t &= 78.6417 - [0.1431 \times \text{Permit } t-1] + [0.6992 \times \text{Real Price Index } t-2] \\ &\quad (112.2) \qquad\qquad\qquad (0.308) \qquad\qquad\qquad (0.311) \\ &\quad - [0.7451 \times \text{Interest Rate } t] \\ &\qquad\qquad\qquad (10.6) \end{aligned} $

Equation 4.1

¹¹ William C. Wheaton, "Does Supply Prevent Appreciation?", Journal of Real Estate Research, Vol.27, No.1.2005

In analyzing Equation 4.1 in detail, we point out that the elasticity with respect to permits is close to 1.0, measured by the percentage change in permits when prices double. If prices increase by \$200, permits will increase by 140, given by Equation 4.1. However, if prices were permanently set at \$400, doubled \$200 increase, after 100 years they would have created 14,000 more cumulative permits than they would without the price increase. Since there are approximately 14,500 existing units in this region, it will take, at least, 100 years for the existing stock to double the amount. Presumably, the building restrictions imposed by Tahoe Regional Planning Agency are the cause of this delay between new construction and price increase, making further development more difficult and costly.

Using the following equation, total stock is calculated using permit data.

$$\text{Stock}_t = \text{Stock}_{t-1} + \text{Permits}_{t-1}$$

Equation 4.2

As shown in the result of the regression in Table 4.1, the value of R square is .38, meaning almost 40 percent of new permit can be explained by these three variables. This also indicates that the real price index $t-2$, with t-Stat of 2.25, is highly significant in determining the new permit. Since it refers to the price two years back, it captures the momentum in prices.

New Permit Regression

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.616862571
R Square	0.380519432
Adjusted R Square	0.247773596
Standard Error	34.54942618
Observations	18

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	10264.99789	3421.665963	2.866526311	0.074251497
Residual	14	16711.27989	1193.662849		
Total	17	26976.27778			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	78.64174484	112.1912111	0.700961725	0.494813525	-161.9846853
Permit _{t-1}	-0.143094792	0.308002433	-0.464589812	0.649368036	-0.803694898
Real Price Index _{t-2}	0.69918286	0.311269375	2.246230808	0.041346653	0.031575854
Interest rate _t	-0.74514594	10.603859	-0.070271204	0.944971716	-23.4881818

	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
	319.2681749	-161.984685	319.2681749
	0.517505313	-0.8036949	0.517505313
	1.366789866	0.031575854	1.366789866
	21.99788992	-23.4881818	21.99788992

Table 4.1

4.3 Demand

In the previous section, we studied supply and created a new permit equation to forecast the future supply. In turn, we must also study demand, identifying different variables that affect skier visits. According to a demographic research of home buyers, a majority of the buyers come from San Francisco Bay Area and the adjacent cities in Nevada¹². These buyers are either young professionals seeking for their vacation home or retirees searching for their retirement home. Many of them indicated that investment potential on investment was a key consideration when buying resort properties.

4.3.1 Skier Visits

Defined as one-person alpine skiing for one day, a skier visit is measured by ticket sales, in which one ticket sold is equivalent to one skier. Heavenly Resort skier visits data prior to 2002 was not available to the general public until the resort became a public company in 2002. Therefore, statewide and region-wide data will be used. For the study of demand, data on California skier visits and Tahoe area skier visits was gathered and sourced through the California Ski Industry Association, which tracks the skier visits data measured by ticket sales from the 1979 season to the present. Both of these series are helpful to compare trends, but only Tahoe skier visits data are used for the analysis.

Even though the number of skier visits for both CA and Tahoe has fluctuated during the studied period, one can conclude that the overall skier visits remained relatively steady for Tahoe area, from 3.7 million in 1987-1988 season to 4.1 million in 2007-2008. A similar trend is shown for California. From 1988 to 1991 season, a steep decreasing trend is observed, a 40% drop from

¹² Alec Rosenberg “Investors fuel second-home boom”, Oakland Tribune, Apr.1, 2005

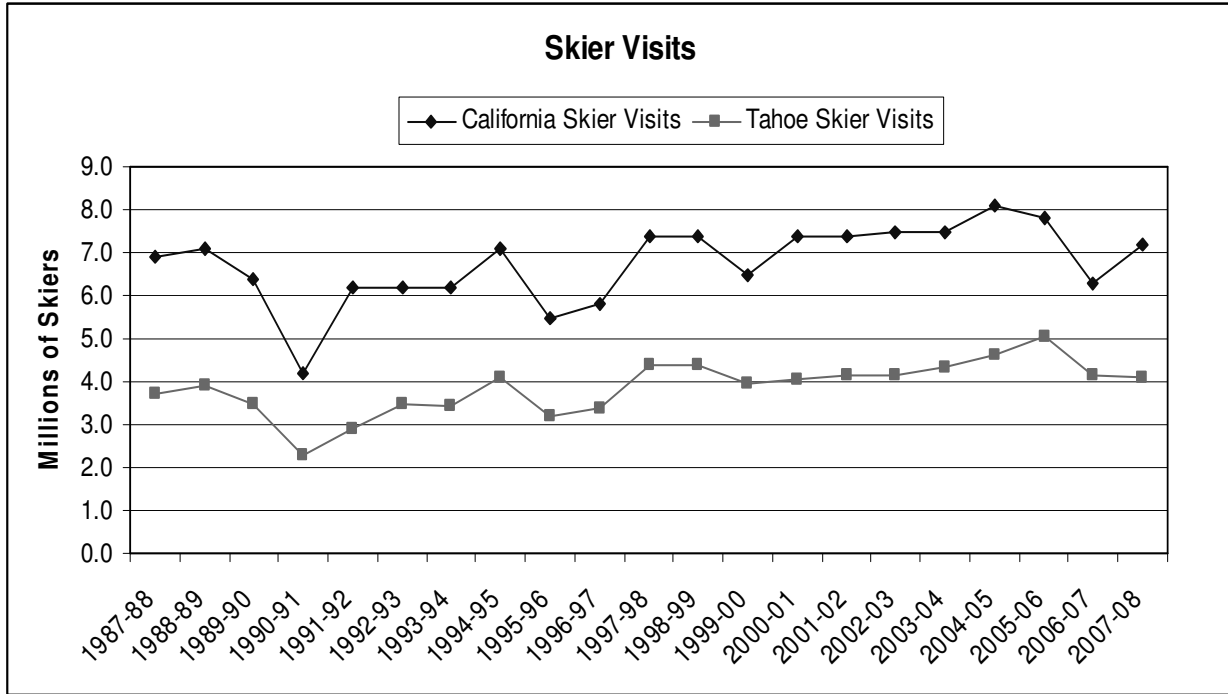


Figure 4.3

3.7 to 2.3 million, followed by a steady increase until 2005 – 2006 season. It showed a 125% increase in skier visits from 2.3 million in 1990-1991 season to 5.1 in 2005-2006 season.

These fluctuations of skier visits are influenced predominately by the regional economy, measured by growth in income and employment, natural snowfall, as well as the previous year's skier turnout. Figure 4.4 underscores the link between skier visits and snowfall. For example, snowfalls in 1993 and 1995 were 344.0 and 455.5 inches respectively, which are all time highs during the study of our timeframe. As can be guessed, skier visits increased during those years of phenomenal snowfall.

Consisted of 14 ski resorts, Tahoe ski areas are attracting millions of people each year from all over the world. Most of these visitors do come from the San Francisco Bay Area, only a 3 hour-

driving distance. Therefore, it makes sense to use regional economic factors for the study of demand in order to predict future skier visits in the econometric model.

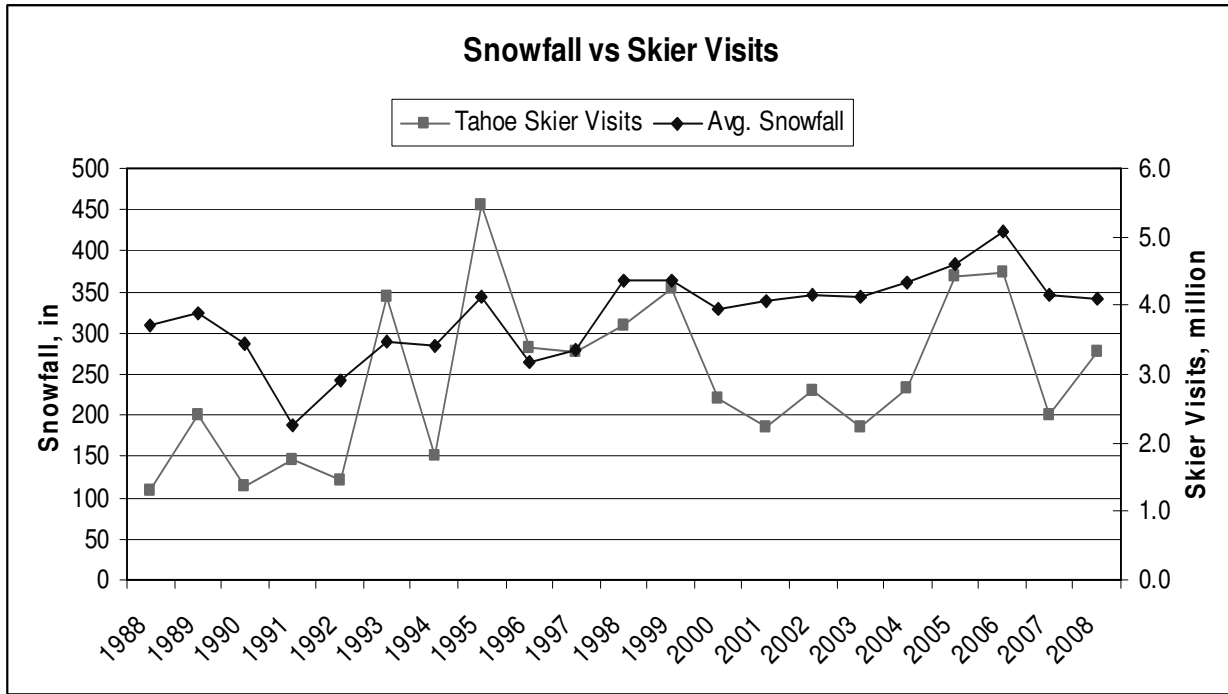


Figure 4.4

4.3.2 Snowfall

Measured in inches, snowfall was obtained directly from the marketing department of Heavenly Ski Resort. It is measured by a several stations throughout the resort. The amount of snowfall is figured by the ski season, from November to April, to better match the skier visit counts. From Figure 4.4, it is clear that the amount of snowfall each season fluctuates considerably throughout the studied period. Comparing to the Skier Visits to the amount of snowfall clearly shows a noticeable result. They are highly correlated. As Snowfall increase in certain year, more skier visits will follow.

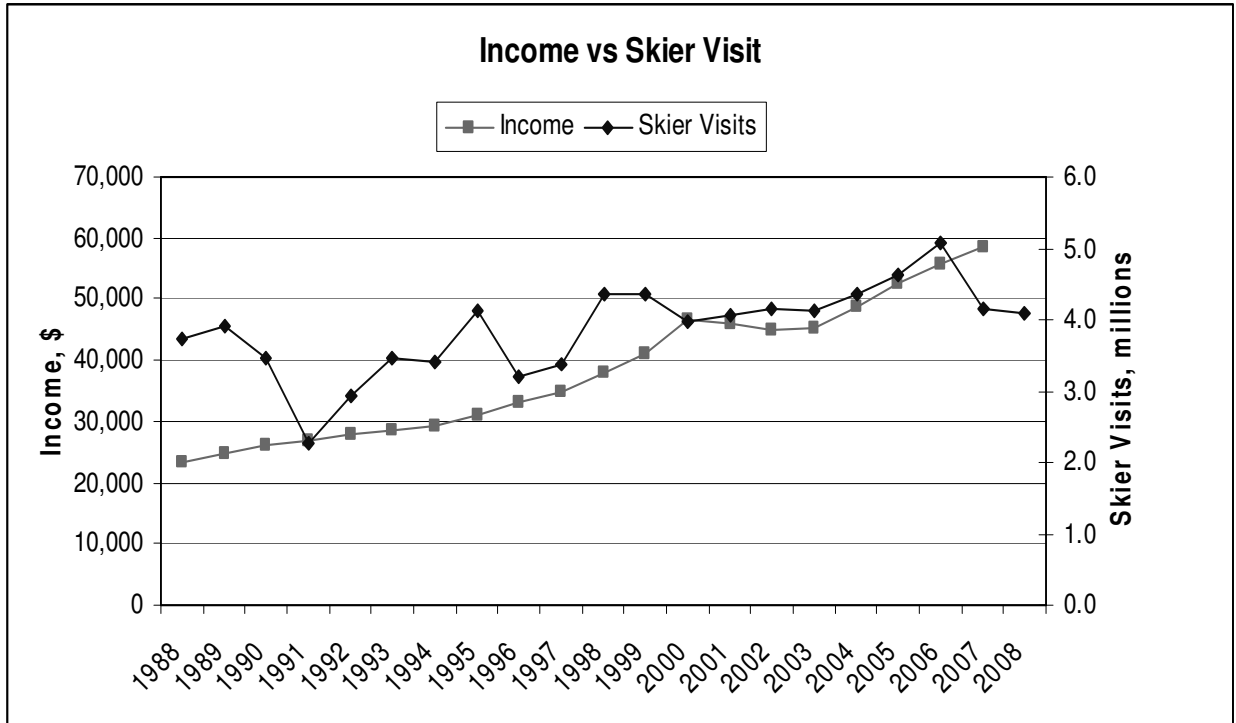


Figure 4.5

4.3.3 San Francisco Bay Area Income

Per capita income for San Francisco Bay Area is another important economic factor that influences skier visits. Measured in dollars, income data was collected through California government agency, Employment Development Department. The Employment Development Department tracks economic data related to the labor market for California and its counties. Consisted of 9 individual counties, San Francisco Bay Area has one of the highest Per Capita Incomes in the U.S. Since this data is not achievable for San Francisco Bay Area, Per Capita Income for those 9 counties were gathered and averaged to arrive at the San Francisco Bay Area Income.

4.4 Skier Visits Equation

In determining which variables had a significant affect on demand, many other data sets were regressed against Skier Visits. Analyzing these regression results, the only combination with variables that affect skier visits and with a reasonable R square was selected, as shown in Table 4.2.

Skier Visits Regression

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.877502615
R Square	0.77001084
Adjusted R Square	0.699244944
Standard Error	0.371262064
Observations	18

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	5.999209	1.499802184	10.88110076	0.000426203
Residual	13	1.791862	0.13783552		
Total	17	7.791071			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	0.720175397	1.812699	0.397294544	0.697596417	-3.195921806
Skier Visits $t-1$	-0.019889009	0.227445	-0.087445433	0.931650093	-0.511253529
Snowfall t	0.002813974	0.000953	2.953317809	0.011200221	0.000755537
Bay Area Employment t	2.70523E-07	7.07E-07	0.382475676	0.708288603	-1.2575E-06
Bay Area Income t	4.12497E-05	1.7E-05	2.422173651	0.030779437	4.45856E-06

<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
4.6362726	-3.19592181	4.6362726
0.471475511	-0.51125353	0.471475511
0.004872412	0.00075553	0.004872412
1.79854E-06	-1.2575E-06	1.79854E-06
7.80409E-05	4.45856E-06	7.80409E-05

Table 4.2

For the purpose of forecasting future demand, the following equation was constructed, taking Tahoe skier visits as the dependent variable. More independent variables could have been added for a complex analysis. However, one with the fewer the inputs is selected. Because we need to make fewer assumptions when determining the future skier visits.

$$\begin{aligned}
 \text{Skier Visits}_t = & 0.7202 - [0.0199 \times \text{Skier Visits}_{t-1}] + [0.0028 \times \text{Snowfall}_t] \\
 & (1.813) \qquad\qquad\qquad (0.227) \qquad\qquad\qquad (0.0010) \\
 & + [2.7052\text{E-}07 \times \text{SF BA Employment}_t] + [4.1250\text{E-}0.5 \times \text{BA Income}_t] \\
 & (7.07 \text{ E-}07) \qquad\qquad\qquad (1.7 \text{ E-}05)
 \end{aligned}$$

Equation 4.3

With these four variables - previous year's visits, natural snowfall, San Francisco Bay Area employment, and income - R square of .77 was achieved, meaning 77 percent of the variations in skier visits are explained by this model. All these inputs would arguably affect skier visits. Examining the t-Stats for each variable, one can identify that t-Stat for snowfall and income showed a much higher value. In another words, the effect of these contributions of these two variables in affecting skier visits is more significant than the other variables: previous year's visits and San Francisco Bay Area employment. Also, the previous year's visits in the equation does not accounts for the momentum factor. Skiers for the last year are less likely to be those of this year. In conclusion, as income grows or more snowfall comes in a certain year, it is expected that skier visits will also increase for that year.

5.0 The Real Price Equation

Using the key economic variables, the real price equation is created. This price equation enables us to forecast the future prices and their behaviors. As in the previous chapters (when creating supply and demand equations), similar approach was taken in determining other economic variables that strongly influence the real pricing. Different sets of variable combination were first gathered and regressed against the real price index. Besides exhibiting the highest R square, the ideal pricing equation would be one that utilizes the fewest independent variables. After running numerous regressions, a set that utilizes the following variables - previous real price, Tahoe visits, interest rates, Bay Area income and stock - was chosen. With R square of .91, this model explains 91 percent of the pricing scenarios. Also, coefficient of these variables expresses the most appropriate sign that follows a fundamental supply and demand principle.

$$\begin{aligned} \text{Real Price Index}_t = & 884.8 + [0.8311 \times \text{Real Price Index}_{t-1}] - [0.07224 \times \text{Stock}_t] \\ & (790.1) \qquad \qquad (0.1765) \qquad \qquad \qquad (0.06439) \\ & + [10.0343 \times \text{Skier Visits}_t] - [11.2276 \times \text{Interest Rate}_t] \\ & \qquad \qquad (8.568) \qquad \qquad \qquad (8.945) \\ & + [0.003135 \times \text{BA Income}_t] \\ & \qquad \qquad \qquad (0.0025) \end{aligned}$$

Equation 5.1

Again, all these inputs would affect real prices index. However, comparing t-Stats of each variable, the previous year's prices, with the highest t-Stat of 4.7, can be further said that it has a significant influence in determining the pricing behaviors due to a momentum effect.

Additionally, it is found that the previous year's price index, Tahoe visits, and income have

positive correlations with real price index. The real price index will increase or decrease as one of these variables increases or decreases in value.

Real Price Index Regression

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.956460588
R Square	0.914816856
Adjusted R Square	0.882054109
Standard Error	15.30843948
Observations	19

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	5	32717.92028	6543.584056	27.92247058	1.61105E-06
Residual	13	3046.528153	234.3483195		
Total	18	35764.44843			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	884.7846601	790.1271133	1.119800403	0.283061694	-822.180861
Price _{t-1}	0.831136218	0.176530231	4.708180653	0.000409131	0.449765914
Tahoe Visits _t	10.03430402	8.568452515	1.171075407	0.262586923	-8.476708659
Interest Rate _t	-11.22764986	8.945317567	-1.255142679	0.2315212	-30.55282982
Bay Area Income _t	0.003135203	0.002519525	1.244362573	0.235334508	-0.002307899
Stock _t	-0.072242445	0.064393271	-1.121894324	0.282202458	-0.211355621

	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
	2591.750181	-822.180861	2591.750181
	1.212506522	0.449765914	1.212506522
	28.5453167	-8.47670866	28.5453167
	8.097530111	-30.5528298	8.097530111
	0.008578304	-0.0023079	0.008578304
	0.066870732	-0.21135562	0.066870732

Table 5.1

From the demand equation, we examined that snowfall and income are more directly related to skier visits than the previous year's price is. If these two variables increase, there will lead to a higher demand for housing. As a result, the real price will rise. Negatively correlated to the real price index, however, the current year's stock and interest rate worked exactly in an opposite manner. Either one of current stock or interest rate increases in value, it will cause the real price to drop. As the mortgage interest rate rises, money becomes more expensive to borrow, causing housing demand to lower. Eventually, the real price will fall to a point where the price cannot be supported by demand at that time.

Using a system of equations, coupled with a new stock equation that connects all the equations, the future pricing behaviors will be examined. The following diagram will help readers understand the relationships between these four equations that form the econometric model

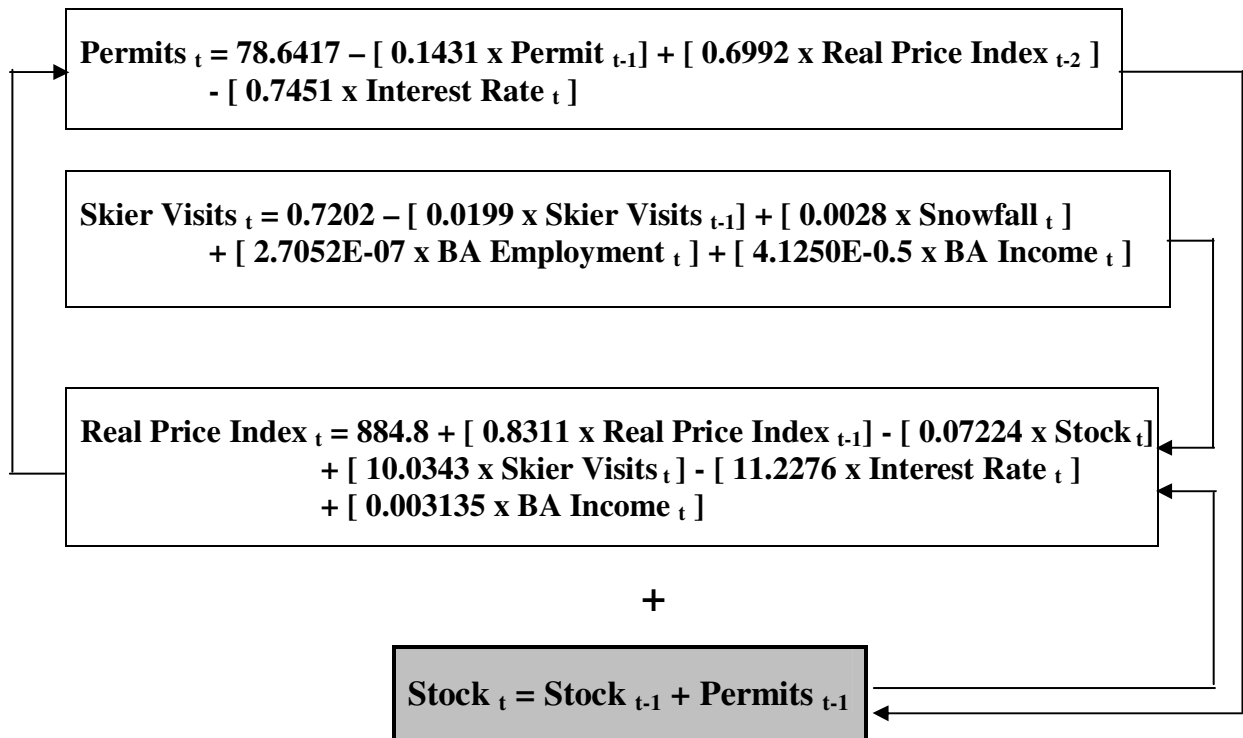


Figure 5.1

6.0 Future Pricing Model

Using the newly created set of equations, the future pricing and its behaviors will be studied.

This study is divided into to 3 scenarios: *realistic*, *optimistic*, and *pessimistic*. Since these equations are derived from snowfall, interest rates, employment, and income, these variables need to be reasonably assumed for each scenario.

6.1 Realistic Scenario

Year	Real Price Index	Total Stock	Annual Permits	Skier Visits (millions)	Snowfall (in)	Employment Growth	Bay Area Employment	Income Growth	Bay Area Income(\$)	Interest Rates(%)
Average 88-08	\$112.65	12,981	108.7	3.9	244.8	0.4%	3,183,455	5.0%	38,204	7.61
Forecast 09-19					244.8	0.4%	-	5.0%	-	7 to 6
1988	\$70.62	12,096	46	3.7	108.5	-	-	-	23,460	10.34
1989	\$66.44	12,142	29	3.9	200.0	-	-	5.9%	24,853	10.32
1990	\$74.13	12,171	70	3.5	114.0	-	3,029,207	5.4%	26,203	10.13
1991	\$77.86	12,241	170	2.3	147.0	-2.9%	2,942,366	1.9%	26,698	9.25
1992	\$71.17	12,411	87	2.9	122.5	-1.9%	2,887,645	4.6%	27,922	8.39
1993	\$78.86	12,498	115	3.5	344.0	-0.3%	2,879,500	1.9%	28,462	7.31
1994	\$71.94	12,613	109	3.4	152.0	0.7%	2,900,397	3.4%	29,421	8.38
1995	\$77.48	12,722	94	4.1	455.5	2.2%	2,964,060	5.8%	31,122	7.93
1996	\$70.26	12,816	117	3.2	281.5	3.9%	3,078,411	6.3%	33,086	7.81
1997	\$70.19	12,933	91	3.4	277.0	3.4%	3,182,397	5.7%	34,980	7.60
1998	\$77.73	13,024	94	4.4	309.5	3.8%	3,303,428	8.4%	37,908	6.94
1999	\$68.74	13,118	81	4.4	354.8	2.7%	3,391,396	8.2%	41,016	7.44
2000	\$104.78	13,199	90	4.0	220.5	4.5%	3,545,274	14.1%	46,806	8.05
2001	\$117.79	13,289	98	4.1	186.0	-1.7%	3,484,810	-1.5%	46,121	6.97
2002	\$139.90	13,387	120	4.1	229.5	-4.9%	3,312,546	-2.7%	44,867	6.54
2003	\$166.93	13,507	168	4.1	185.3	-3.0%	3,213,125	1.2%	45,410	5.83
2004	\$173.89	13,675	139	4.4	232.5	-0.7%	3,191,936	7.3%	48,708	5.84
2005	\$203.94	13,814	114	4.6	368.0	0.7%	3,213,983	7.8%	52,497	5.87
2006	\$224.91	13,928	108	5.1	374.5	1.9%	3,275,561	6.4%	55,876	6.41
2007	\$178.15	14,036	234	4.2	200.0	6.3%	3,482,800	5.0%	58,669	6.34
2008	\$179.96	14,270	165	4.1	277.5	-7.9%	3,206,800	5.0%	61,603	6.22
2009	\$166.20	14,435	166	5.0	244.8	0.4%	3,219,627	5.0%	64,683	7.00
2010	\$157.30	14,601	166	5.2	244.8	0.4%	3,232,506	5.0%	67,917	6.75
2011	\$150.01	14,767	160	5.3	244.8	0.4%	3,245,436	5.0%	71,313	6.75
2012	\$147.92	14,927	155	5.5	244.8	0.4%	3,258,417	5.0%	74,879	6.50
2013	\$148.36	15,082	154	5.6	244.8	0.4%	3,271,451	5.0%	78,623	6.50
2014	\$151.59	15,236	155	5.8	244.8	0.4%	3,284,537	5.0%	82,554	6.50
2015	\$160.57	15,392	158	6.0	244.8	0.4%	3,297,675	5.0%	86,681	6.25
2016	\$172.09	15,549	164	6.2	244.8	0.4%	3,310,866	5.0%	91,015	6.25
2017	\$186.03	15,713	172	6.4	244.8	0.4%	3,324,109	5.0%	95,566	6.25
2018	\$205.06	15,885	181	6.6	244.8	0.4%	3,337,406	5.0%	100,344	6.00
2019	\$225.70	16,066	193	6.8	244.8	0.4%	3,350,755	5.0%	105,362	6.00

Table 6.1

The first case portrays a realistic scenario. What happens to the future economy usually mirrors what has happened in the past, as history tends to repeat itself. In this case, instead of using cyclical trends, we compute the historical growth rate of each variable (linear trend) and used it as a basis to estimate future growth rates for the next 10 years. For instance, the average employment growth rate from 1990 to 2008 was .4 percent per year. We assume, then, that the annual employment growth rate for next ten years will be .4 percent. Applying this growth rate, we are able to calculate the future employments. The same method is used to forecast the future income. For snowfall, however, it is very difficult to recognize any notable trends. For the sake of simplicity, a historical average of 244.8 inches of snowfall is used for the next ten years (note: this is not an annual growth rate). Lastly, based on Mortgage Bankers Association’s economy forecasts, we assume that the interest rate goes up to 7.0 percent in 2009 and gradually falls back to 6.0 percent in 2019. This interest rate assumption will be applied in all cases.

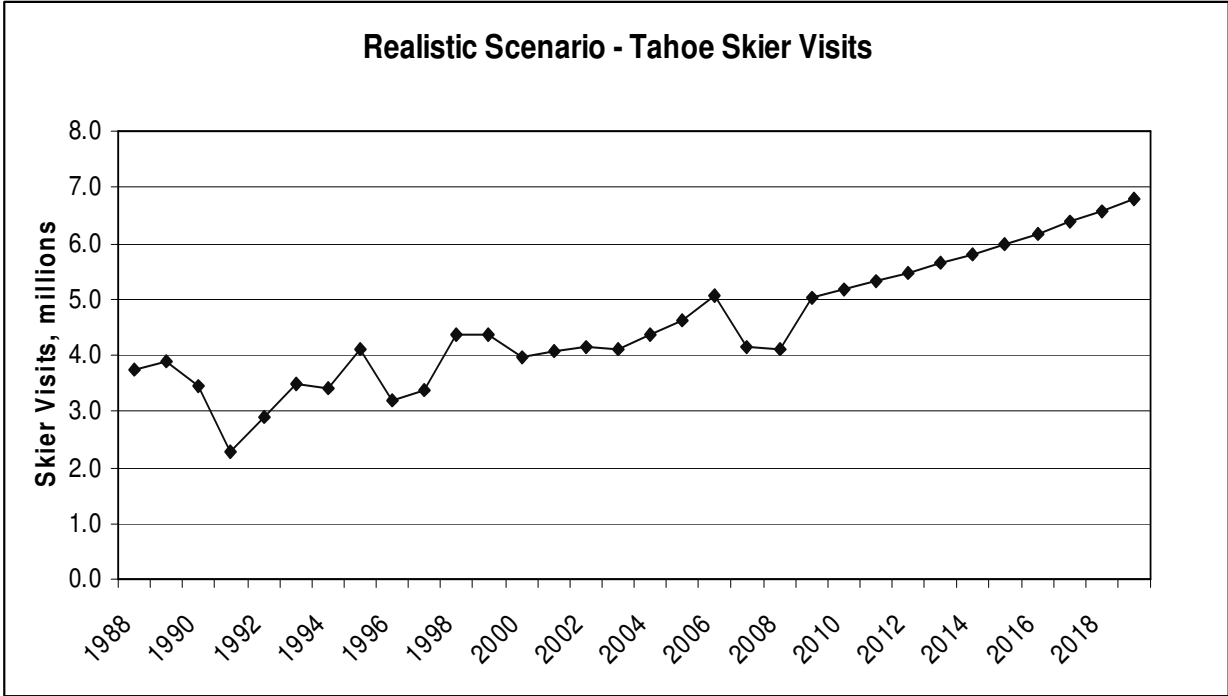


Figure 6.1

In chapter 4, we examined that Tahoe skier visits are dependent on snowfall, employment, and income and the previous year's skier visits. Due to a steady growth in income and employment, .4 percent and 5 percent respectively, and a moderate snowfall of 244.8 inches, skier visits immediately jump a remarkable 23 percent in the 2009 ski season. Though slower, the increase begins to follow a linear trend of 3 percent a year until 2019.

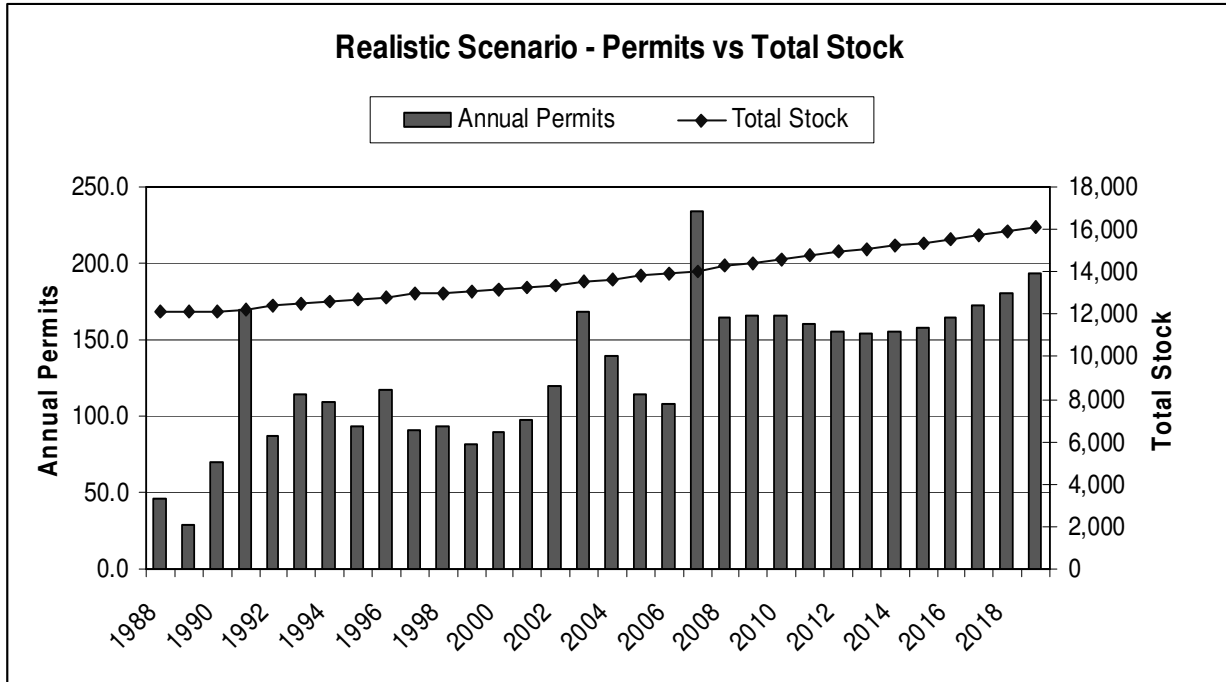


Figure 6.2

New permits are more closely linked to interest rates, the previous year's real price (price $t-2$) and permits (permits $t-1$) than the current economic conditions. Higher interest rates and a decline in price cause stagnation in annual permits for the next two years. Thereafter, an immediate downward trend is observed until 2013, falling at a rate of 1.3 percent a year. As interest rates decline, the new permits slowly begin to increase at 4 percent annually, from 154 permits in 2009 to 193 in 2013. A similar trend is observed in the real price index. In response to modest snowfall and economic growth, the real prices immediately start to fall 4 percent a year until 2013. Thereafter, it exhibits an upward trend until 2019.

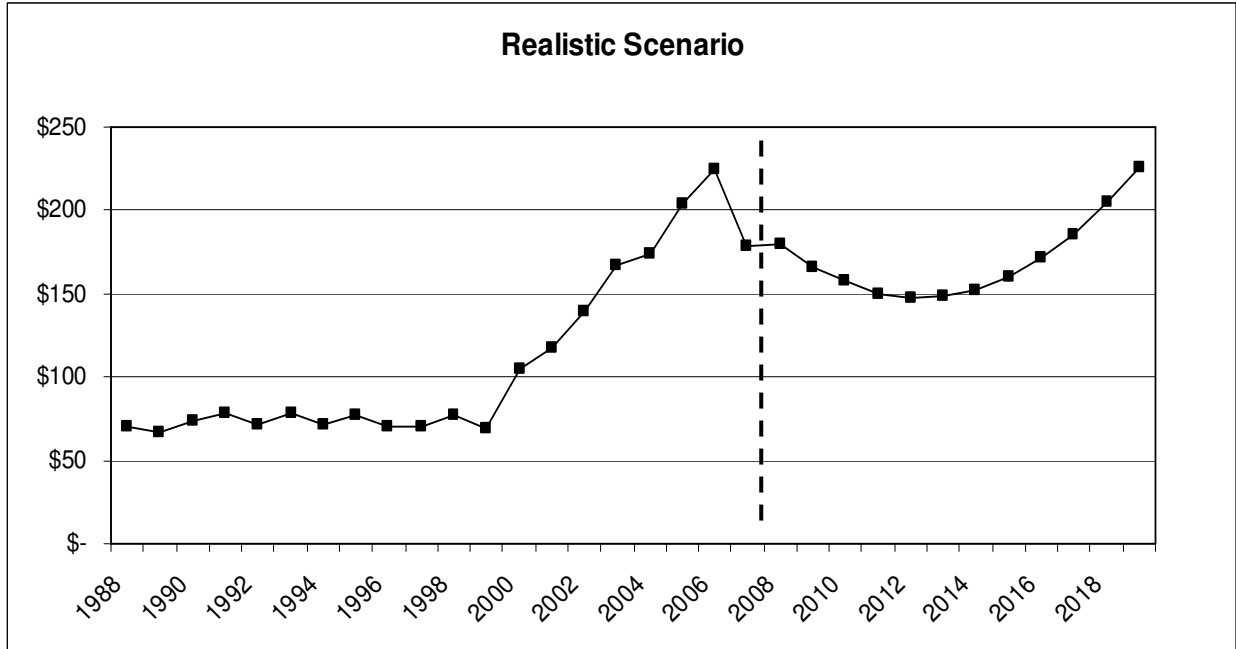


Figure 6.3

6.2 Optimistic Scenario

Year	Real Price Index	Total Stock	Annual Permits	Skier Visits (millions)	Snowfall (in)	Employment Growth	Bay Area Employment	Income Growth	Bay Area Income(\$)	Interest Rates(%)
Average 88'-08'	\$112.65	12,981	108.7	3.9	244.8	0.4%	3,183,455	5.0%	38,204	7.61
Forecast 09'-19'					375.0	1.5%		7.0%		7 to 6
2009	\$178.80	14,435	166	5.5	375.0	1.5%	3,254,902	7.0%	67,171	7.00
2010	\$185.77	14,601	175	5.7	375.0	1.5%	3,303,726	7.0%	71,872	6.75
2011	\$196.96	14,776	180	6.0	375.0	1.5%	3,353,281	7.0%	76,904	6.75
2012	\$215.36	14,956	186	6.2	375.0	1.5%	3,403,581	7.0%	82,287	6.50
2013	\$237.82	15,142	199	6.5	375.0	1.5%	3,454,634	7.0%	88,047	6.50
2014	\$264.20	15,341	213	6.7	375.0	1.5%	3,506,454	7.0%	94,210	6.50
2015	\$297.12	15,554	230	7.0	375.0	1.5%	3,559,051	7.0%	100,805	6.25
2016	\$333.09	15,784	251	7.3	375.0	1.5%	3,612,436	7.0%	107,861	6.25
2017	\$371.84	16,036	274	7.7	375.0	1.5%	3,666,623	7.0%	115,411	6.25
2018	\$415.96	16,310	298	8.0	375.0	1.5%	3,721,622	7.0%	123,490	6.00
2,019	\$461.99	16,608	326	8.4	375.0	1.5%	3,777,447	7.0%	132,135	6.00

Table 6.2

With much higher income and employment growth rates as well as a phenomenal snowfall, the optimistic case represents the most attractive price appreciation, more skier visits, and new permits increase. For this scenario, we assume 1.5 percent for the employment growth rate and 7

percent for income because economy growth for this case should portray the economic condition between 2003 and 2006, a period with strong economy growth.

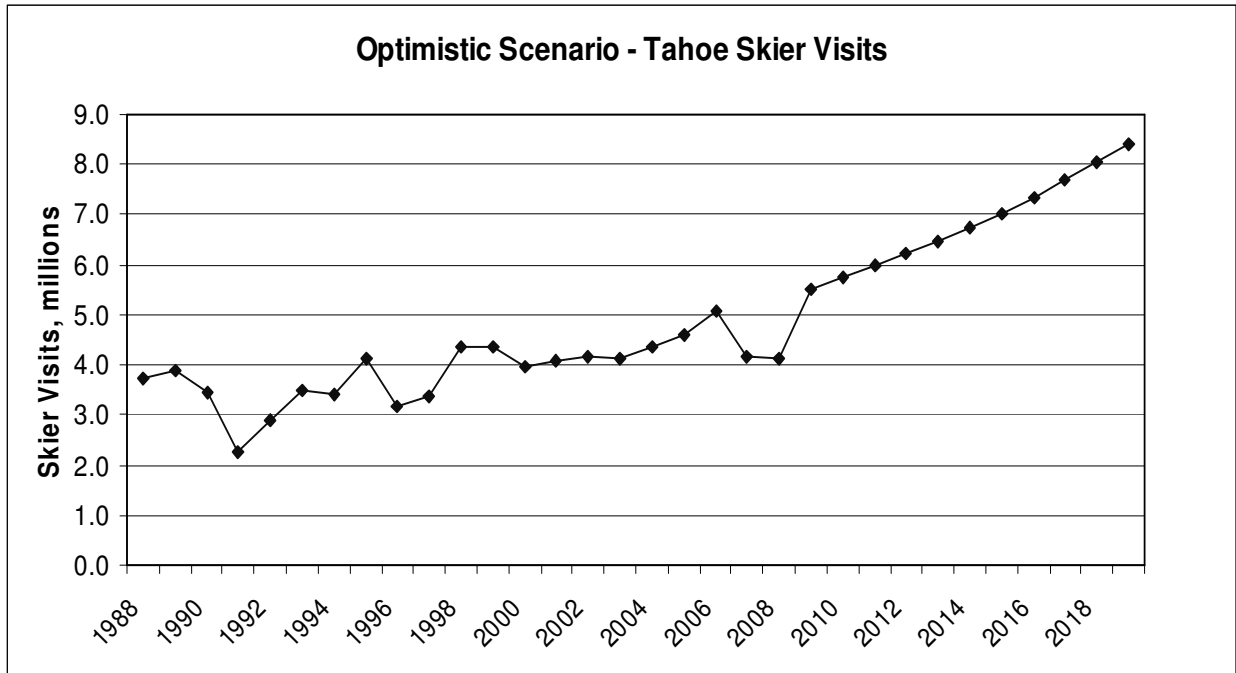


Figure 6.4

In reaction to 375 inches of snowfall (vs. 244.8 in), 7 percent of annual income growth (vs. 5%), and 1.5 percent employment growth (vs. 0.4%), the number of skier visits increases 34 percent during 2008- 2009 season and plateau out to a 4 percent annual increase thereafter. Interestingly, its annual growth rate of 7 percent precisely matches the income growth. Therefore, a change in income is a significant factor that influences skier visits. Accordingly, new permits also grow at a rate of 6.5 percent, compared to 1.5 percent in the realistic scenario, annually for the next 10 years. As a result of these increases, the real prices will also escalate a terrific 9 percent annually, from \$178.8 in 2009 to \$462 in 2019. However, it is surprising to see that the amount of total stock does not respond fast enough to this optimistic economy growth. Despite the fact that new permits steadily increase at a rate of 6.5 percent, their contributions, regardless of economic conditions, to the total stock is insignificant. Possibly, restrictions on new development imposed

by Tahoe Regional Planning Agency may explain why a relatively small number of new constructions are permitted each year. Hence, in order for real prices to taper off due to a sufficient supply of cumulative housing units in this market, it will probably take several decades at least.

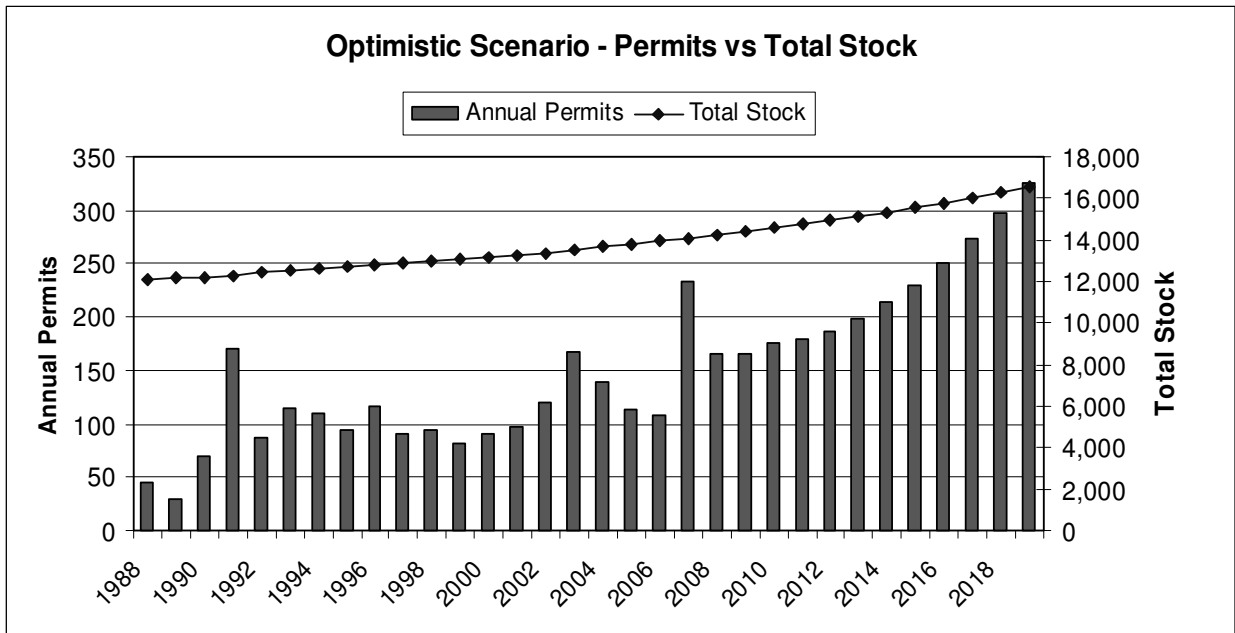


Figure 6.5

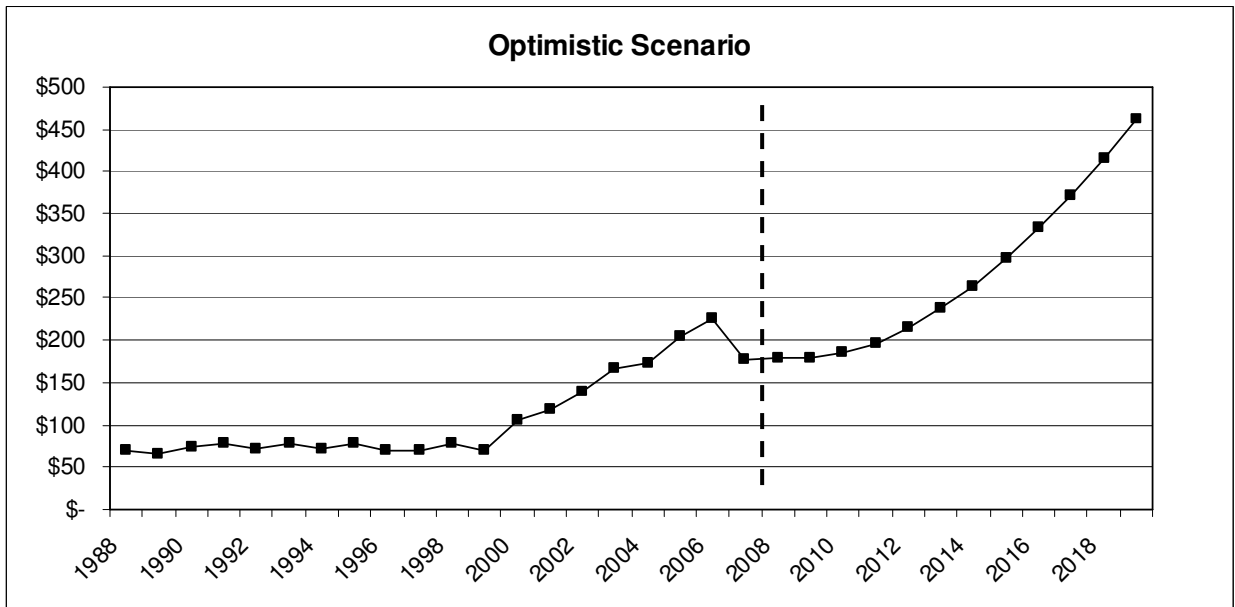


Figure 6.6

6.3 Pessimistic Scenario

Year	Real Price Index	Total Stock	Annual Permits	Skier Visits (millions)	Snowfall (in)	Employment Growth	Bay Area Employment	Income Growth	Bay Area Income(\$)	Interest Rates(%)
Average 88-08	\$112.65	12,981	109	3.9	244.8	0.4%	3,183,455	5.0%	38,204	7.61
Forecast 09-19					200.0	0.2%		3.5%		7 to 6
2009	\$158.41	14,435	166	4.8	200.0	0.2%	3,213,214	3.5%	62,848	7.00
2010	\$139.29	14,601	161	4.9	200.0	0.2%	3,219,640	3.5%	65,048	6.75
2011	\$119.91	14,762	147	5.0	200.0	0.2%	3,226,079	3.5%	67,324	6.75
2012	\$104.37	14,909	135	5.1	200.0	0.2%	3,232,531	3.5%	69,681	6.50
2013	\$90.42	15,044	126	5.2	200.0	0.2%	3,238,997	3.5%	72,120	6.50
2014	\$78.75	15,169	118	5.3	200.0	0.2%	3,245,475	3.5%	74,644	6.50
2015	\$72.65	15,287	111	5.5	200.0	0.2%	3,251,965	3.5%	77,256	6.25
2016	\$69.20	15,398	108	5.6	200.0	0.2%	3,258,469	3.5%	79,960	6.25
2017	\$68.51	15,506	106	5.7	200.0	0.2%	3,264,986	3.5%	82,759	6.25
2018	\$73.37	15,612	107	5.8	200.0	0.2%	3,271,516	3.5%	85,655	6.00
2019	\$80.39	15,719	110	5.9	200.0	0.2%	3,278,059	3.5%	88,653	6.00

Table 6.3

As can be seen Table 6.3, there is the greatest price decline in the pessimistic scenario. For this case, we assume 200 inches of snowfall, .2 percent employment growth, and 3.5 percent of income growth to replicate the economic condition under the early 1990’s U.S. recession.

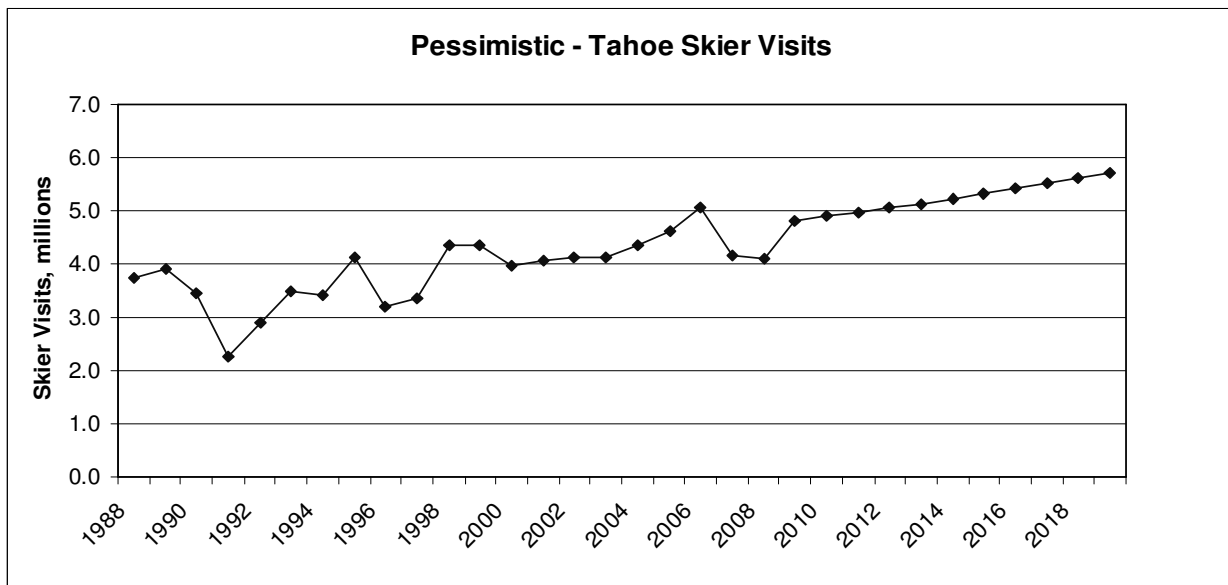


Figure 6.7

In reaction to the growth rates that are below historical averages, the number of skier visits grows only at 3 percent a year, compared to 7% in the optimistic case. Again, this growth rate

keeps up with the income growth. In spite of the weak economic growth, annual permits surprisingly manage to remain unchanged in the following year and begin their downward trend, from 166 permits in 2009 to 110 in 2019. Finally, the decrease in the real price is remarkable, from \$158.41 in 2009 to \$80.39 in 2019. This is more than a 45 percent decline.

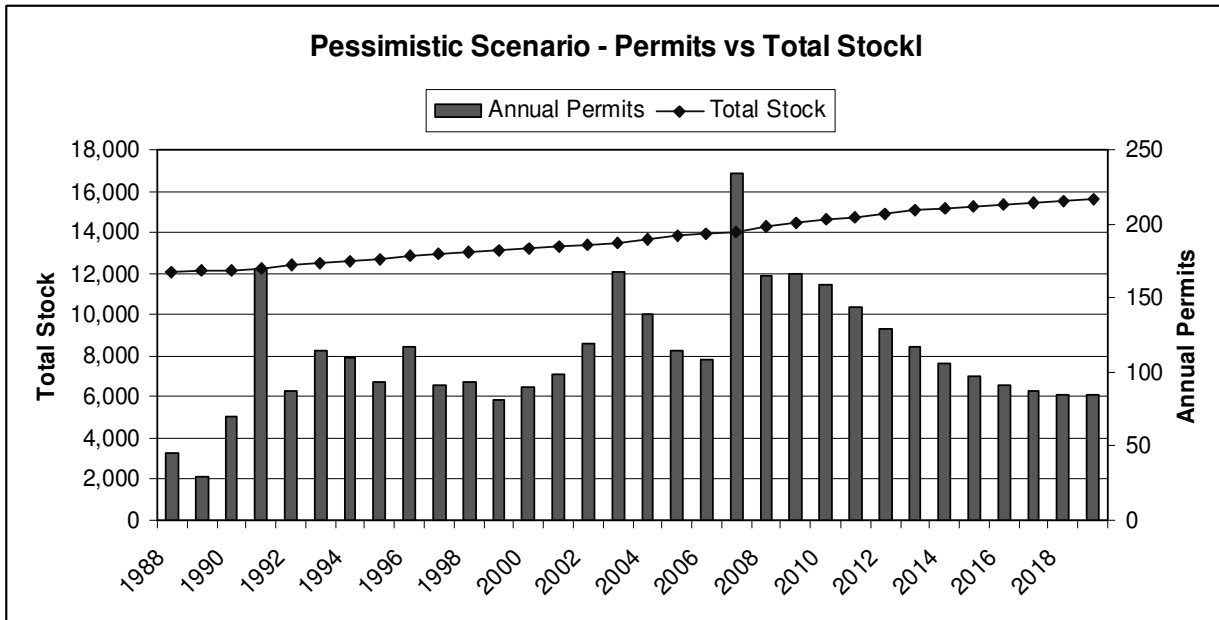


Figure 6.8

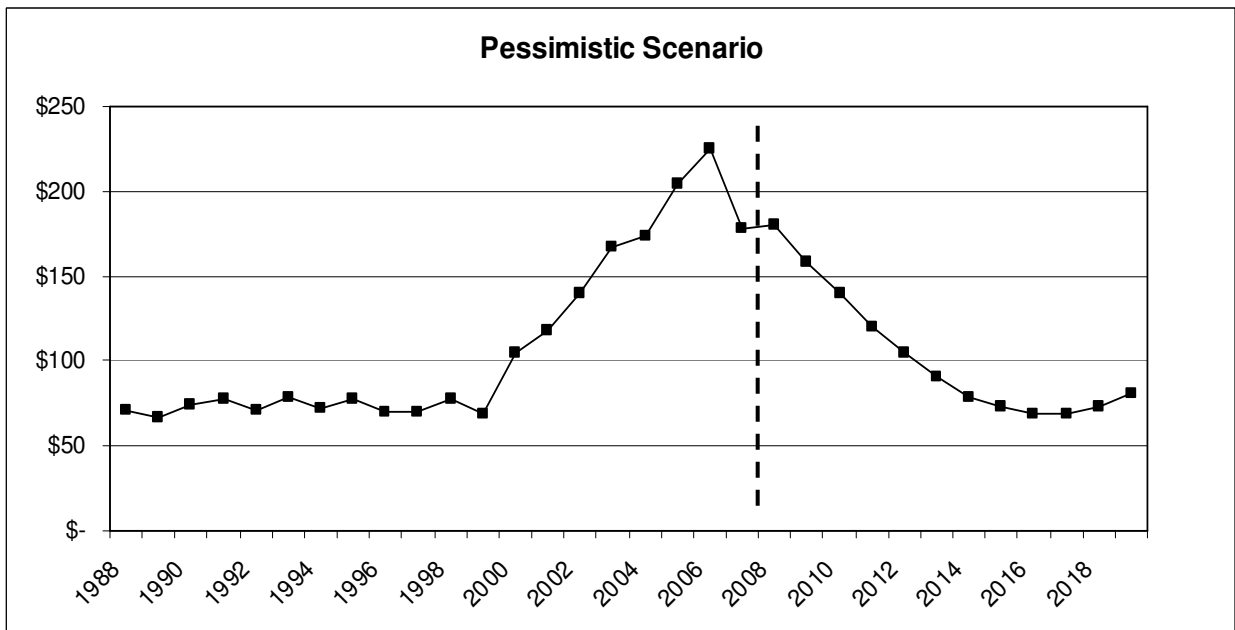


Figure 6.9

7.0 Conclusion

The intent of this study was to understand the second home market near Heavenly Ski Resort and to predict its future pricing behaviors. In order to do this study, we constructed a series of econometric models by analyzing a large amount of historical economic, demographic, and climate data pertaining to the Heavenly Ski Resort market. Utilizing these econometric models, we examined the future pricing behaviors in terms of three different market conditions: *realistic*, *optimistic* and *pessimistic*.

There are several findings throughout the historical data analysis. Firstly, we found that this market has experienced a significant amount of real price appreciation during the 20 years of the study period, from \$70.62 in 1988 to \$179.96 in 2008. This price appreciation is closely linked to economic growth and mainly caused by the low mortgage interest rates, the liberal mortgage lending practices, and an increase in demand for second homes. Though skier visits often fluctuated, they appear to have increased slightly during the same period. Lastly, increases in new permits were observed during most of the 20 year period under study, and it is noted that the momentum effect in price plays a big role in determining the new permit.

In the study of future pricing behaviors with three different scenarios, the following pricing behaviors were observed. First, in the realistic case with a modest snowfall and economy growth, the real price immediately showed a downward trend until 2013, when it began upward trend, from \$147.92 in 2013 to \$225.70 in 2019. Secondly, the phenomenal price appreciation in the optimistic scenario was mainly caused by strong economic growth and outstanding natural snowfall. The price escalated from \$178.80 in 2009 to \$461.99 in 2019, a roughly 158% increase. On the other hand, the greatest price decline was observed in the pessimistic scenario.

In fact, the real price decreased from \$158.41 in 2009 to \$80.39 in 2019, a more than 45 percent decline in price. In conclusion, the real housing prices will likely continue to rise in realistic and optimistic scenarios, but not in pessimistic scenarios.

In 2005, an article that examined ski condo prices for New England was published in *Journal of Real Estate Research*. According to this article, “the historical movements in condo prices and stock behave as if supply were perfectly elastic in real price levels and prone to overbuild every time positive demand shock occurs.”¹³ This means that new construction will promptly follow, as condo prices begin to appreciate above construction cost, rapidly depressing prices. The main reason for the dynamic price behaviors is that, unlike the real estate market near Heavenly, this market is relatively young, with its first condo development in 1976, and apparently has fewer development restrictions permitting new condo supply. In contrast, South Lake Tahoe has a major portion of housing stock built prior to 1980, and subsequent constructions were relatively minimal. Hence, the total stock has not increased considerably to influence real prices for the last 20 years. Based on our analysis, it takes several decades, at least, to build considerable housing stock to affect real prices. The development restrictions imposed by Tahoe Regional Planning Agency may explain the small number of development occurrences. With more confined housing supply, prices in South Lake Tahoe have appreciated 155 percent in real terms, while prices have fallen by 40% in New England over the last two decades.

¹³ William C. Wheaton, “Does Supply Prevent Appreciation?”, *Journal of Real Estate Research*, Vol.27. No.1.2005

Appendix A

Heavenly Ski Resort Sales Data

APN	Sale Date	Price	P/sf	Baths	Beds	SqFt	YearBuilt
2503104	19881205	\$85,000	79.74	1	3	1,066	1954
2503116	19910130	\$103,000	79.48	1	3	1,296	1959
2503116	19990114	\$20,000	15.43	1	3	1,296	1959
2503119	20080327	\$1,180,000	393.86	3.5	4	2,996	2006
2503121	19970721	\$130,000	130.78	1	2	994	1967
2503228	20060801	\$350,000	261.19	1	1	1,340	1952
2503229	19880505	\$190,000	78.64	4	4	2,416	1958
2503229	19970109	\$185,000	76.57	4	4	2,416	1958
2503230	19880415	\$99,000	47.60	2	4	2,080	1972
2503230	19970106	\$33,000	15.87	2	4	2,080	1972
2503237	19960820	\$99,000	134.88	1	2	734	1953
2503237	20011109	\$199,000	271.12	1	2	734	1953
2503237	20030206	\$250,000	340.60	1	2	734	1953
2503238	19890217	\$110,000	83.33	2	3	1,320	1965
2503238	19950113	\$160,500	121.59	2	3	1,320	1965
2532103	20040806	\$990,000	349.95	2.5	3	2,829	2004
2532105	19890705	\$140,500	98.25	2	3	1,430	1962
2532105	19970521	\$152,500	106.64	2	3	1,430	1962
2532105	20031104	\$421,000	294.41	2	3	1,430	1962
2532107	19911216	\$139,000	112.10	1	3	1,240	1974
2532115	19930512	\$158,000	91.01	3	3	1,736	1978
2589101	19971110	\$83,000	96.96	1.5	2	856	1972
2589101	20050512	\$355,000	414.72	1.5	2	856	1972
2589102	19940331	\$72,500	87.14	2	2	832	1972
2589102	19980622	\$78,000	93.75	2	2	832	1972
2589102	20061109	\$92,954	111.72	2	2	832	1972
2589103	19990115	\$80,000	96.15	1.5	2	832	1972
2589103	20041110	\$275,000	330.53	1.5	2	832	1972
2589104	19891229	\$74,000	86.45	2.5	2	856	1972
2589104	19970805	\$80,000	93.46	2.5	2	856	1972
2589105	20011207	\$155,000	176.34	1.5	2	879	1972
2589106	19901102	\$70,000	84.13	1.5	2	832	1972
2589106	19990803	\$87,000	104.57	1.5	2	832	1972
2589106	20040831	\$280,000	336.54	1.5	2	832	1972
2589107	19890331	\$25,000	30.05	1.5	2	832	1972
2589107	19900330	\$75,000	90.14	1.5	2	832	1972
2589107	19900330	\$67,000	80.53	1.5	2	832	1972
2589107	19991118	\$90,000	108.17	1.5	2	832	1972
2589107	20010801	\$145,000	174.28	1.5	2	832	1972
2589107	20040611	\$275,000	330.53	1.5	2	832	1972
2589108	19920708	\$66,000	79.33	1.5	2	832	1972
2589108	20040611	\$258,000	310.10	1.5	2	832	1972

2589108	20050119	\$294,500	353.97	1.5	2	832	1972
2589109	19930126	\$69,000	82.93	2	2	832	1972
2589109	20010420	\$139,000	167.07	2	2	832	1972
2589110	19990811	\$72,500	82.48	1.5	2	879	1972
2589110	20021226	\$215,000	244.60	1.5	2	879	1972
2589110	20030811	\$225,000	255.97	1.5	2	879	1972
2589110	20050525	\$365,000	415.24	1.5	2	879	1972
2589110	20080109	\$255,000	290.10	1.5	2	879	1972
2589110	20080509	\$310,000	352.67	1.5	2	879	1972
2589111	20020321	\$76,000	88.79	2	2	856	1972
2589111	20050817	\$312,000	364.49	2	2	856	1972
2589112	19900910	\$67,000	80.53	2	2	832	1972
2589112	19900910	\$67,000	80.53	2	2	832	1972
2589113	19891108	\$62,000	74.52	2	2	832	1972
2589113	19941007	\$68,500	82.33	2	2	832	1972
2589113	20031114	\$217,000	260.82	2	2	832	1972
2589114	19990126	\$78,000	93.75	2	2	832	1972
2589115	19900608	\$67,000	80.53	2	2	832	1972
2589115	19930604	\$77,500	93.15	2	2	832	1972
2589116	20071228	\$275,000	330.53	2	2	832	1972
2589117	19990902	\$86,000	103.37	1.5	2	832	1972
2589117	20041229	\$319,000	383.41	1.5	2	832	1972
2589117	20070918	\$280,000	336.54	1.5	2	832	1972
2589119	19921105	\$40,000	48.08	2	2	832	1972
2589119	19941216	\$79,000	94.95	2	2	832	1972
2589119	19991028	\$85,000	102.16	2	2	832	1972
2589119	20051014	\$320,000	384.62	2	2	832	1972
2589119	20051220	\$160,000	192.31	2	2	832	1972
2589121	19890216	\$59,500	71.51	2	2	832	1972
2589121	20010308	\$125,000	150.24	2	2	832	1972
2589121	20040330	\$225,000	270.43	2	2	832	1972
2589121	20070621	\$300,000	360.58	2	2	832	1972
2589122	20051021	\$346,000	404.21	2	2	856	1972
2589123	19881116	\$65,000	75.93	2.5	2	856	1972
2589123	20050722	\$375,000	438.08	2.5	2	856	1972
2589125	19990528	\$83,000	99.76	2	2	832	1972
2589126	19891116	\$74,000	88.94	2	2	832	1972
2589126	19981020	\$74,000	88.94	2	2	832	1972
2589127	19900425	\$62,500	75.12	2	2	832	1972
2589127	19911031	\$70,000	84.13	2	2	832	1972
2589127	19920205	\$70,000	84.13	2	2	832	1972
2589128	19991216	\$91,000	106.31	2.5	2	856	1972
2589130	19980410	\$80,000	96.15	2	2	832	1972
2589130	19990621	\$85,500	102.76	2	2	832	1972
2589130	20051007	\$337,000	405.05	2	2	832	1972
2589131	19980716	\$77,000	92.55	2	2	832	1972
2589131	20030227	\$210,000	252.40	2	2	832	1972

2589132	19990909	\$89,000	106.97	2	2	832	1972
2589132	20020731	\$190,000	228.37	2	2	832	1972
2589133	19941229	\$74,000	88.94	2	2	832	1972
2589134	19891031	\$63,000	75.72	2	2	832	1972
2589136	19940630	\$70,000	81.78	2.5	2	856	1972
2589136	19970523	\$77,000	89.95	2.5	2	856	1972
2590101	19970227	\$66,000	82.50	2	2	800	1973
2590101	19980323	\$68,500	85.63	2	2	800	1973
2590102	19900123	\$62,000	77.50	2	2	800	1973
2590102	19900928	\$62,000	77.50	2	2	800	1973
2590102	19940414	\$69,000	86.25	2	2	800	1973
2590102	20041208	\$279,000	348.75	2	2	800	1973
2590103	19921023	\$44,600	55.75	2	2	800	1973
2590104	20000310	\$90,000	112.50	2	2	800	1973
2590105	20000915	\$117,500	146.88	2	2	800	1973
2590106	19930226	\$79,000	98.75	2	2	800	1973
2590106	19981015	\$80,000	100.00	2	2	800	1973
2590106	20040714	\$286,000	357.50	2	2	800	1973
2590107	19960918	\$65,500	81.88	2	2	800	1973
2590107	20040109	\$204,000	255.00	2	2	800	1973
2590108	19990301	\$75,500	94.38	2	2	800	1973
2590108	20020715	\$180,000	225.00	2	2	800	1973
2590109	19990121	\$70,000	87.50	2	2	800	1973
2590109	20000106	\$88,000	110.00	2	2	800	1973
2590111	19991207	\$81,000	101.25	2	2	800	1973
2590112	19960116	\$66,000	82.50	2	2	800	1973
2590112	19981201	\$66,000	82.50	2	2	800	1973
2590112	20020827	\$132,000	165.00	2	2	800	1973
2590113	19980129	\$81,000	101.25	2	2	800	1973
2590114	19900221	\$73,000	91.25	2	2	800	1973
2590116	20060628	\$347,500	434.38	2	2	800	1973
2590117	19931119	\$78,000	97.50	2	2	800	1973
2590117	20001229	\$125,000	156.25	2	2	800	1973
2590117	20030710	\$195,000	243.75	2	2	800	1973
2590117	20051123	\$350,000	437.50	2	2	800	1973
2590118	20011231	\$110,000	137.50	2	2	800	1973
2590119	19901018	\$73,000	91.25	2	2	800	1973
2590119	20020502	\$70,000	87.50	2	2	800	1973
2590120	20041109	\$273,000	341.25	2	2	800	1973
2590121	19910628	\$72,000	90.00	2	2	800	1973
2590121	20000728	\$102,000	127.50	2	2	800	1973
2590121	20071019	\$102,000	127.50	2	2	800	1973
2590122	19911106	\$57,000	71.25	2	2	800	1973
2590122	19940607	\$87,000	108.75	2	2	800	1973
2590122	20030908	\$228,500	285.63	2	2	800	1973
2590122	20080312	\$228,500	285.63	2	2	800	1973
2590123	19921214	\$78,500	98.13	2	2	800	1973

2590123	19970728	\$81,000	101.25	2	2	800	1973
2804219	20040903	\$205,000	213.54	1	3	960	1957
2804219	20050602	\$355,000	369.79	1	3	960	1957
2805107	20060112	\$497,500	485.84	1	2	1,024	1958
2805110	20050805	\$547,500	335.48	2.5	4	1,632	1967
2805116	20050201	\$730,000	303.16	3	4	2,408	1992
2805119	20021209	\$293,000	234.40	2	3	1,250	1973
2805119	20030627	\$329,000	263.20	2	3	1,250	1973
2805119	20080125	\$329,000	263.20	2	3	1,250	1973
2805120	19900411	\$57,000	40.20	2	4	1,418	1973
2805121	19880803	\$150,000	59.86	3	3	2,506	1965
2805122	20020627	\$427,000	144.26	4	4	2,960	1964
2805122	20040903	\$640,000	216.22	4	4	2,960	1964
2805125	19951013	\$210,000	95.80	2	3	2,192	1966
2805203	19970707	\$175,000	91.91	2.5	3	1,904	1969
2805205	20041018	\$460,000	286.07	2.5	3	1,608	1957
2805206	19900731	\$305,000	81.29	3	4	3,752	1958
2805206	19991221	\$315,000	83.96	3	4	3,752	1958
2805206	20020923	\$639,000	170.31	3	4	3,752	1958
2805210	19971030	\$209,000	100.10	2	3	2,088	1997
2806103	19980616	\$135,000	98.68	2	3	1,368	1973
2806119	19910206	\$207,500	85.04	2.5	3	2,440	1984
2806120	19930903	\$150,000	82.78	2	3	1,812	1959
2806121	20000503	\$390,000	121.65	2	4	3,206	1963
2806125	20010919	\$205,000	133.46	2	4	1,536	1975
2806140	19990128	\$175,000	105.68	2	2	1,656	1966
2806140	20010323	\$308,000	185.99	2	2	1,656	1966
2806140	20041118	\$429,000	259.06	2	2	1,656	1966
2806142	19980923	\$149,500	87.12	2	3	1,716	1974
2806145	20080422	\$125,000	70.22	2	3	1,780	1970
2806201	19890915	\$137,000	91.76	2	3	1,493	1962
2806201	19931018	\$155,000	103.82	2	3	1,493	1962
2806201	20040412	\$418,000	279.97	2	3	1,493	1962
2806203	19931105	\$142,000	92.27	2	3	1,539	1974
2806206	19980710	\$100,000	72.73	2	3	1,375	1957
2806208	20020226	\$302,500	207.76	2	3	1,456	1977
2806301	20010208	\$525,000	193.30	2.5	4	2,716	2001
2806301	20020405	\$700,000	257.73	2.5	4	2,716	2001
2806301	20040315	\$775,000	285.35	2.5	4	2,716	2001
2806306	19941115	\$78,500	54.63	1.5	3	1,437	1959
2806307	19890216	\$153,000	103.17	3.5	4	1,483	1963
2806307	20050712	\$1,255,000	846.26	3.5	4	1,483	1963
2807013	19961002	\$156,500	67.25	1.5	2	2,327	1963
2807027	20050411	\$1,250,000	386.88	4.5	5	3,231	2004
2807027	20080423	\$1,200,000	371.40	4.5	5	3,231	2004
2808204	20021018	\$425,000	241.48	3	4	1,760	1958
2808205	20001219	\$400,000	182.82	3	3	2,188	2000

2808205	20030923	\$595,000	271.94	3	3	2,188	2000
2808205	20060420	\$865,000	395.34	3	3	2,188	2000
2808208	19910530	\$95,000	62.50	2	3	1,520	1957
2812109	20010613	\$195,000	156.25	2	3	1,248	1978
2812132	20050418	\$315,000	316.90	2	3	994	1952
2812203	19970127	\$92,000	102.22	1	2	900	1965
2812301	20061108	\$649,000	364.20	2.5	3	1,782	1976
2812304	19890303	\$171,500	65.11	3	5	2,634	1981
2812305	19890308	\$168,000	73.88	3	4	2,274	1975
2812305	19901206	\$189,000	83.11	3	4	2,274	1975
2812305	19960229	\$204,000	89.71	3	4	2,274	1975
2812305	20031003	\$620,000	272.65	3	4	2,274	1975
2812308	20001006	\$160,000	118.34	2	3	1,352	1964
2812308	20021015	\$370,000	273.67	2	3	1,352	1964
2812308	20040505	\$259,000	191.57	2	3	1,352	1964
2812316	19970116	\$158,000	124.12	2	3	1,273	1970
2813102	20050527	\$985,000	325.94	3.5	5	3,022	2005
2813102	20070305	\$1,195,000	395.43	3.5	5	3,022	2005
2813106	20070216	\$1,100,000	393.00	3	5	2,799	2006
2813108	19880413	\$29,000	23.75	2	3	1,221	1966
2813108	19960221	\$125,000	102.38	2	3	1,221	1966
2813110	19941005	\$135,000	96.15	2	4	1,404	1963
2813112	19911030	\$155,000	91.61	2	3	1,692	1970
2813112	19981216	\$196,500	116.13	2	3	1,692	1970
2813112	20030402	\$355,500	210.11	2	3	1,692	1970
2813113	19890809	\$85,500	74.22	2	3	1,152	1965
2813114	19900627	\$134,000	79.76	2	4	1,680	1972
2813114	20010307	\$260,000	154.76	2	4	1,680	1972
2813114	20061208	\$650,000	386.90	2	4	1,680	1972
2813119	19881130	\$105,000	90.36	2	3	1,162	1971
2814122	19921102	\$169,500	93.85	2	2	1,806	1980
2814142	19930930	\$185,000	124.58	2.5	2	1,485	1978
2815101	20030922	\$544,000	273.09	2	4	1,992	1975
2815102	19941005	\$300,000	191.69	2	3	1,565	1988
2815102	20000616	\$445,000	284.35	2	3	1,565	1988
2815210	20070608	\$630,000	368.42	2	3	1,710	1974
2815211	20040329	\$525,000	287.83	2	3	1,824	1977
2815213	19930201	\$225,000	129.31	2	3	1,740	1973
2815213	20020426	\$525,000	301.72	2	3	1,740	1973
2815221	19890531	\$155,000	87.37	2	3	1,774	1974
2815221	19930423	\$177,000	99.77	2	3	1,774	1974
2815223	19941031	\$255,000	140.34	3	4	1,817	1974
2815224	19900511	\$178,000	69.10	3	4	2,576	1978
2815224	19901107	\$178,000	69.10	3	4	2,576	1978
2815224	19980225	\$342,500	132.96	3	4	2,576	1978
2815225	19940331	\$197,000	148.34	2	2	1,328	1978
2815243	19911218	\$235,000	136.00	2	4	1,728	1974

2815243	19971114	\$230,000	133.10	2	4	1,728	1974
2815243	19971114	\$215,000	124.42	2	4	1,728	1974
2815246	20080303	\$800,000	702.37	1.5	2	1,139	1965
2815247	19880810	\$525,000	108.05	3	4	4,859	1981
2815247	20000531	\$1,250,000	257.25	3	4	4,859	1981
2815247	20060707	\$2,350,000	483.64	3	4	4,859	1981
2815248	19900601	\$204,000	110.87	2.5	3	1,840	1968
2815248	19980630	\$213,000	115.76	2.5	3	1,840	1968
2815310	19950922	\$315,000	91.09	3.5	4	3,458	1977
2815310	20000201	\$599,000	173.22	3.5	4	3,458	1977
2815310	20030213	\$1,090,000	315.21	3.5	4	3,458	1977
2815312	20000926	\$540,000	247.25	2.5	3	2,184	1972
2815314	20020816	\$556,000	238.93	3	3	2,327	1969
2815403	20071204	\$845,000	346.88	3.5	5	2,436	1977
2816101	20061214	\$912,500	552.36	2	3	1,652	1979
2816232	19900524	\$375,000	125.50	3	4	2,988	1967
2816233	19990903	\$320,000	123.08	3	4	2,600	1976
2816233	20001108	\$485,000	186.54	3	4	2,600	1976
2816233	20040116	\$615,000	236.54	3	4	2,600	1976
2816237	19980623	\$470,000	132.10	3	4	3,558	1967
2816237	19990517	\$104,000	29.23	3	4	3,558	1967
2816237	20000616	\$770,000	216.41	3	4	3,558	1967
2816303	19931217	\$249,000	297.85	3	5	836	1972
2816304	19891027	\$265,000	87.78	3.5	4	3,019	1977
2816304	19950719	\$365,000	120.90	3.5	4	3,019	1977
2816304	19970527	\$416,000	137.79	3.5	4	3,019	1977
2816304	19980930	\$635,000	210.33	3.5	4	3,019	1977
2816304	20020920	\$1,120,000	370.98	3.5	4	3,019	1977
2830102	19931015	\$165,000	82.83	2	4	1,992	1977
2830102	19971205	\$176,500	88.60	2	4	1,992	1977
2830102	19990708	\$230,000	115.46	2	4	1,992	1977
2830103	20010622	\$326,000	176.41	2.5	3	1,848	1973
2830104	20041018	\$429,000	242.92	2	3	1,766	1973
2830105	19880415	\$150,000	81.17	2.5	3	1,848	1973
2830109	19881102	\$132,000	87.36	1.5	2	1,511	1979
2830110	19950929	\$185,000	92.87	3	4	1,992	1977
2830110	20021213	\$472,500	237.20	3	4	1,992	1977
2830111	19921001	\$170,000	112.51	1.5	2	1,511	1979
2830111	19980213	\$168,000	111.18	1.5	2	1,511	1979
2830112	19910412	\$175,000	77.64	2	4	2,254	1979
2830113	19880621	\$114,000	62.23	2	2	1,832	1980
2830113	20051117	\$745,000	406.66	2	2	1,832	1980
2830114	20070126	\$595,000	394.56	2	2	1,508	1979
2830115	20010921	\$295,000	188.14	2	2	1,568	1977
2830116	19900409	\$160,000	84.21	2	2	1,900	1979
2830116	19940531	\$179,000	94.21	2	2	1,900	1979
2830118	19900816	\$177,000	97.90	2	2	1,808	1979

2830118	19950807	\$177,000	97.90	2	2	1,808	1979
2830118	19970822	\$184,000	101.77	2	2	1,808	1979
2830119	19931221	\$59,500	39.46	2	2	1,508	1979
2830119	19960812	\$158,000	104.77	2	2	1,508	1979
2830119	20050315	\$550,000	364.72	2	2	1,508	1979
2830120	20040514	\$470,000	319.29	2	3	1,472	1973
2830123	20011206	\$339,000	230.30	2	3	1,472	1973
2830124	19900503	\$188,500	103.17	2	3	1,827	1973
2830124	19980527	\$230,000	125.89	2	3	1,827	1973
2830125	19890223	\$158,800	70.45	2	4	2,254	1979
2830125	19940125	\$225,000	99.82	2	4	2,254	1979
2830125	19980109	\$235,000	104.26	2	4	2,254	1979
2830126	19900717	\$227,500	101.56	3	3	2,240	1973
2830126	19940420	\$230,500	102.90	3	3	2,240	1973
2830126	19980501	\$254,000	113.39	3	3	2,240	1973
2830126	20020814	\$435,000	194.20	3	3	2,240	1973
2830126	20021202	\$485,000	216.52	3	3	2,240	1973
2830127	19890912	\$260,000	80.30	3	4	3,238	1973
2830127	19930128	\$310,000	95.74	3	4	3,238	1973
2830127	19980527	\$330,000	101.91	3	4	3,238	1973
2830129	20021008	\$380,000	190.76	2	4	1,992	1977
2830132	19940810	\$210,000	118.91	2	3	1,766	1973
2830132	19970825	\$232,500	131.65	2	3	1,766	1973
2830137	19910603	\$156,000	103.45	2	2	1,508	1980
2830139	19970711	\$122,000	54.13	2	4	2,254	1977
2830140	19880816	\$123,500	81.73	2	2	1,511	1980
2830140	19940317	\$145,500	96.29	2	2	1,511	1980
2830140	20000411	\$200,500	132.69	2	2	1,511	1980
2830140	20010810	\$287,000	189.94	2	2	1,511	1980
2830141	19990322	\$161,500	95.90	2	2	1,684	1979
2830144	19961119	\$190,000	84.29	2	4	2,254	1980
2830145	19890331	\$134,000	88.68	1.5	2	1,511	1979
2830145	20001018	\$250,000	165.45	1.5	2	1,511	1979
2830145	20041028	\$446,000	295.17	1.5	2	1,511	1979
2830146	19940930	\$39,500	19.83	2	2	1,992	1979
2830146	19990105	\$199,000	99.90	2	2	1,992	1979
2830146	20021108	\$389,000	195.28	2	2	1,992	1979
2830146	20041015	\$535,000	268.57	2	2	1,992	1979
2830147	19910110	\$204,000	75.61	2.5	4	2,698	1973
2830147	19930520	\$276,500	102.48	2.5	4	2,698	1973
2830147	19990301	\$330,000	122.31	2.5	4	2,698	1973
2830147	20031003	\$535,000	198.30	2.5	4	2,698	1973
2830148	19930209	\$81,000	53.71	2	2	1,508	1980
2830149	19910910	\$174,500	104.30	2	2	1,673	1979
2830149	19970923	\$165,000	98.63	2	2	1,673	1979
2830150	19900706	\$175,000	99.09	2	3	1,766	1973
2830150	20010205	\$351,000	198.75	2	3	1,766	1973

2830150	20071031	\$590,000	334.09	2	3	1,766	1973
2830152	19970930	\$177,000	120.24	2	3	1,472	1973
2830152	20030703	\$400,000	271.74	2	3	1,472	1973
2830152	20050520	\$590,000	400.82	2	3	1,472	1973
2830153	19931124	\$211,000	117.75	2	3	1,792	1973
2830153	19990419	\$232,500	129.74	2	3	1,792	1973
2830154	19940413	\$172,500	110.01	2	2	1,568	1980
2830154	20020801	\$356,000	227.04	2	2	1,568	1980
2830154	20030625	\$445,000	283.80	2	2	1,568	1980
2830155	19931229	\$200,000	111.61	2.5	3	1,792	1973
2830155	19980820	\$205,000	114.40	2.5	3	1,792	1973
2830155	20071030	\$521,000	290.74	2.5	3	1,792	1973
2830156	19901018	\$157,500	104.44	2	2	1,508	1980
2830156	19920529	\$165,500	109.75	2	2	1,508	1980
2830157	19930406	\$155,000	77.81	2	2	1,992	1980
2830157	19960117	\$182,000	91.37	2	2	1,992	1980
2830157	20000821	\$238,000	119.48	2	2	1,992	1980
2830157	20020205	\$333,500	167.42	2	2	1,992	1980
2830157	20030630	\$445,000	223.39	2	2	1,992	1980
2830159	19940817	\$400,000	155.95	2	3	2,565	1990
2830159	19990219	\$470,000	183.24	2	3	2,565	1990
2830160	19940629	\$240,000	51.98	5	5	4,617	1992
2830161	19980911	\$650,000	200.37	3	3	3,244	1991
2830161	20000313	\$795,000	245.07	3	3	3,244	1991
2830161	20020722	\$905,000	278.98	3	3	3,244	1991
2830162	19971219	\$560,000	124.44	3	5	4,500	1991
2831101	19980128	\$171,000	85.84	3	4	1,992	1977
2831102	19890814	\$12,000	5.32	2	4	2,254	1980
2831105	19910906	\$222,000	98.49	2	4	2,254	1979
2831105	19980817	\$235,000	104.26	2	4	2,254	1979
2831106	19941122	\$185,000	92.87	2	2	1,992	1979
2831107	19951129	\$205,500	91.17	2	4	2,254	1977
2831108	19900831	\$220,000	110.44	2	4	1,992	1977
2831109	19931116	\$101,000	66.84	1.5	3	1,511	1977
2831109	19940428	\$168,000	111.18	1.5	3	1,511	1977
2831111	19901109	\$32,000	14.20	2	4	2,254	1979
2831111	19950209	\$230,000	102.04	2	4	2,254	1979
2831111	19970509	\$225,000	99.82	2	4	2,254	1979
2831112	19971126	\$226,000	113.45	2	2	1,992	1979
2831113	19910405	\$157,500	104.24	1.5	2	1,511	1979
2831113	19951025	\$155,000	102.58	1.5	2	1,511	1979
2831114	19980925	\$148,500	100.47	1.5	3	1,478	1977
2831114	20060825	\$562,000	380.24	1.5	3	1,478	1977
2831115	19910129	\$182,000	91.37	2	2	1,992	1979
2831115	19920514	\$182,000	91.37	2	2	1,992	1979
2831115	19970401	\$175,000	87.85	2	2	1,992	1979
2831116	19910206	\$135,000	91.34	1.5	2	1,478	1977

2831116	19970929	\$150,000	101.49	1.5	2	1,478	1977
2831116	20010731	\$306,818	207.59	1.5	2	1,478	1977
2831118	20050823	\$610,000	306.22	2	2	1,992	1979
2831120	19890925	\$130,000	86.04	1.5	2	1,511	1979
2831120	19950929	\$140,000	92.65	1.5	2	1,511	1979
2831123	19900322	\$135,000	89.34	1.5	2	1,511	1979
2831123	19940107	\$150,000	99.27	1.5	2	1,511	1979
2831123	20041020	\$105,000	69.49	1.5	2	1,511	1979
2831124	19910718	\$170,000	75.52	2	2	2,251	1979
2831124	20010809	\$330,000	146.60	2	2	2,251	1979
2831126	20001010	\$230,000	158.84	2.5	3	1,448	1977
2831126	20020328	\$319,000	220.30	2.5	3	1,448	1977
2831126	20031003	\$405,000	279.70	2.5	3	1,448	1977
2831127	19951219	\$151,000	100.13	2	2	1,508	1980
2831127	20000208	\$189,500	125.66	2	2	1,508	1980
2831127	20020228	\$290,000	192.31	2	2	1,508	1980
2831128	19990608	\$177,000	133.28	2	2	1,328	1979
2831129	20040305	\$530,000	235.45	2	2	2,251	1980
2831130	19881227	\$137,000	87.37	2	2	1,568	1980
2831131	19951031	\$181,000	113.13	1.5	2	1,600	1979
2831133	19891122	\$136,000	92.02	1.5	3	1,478	1977
2831133	19940927	\$150,000	101.49	1.5	3	1,478	1977
2831133	19981106	\$152,000	102.84	1.5	3	1,478	1977
2831133	20041222	\$460,000	311.23	1.5	3	1,478	1977
2831134	19901114	\$205,000	91.07	2	2	2,251	1979
2831135	19891212	\$142,000	94.16	2	2	1,508	1979
2831135	19950531	\$158,000	104.77	2	2	1,508	1979
2831135	20041229	\$400,000	265.25	2	2	1,508	1979
2831136	19901002	\$165,000	82.83	2	2	1,992	1979
2831137	19891003	\$124,000	83.90	1.5	3	1,478	1977
2831137	19891003	\$124,000	83.90	1.5	3	1,478	1977
2831137	19990726	\$167,000	112.99	1.5	3	1,478	1977
2831138	19970813	\$169,000	84.84	2	4	1,992	1977
2831138	20010522	\$319,000	160.14	2	4	1,992	1977
2831139	19880826	\$125,000	94.13	2	2	1,328	1979
2831139	19970411	\$157,500	118.60	2	2	1,328	1979
2831139	20000811	\$226,000	170.18	2	2	1,328	1979
2831140	19880824	\$115,000	73.34	2	2	1,568	1979
2831142	19880830	\$129,000	82.27	2	2	1,568	1977
2831142	19980113	\$155,000	98.85	2	2	1,568	1977
2831142	19981215	\$176,500	112.56	2	2	1,568	1977
2831143	19900824	\$239,000	142.86	2	2	1,673	1979
2831144	19931124	\$165,000	109.42	5	2	1,508	1979
2831144	19970113	\$156,500	103.78	5	2	1,508	1979
2831144	20011004	\$295,000	195.62	5	2	1,508	1979
2831144	20031016	\$391,500	259.62	5	2	1,508	1979
2831148	19971016	\$151,000	102.17	1.5	3	1,478	1977

2831148	20010525	\$285,000	192.83	1.5	3	1,478	1977
2831149	19921030	\$170,000	85.34	2	2	1,992	1979
2831150	19991029	\$177,500	105.40	2	2	1,684	1980
2831151	19910502	\$160,000	95.64	2	2	1,673	1979
2831151	19950619	\$150,000	89.66	2	2	1,673	1979
2831151	19960627	\$152,500	91.15	2	2	1,673	1979
2831152	19890606	\$180,000	79.96	2	2	2,251	1980
2831152	19961029	\$182,000	80.85	2	2	2,251	1980
2831153	19941017	\$145,000	64.42	2	2	2,251	1980
2831154	19961226	\$183,000	81.30	2	2	2,251	1980
2831155	19891128	\$145,000	85.90	2	4	1,688	1979
2831157	19880217	\$165,000	93.43	2	3	1,766	1976
2942211	19881222	\$110,000	60.31	2	3	1,824	1969
2942213	19931228	\$80,000	113.31	1	2	706	1958
2942213	19991027	\$95,000	134.56	1	2	706	1958
2942220	19990611	\$129,000	111.98	2	4	1,152	1962
2942221	20000811	\$255,000	100.04	3.5	4	2,549	1984
2942221	20030717	\$419,000	164.38	3.5	4	2,549	1984
2942223	19940325	\$123,000	91.93	2	3	1,338	1971
2942225	19940328	\$175,000	109.79	2	3	1,594	1976
2942226	19951101	\$159,500	100.31	2	3	1,590	1958
2942226	19990603	\$182,000	114.47	2	3	1,590	1958
2942228	19991130	\$145,000	117.69	2	2	1,232	1964
2942228	20050610	\$555,000	450.49	2	2	1,232	1964
3035102	19890228	\$36,000	23.23	2	3	1,550	1976
3035105	19901026	\$147,000	101.87	2	3	1,443	1967
3035105	19970903	\$150,000	103.95	2	3	1,443	1967
3035107	20000411	\$184,500	108.21	2	3	1,705	1981
3035116	20010222	\$200,000	108.70	2	4	1,840	1957
3035116	20030228	\$325,000	176.63	2	4	1,840	1957
3035117	20000210	\$205,000	102.60	1	2	1,998	1957
3035201	19960913	\$95,000	107.47	1	2	884	1947
3035205	19890404	\$115,000	68.49	2	4	1,679	1976
3035205	19990722	\$150,000	89.34	2	4	1,679	1976
3035206	20051216	\$450,000	312.50	2	3	1,440	1976
3035206	20070305	\$575,000	399.31	2	3	1,440	1976
3035207	20030502	\$335,000	227.58	2	4	1,472	1974
3035208	19991026	\$63,000	34.24	2	5	1,840	1975
3035210	20000406	\$236,000	115.07	3	6	2,051	1957
3035210	20020726	\$385,000	187.71	3	6	2,051	1957
3035212	20021007	\$385,000	208.22	2	3	1,849	1972
3035213	19981110	\$166,500	87.82	2	2	1,896	1961
3035213	20040427	\$419,000	220.99	2	2	1,896	1961
3035214	19891227	\$99,000	66.00	2	3	1,500	1975
3035214	19930727	\$128,000	85.33	2	3	1,500	1975
3035214	19970926	\$133,000	88.67	2	3	1,500	1975
3035225	19931118	\$152,500	90.88	2	3	1,678	1981

3035225	19980626	\$190,000	113.23	2	3	1,678	1981
3035228	19970325	\$34,000	47.22	1	2	720	1957
3035229	19960815	\$150,000	97.28	2	3	1,542	1976
3035229	19991019	\$194,500	126.13	2	3	1,542	1976
3035302	19880404	\$125,000	75.12	2	3	1,664	1976
3035307	19900820	\$145,000	99.59	2	3	1,456	1966
3035308	19900905	\$162,000	89.95	2	3	1,801	1982
3035309	19971216	\$120,000	151.52	1	2	792	1959
3035310	20060830	\$785,000	343.09	2	2	2,288	1981
3035315	20050525	\$114,000	55.80	2	3	2,043	1965
3035315	20050705	\$119,090	58.29	2	3	2,043	1965
3036114	19910709	\$150,000	119.24	2	3	1,258	1975
3036119	19970829	\$110,000	54.35	3	4	2,024	1969
3036120	20000223	\$299,000	149.50	3	4	2,000	2000
3036121	19951010	\$161,000	104.82	2	3	1,536	1976
3036126	19970715	\$94,500	82.03	1	3	1,152	1965
3036128	19890920	\$144,500	103.07	2	3	1,402	1983
3036129	19900109	\$188,000	134.29	2	3	1,400	1978
3036129	19980724	\$183,000	130.71	2	3	1,400	1978
3036129	20021127	\$459,000	327.86	2	3	1,400	1978
3036133	19891120	\$96,500	60.92	2	4	1,584	1975
3036133	20050714	\$515,000	325.13	2	4	1,584	1975
3036133	20060907	\$610,000	385.10	2	4	1,584	1975
3036202	19911206	\$135,000	107.40	2	3	1,257	1966
3036202	20000921	\$287,000	228.32	2	3	1,257	1966
3036203	20050712	\$595,000	425.61	2	4	1,398	1970
3036205	20000229	\$130,000	159.31	1	2	816	1963
3036205	20071129	\$237,163	290.64	1	2	816	1963
3036205	20080409	\$315,000	386.03	1	2	816	1963
3036207	19880310	\$103,000	67.59	2	3	1,524	1976
3036210	19921005	\$239,000	146.27	2	3	1,634	1959
3036221	20001109	\$150,000	100.94	2	3	1,486	1960
3036221	20021018	\$351,000	236.20	2	3	1,486	1960
3036221	20021024	\$290,000	195.15	2	3	1,486	1960
3036223	19900711	\$124,000	80.73	2	3	1,536	1976
3036223	19981104	\$145,000	94.40	2	3	1,536	1976
3036307	19960628	\$235,000	116.57	2	3	2,016	1982
3036308	19931230	\$189,500	106.28	2	3	1,783	1976
3036310	19970321	\$215,000	134.54	2	3	1,598	1976
3036311	19981019	\$176,500	98.49	2	4	1,792	1976
3036311	20030408	\$420,000	234.38	2	4	1,792	1976
3036311	20050422	\$582,500	325.06	2	4	1,792	1976
3036312	19940413	\$179,000	99.11	2	5	1,806	1976
3036314	19950922	\$165,000	89.29	2	4	1,848	1976
3036314	20031126	\$440,000	238.10	2	4	1,848	1976
3040104	19890922	\$185,000	90.33	2	3	2,048	1964
3040104	19910411	\$185,000	90.33	2	3	2,048	1964

3040104	19951106	\$225,000	109.86	2	3	2,048	1964
3040108	19971210	\$34,500	35.20	1	2	980	1975
3040108	20031024	\$350,000	357.14	1	2	980	1975
3040108	20080201	\$480,000	489.80	1	2	980	1975
3040112	19960705	\$217,500	95.65	3.5	4	2,274	1976
3040112	19980731	\$250,000	109.94	3.5	4	2,274	1976
3040115	19900522	\$145,000	72.90	2	3	1,989	1974
3040115	20031110	\$495,000	248.87	2	3	1,989	1974
3040120	19930514	\$378,500	156.66	2.5	4	2,416	1976
3040120	19971010	\$426,000	176.32	2.5	4	2,416	1976
3040126	19880708	\$400,000	103.01	3	3	3,883	1980
3040127	19930511	\$225,000	81.17	2	3	2,772	1978
3040127	19970702	\$420,000	151.52	2	3	2,772	1978
3040127	20020416	\$526,500	189.94	2	3	2,772	1978
3040137	20070518	\$455,000	153.10	3	4	2,972	1967
3040140	20060104	\$582,000	485.00	2	2	1,200	1976
3040141	19941118	\$185,000	75.82	3	4	2,440	1960
3040201	20070416	\$985,000	246.25	4	7	4,000	1977
3040203	19900816	\$220,000	118.22	2	4	1,861	1974
3040212	19930226	\$415,000	166.80	2	3	2,488	1965
3040308	19891108	\$255,000	120.97	2	3	2,108	1970
3040311	19981118	\$305,000	125.15	2.5	3	2,437	1977
3041114	19890531	\$330,000	118.88	3.5	4	2,776	1987
3058103	19980501	\$200,000	114.94	2	5	1,740	1971

(Data Source: Data Quick)

Appendix B

South Lake Tahoe Residential Permits

Year	Permits	Housing Stock
1988	46	12,096
1989	29	12,142
1990	70	12,171
1991	170	12,241
1992	87	12,411
1993	115	12,498
1994	109	12,613
1995	94	12,722
1996	117	12,816
1997	91	12,933
1998	94	13,024
1999	81	13,118
2000	90	13,199
2001	98	13,289
2002	120	13,387
2003	168	13,507
2004	139	13,675
2005	114	13,814
2006	108	13,928
2007	234	14,036
2008	-	14,270

(Data Source: Eldorado County Building Department)

Appendix C

Skier Visits

Season	CA (millions)	Tahoe (millions)
1987-88	6.9	3.7
1988-89	7.1	3.9
1989-90	6.4	3.5
1990-91	4.2	2.3
1991-92	6.2	2.9
1992-93	6.2	3.5
1993-94	6.2	3.4
1994-95	7.1	4.1
1995-96	5.5	3.2
1996-97	5.8	3.4
1997-98	7.4	4.4
1998-99	7.4	4.4
1999-00	6.5	4.0
2000-01	7.4	4.1
2001-02	7.4	4.1
2002-03	7.5	4.1
2003-04	7.5	4.4
2004-05	8.1	4.6
2005-06	7.8	5.1
2006-07	6.3	4.2
2007-08	7.2	4.1

(Data Source: California Ski Industry Association)

Appendix D

Heavenly Ski Resort Snowfall

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total(in)
87-88	-	8.00	52.50	42.00	-	6.00	-	-	108.50
88-89	-	23.00	40.50	22.50	37.50	74.00	2.50	-	200.00
89-90	-	18.00	-	34.00	43.00	19.00	-	-	114.00
90-91	-	11.00	25.00	3.00	9.50	90.00	8.50	-	147.00
91-92	24.00	15.00	19.50	10.00	34.00	20.00	-	-	122.50
92-93	14.00	2.00	128.00	88.00	66.00	28.00	18.00	-	344.00
93-94	8.00	11.50	27.00	13.50	72.50	13.50	6.00	-	152.00
94-95	7.00	105.00	39.50	101.50	8.00	121.00	42.50	31.00	455.50
95-96	-	2.00	32.00	99.00	71.00	58.50	19.00	-	281.50
96-97	17.00	8.00	124.00	108.00	8.00	11.00	1.00	-	277.00
97-98	-	19.50	20.00	55.50	98.50	71.00	21.00	24.00	309.50
98-99	6.00	26.50	33.00	69.00	105.00	40.00	65.25	10.00	354.75
99-00	-	0.50	7.00	100.00	78.00	26.00	9.00	-	220.50
00-01	-	16.00	16.00	33.00	59.00	16.50	45.50	-	186.00
01-02	-	22.50	92.00	19.00	15.50	58.50	22.00	-	229.50
02-03	-	8.00	137.25	4.00	19.00	17.00	-	-	185.25
03-04	-	30.00	88.50	37.50	58.50	16.00	2.00	-	232.50
04-05	24.00	22.00	55.00	128.50	55.00	57.00	21.50	5.00	368.00
05-06	-	10.00	113.50	70.00	43.00	91.50	46.50	-	374.50
06-07	-	-	23.00	22.00	92.00	28.00	35.00	-	200.00
07-08	4.00	-	18.00	167.50	71.00	15.00	2.00	-	277.50

(Data Source: Heavenly Ski Resort)

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